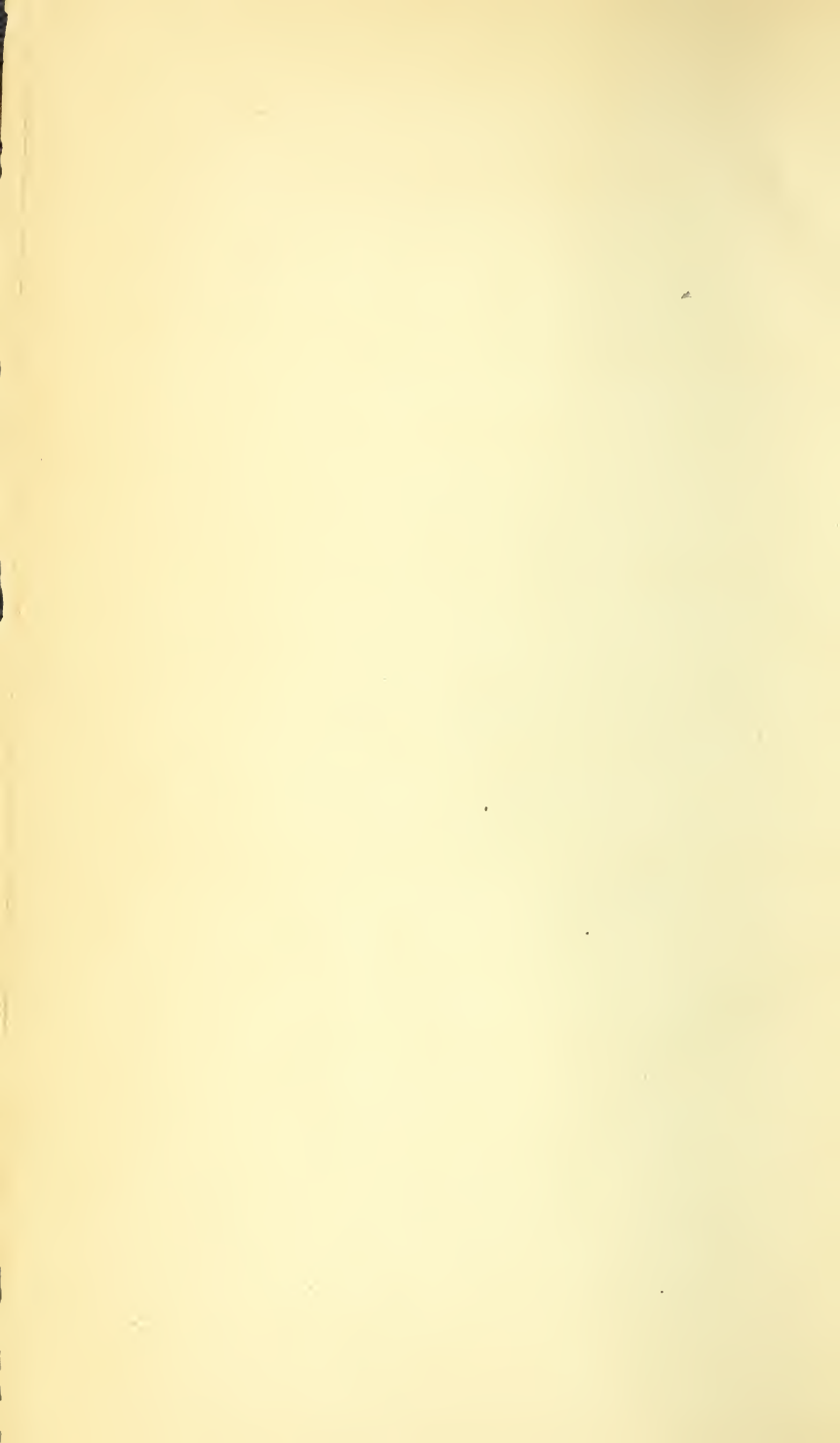




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*Ars Veterinaria post medicinam secunda est.—Vegetius.*

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THE  
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Communications and Cases.

A CYSTIC TUMOUR IN THE LUMBAR REGION  
OF A DOG.

By Messrs. GOWING and SON, M.R.C.V.S., Camden Town.

A SPANIEL dog, twelve years old, was brought for examination in reference to a tumour, which was situated in the left lumbar region, embracing at its base a space of about four inches.

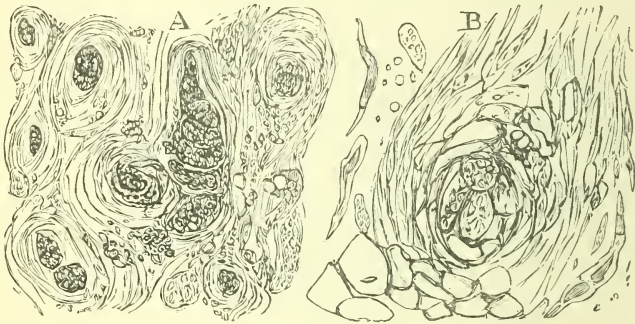
On manipulation the morbid growth felt somewhat firm and irregular; the upper part was soft and fluctuating; this was punctured with an exploring needle, and a cream-like fluid escaped; when the sac was partially emptied, from the flaccid condition of the skin, the irregular surface of the tumour could be easily felt.

It was explained to the owner that it would be possible to remove the tumour, and the poor old dog was put under the operation of the scalpel. An incision was made through the skin three and a half inches in length; the integument was then reflected back, and the morbid growth separated from its cellular connection. The dissection was tedious and somewhat difficult. At the part approaching the lumbar spine, the tumour was closely attached to the muscles, and one or two vessels had to be secured. The poor old fellow bore the operation well, excepting that he seemed faint. As the dog will not bear up well under much loss of blood, a stimulant was given to him in the shape of brandy-and-water; sutures were passed through the divided integument; the animal soon rallied, and is now progressing satisfactorily.

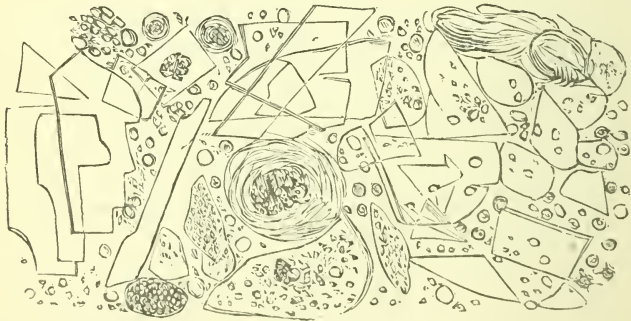
[The tumour presented several peculiar features; its walls were principally composed of white fibrous tissue, intermixed with a few fine fibres of yellow elastic tissue. Besides the cyst which Mr. Gowing punctured, there was another of

equal size, which contained about four ounces of fluid, having the appearance of pus slightly tinged with blood. This fluid under the microscope was found to contain a large quantity of cholesterine, with exudation-corpuscles and blood-discs. In the interior of the cyst which was last opened there was a small detached tumour of the size of a chestnut, smooth on the surface, and quite firm in texture. To the interior of the walls of the two cysts were attached small tumours, varying in size from a pea to a hazel-nut, and on the surface of the lining of the cysts a quantity of flocculent white matter was deposited.

The accompanying illustration will convey an idea of the structure of the morbid growths, which were all composed of the same elements. At the part marked A, the appearance of a



section of the tumour under the inch-objective is depicted ; the dark centres are the openings apparently of sebaceous follicles, and the concentric lines represent layers of epithelium lining the follicles, and also layers of white fibrous tissue imme-



diately extern to them. All these elements are more perfectly shown at B, which represents a single section of one of the follicles magnified 600 diameters.

The second figure depicts the microscopic appearance of the flocculent matter deposited in the interior of the cyst.

Numerous large plates of cholesterine are shown, together with many fat-globules, some epithelial scales, exudation-corpuscles, and a small portion of a sebaceous follicle with its epithelial lining. It is obvious that the morbid growth originated in disease of the structures of the true skin, probably the result of an injury.—Eds.]

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## DISTENSION OF THE UTERUS OF A BITCH WITH PSEUDO-PURULENT FLUID.

By the Same.

ON November 22nd, our attention was called to the condition of a small rough terrier bitch about ten years old. The animal presented some of the appearances characteristic of ascites; the abdomen was enlarged, pendulous, and fluctuating. There was much prostration, the action of the heart was feeble, the breathing was accelerated, the appetite was impaired, but the desire for drink was constant. It was evident that the case was a hopeless one, and no attempt was made to apply any treatment. The dog died on November 29th.

The *post-mortem* examination did not reveal any lesion of the internal organs, except the uterus, which was distended with fluid; this viscus we have forwarded for your inspection.

[As stated in Messrs. Gowing's report of the case, the uterus was distended with fluid; the horns and the body of the organ being about equally tense. When the walls of the viscus were opened, the contained fluid was found to present the ordinary characters of pus, being thick, yellowish white in colour, and perfectly uniform in consistence. The lining membrane of the uterus was softened and somewhat pulpy, but no ulceration or other morbid change was observed. Under the microscope the fluid was found to consist principally of epithelial scales with small exudation-corpuscles and blood-discs, but there were no pus-corpuscles. In the larger mammalian animals collection of fluid in the uterus is not uncommon, and the condition is sometimes described as false conception; there is no reason, however, to conclude that this abnormal secretion is in any way connected with impregnation.—Eds.]

## FATTY DEGENERATION OF THE KIDNEYS OF A HORSE.

By the Same.

THE morbid specimens which are sent for examination were removed from an aged grey cart-gelding, to which our attention was directed in consequence of an attack of influenza. The usual treatment was pursued with success as far as the catarrhal disease was concerned, but the animal, after recovery from the acute attack, did not make much progress. At times he would refuse all food, and stand moping in a corner of his box; there was much debility present, and it was particularly noticed that the circulation was feeble.

While under our care the horse did not show any symptoms of disease of the urinary organs, and from recent inquiries we learn that the urine was passed freely, and did not present any peculiar appearance. Occasionally the fluid was "thick," but no notice was taken of this, which is so common a character of the urine of the horse. The animal died on November 26th, ten days after the commencement of the treatment for the attack of influenza.

*Post-mortem examination.*—No abnormal condition of the internal organs was detected until the kidneys were reached, when it was immediately apparent that those organs were the seat of important structural change; the fat which should surround them had been in great part replaced by fibrous exudation; the right kidney was much enlarged, weighing 9 lbs., and both the cortical and medullary substances were diseased. The posterior two thirds of the right kidney was nearly black in colour, from accumulation of blood in the vessels.

The left kidney was but slightly affected; its colour was normal, and its weight 3 lbs. The bladder was normal, and at the time of the examination was full of urine, but the slaughterman unfortunately cut into it and lost the whole of the urine, so that we were unable to obtain a specimen for examination.

[A microscopic examination of the kidneys sent to us by Messrs. Gowing and Son showed the disease to be fatty degeneration. The uriniferous tubes of the right kidney were almost all of them filled with granular fat, and the left kidney gave evidence of a considerable advance of the

disease. From the condition of the diseased organs, there can be no doubt that the function of both was seriously impaired; that of the right must have been lost entirely. The analysis of the urine would have contributed important evidence; but it was not possible to obtain a specimen, and we are consequently left very much to conjecture. It is probable, however, that the secretion of urea was only partially effected, and it is not unlikely that the imperfect elimination of this effete product had some influence in causing the animal's death.—EDS.]

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### THE "HORNY LAMINÆ."

By THOMAS GREAVES, M.R.C.V.S., Manchester.

IT is said that man is a fighting animal; if this be so, I feel I am an exception to the rule, for, although I have a profound respect for many well-meaning men who think they have a mission to perform in converting all men to their views, irrespective of what those views may be, still at the same time I hold in abhorrence any man who is fond of crossing swords with his professional brethren, fond of wrangling and contention. On this occasion, in reply to some animadversions on my paper in the November number of the *Veterinarian*, I only desire to repeat that which I there stated, viz., that my sphere of observation, as well as the opportunities afforded me, have been much greater than that of many of my fellow veterinary surgeons during the last thirty-seven years. The opportunities thus alluded to are as follows:—During many years I had four forges, and shod or had the close supervision of the shoeing of more than 1400 horses regularly; 100 of these were shunters, that is, horses that had to draw trucks or waggons of merchandise backwards and forwards in the railway goods yards; in some places in these yards the turntables have five or six different lines of rails converging on to them. At these places the points of the metals being so very close, numerous, and intricate, the horses' shoes were constantly getting fast in them; when perhaps the next moment a waggon wheel was upon his foot—a waggon with twelve or fifteen tons in it. The coffin-bone was often cracked like a cockle-shell, or one half the hoof was stripped from the bone from the top to the bottom, or so desperately crushed and contused that in a few days it became detached, and, the vascular laminæ being destroyed, would slough away. For several years I was never clear of

these desperate cases; sometimes I had two fresh cases a day, sometimes but one case a week; rarely, however, would a fortnight pass without an accident of the kind happening. I had usually twelve or fifteen of these cases under my treatment at a time. This continued for years. Now, however, these railways employ capstans or windlasses worked by steam, and consequently these accidents have been avoided.

I always pared, dressed, and bandaged the feet with my own hands. Inflammation, caries, quittor, open joint, were matters of everyday experience, and thus it was by close observation that I have had the peculiar experience referred to, and an opportunity of satisfying myself over and over again, beyond the possibility of a doubt, that the horny laminæ and hoof can grow and retain all their pristine vigour and completeness when there exists not a vestige of vascular or sensitive laminæ underneath. That the horny laminæ retain their soft, moist, fresh, white, and perfect condition, notwithstanding they have not the slightest attachment at any point of the section to the tissues underneath, I have often witnessed. From the top to the bottom of the foot for one or two inches in breadth, these living horny laminæ rest upon a perfectly smooth surface throughout the whole space. It appears to me that in some of these cases there is a fibro-ligamentous material or pad in the place of vascular laminæ, which, in its minute structure, is very like, if not identical with, the fibro-ligamentous material or pad forming the base of the sensitive laminæ, and covering the periosteum on the coffin-bone. Upon this pad is a bright, pellucid membrane, not much unlike in its hue to the tapetum lucidum; and covering this is a greasy secretion which keeps the horny laminæ and this smooth surface entirely separated the whole extent; but on the surface of this pad there is not a vestige of sensitive or vascular laminæ, not to the extent of a single line. I have seen this over and over again, therefore I know that I am speaking the truth.

I am aware that it is the opinion of some men that horny laminæ cannot be formed without sensitive laminæ to give them form and nutrition. I held this opinion myself until the most convincing proofs came under my observation, and forced me to change views which had become utterly untenable. If it be any satisfaction to the gentleman to whom my remarks are specially directed, I may tell him I have studied this matter in my private room, with the aid of the microscope, and by its help I found that the wall and horny laminæ, without the slightest attachment at any point with the vascular laminæ, can live on and be vigorous and perfect,

and do not, as he so boldly states at page 901, vol. xliii, "become dry, and crumble into powder," neither does the wall necessarily "become hard, dry, and condensed."

I hope this gentleman will ere long have an opportunity afforded him of seeing for himself the exact condition of hoof growing false, and will then admit himself in error, and will verify the truth of what I have advanced, as he did in the physiology of seedy toe at page 739, vol. xxxix, and will then make amends for the injustice he has now done me.

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## THE PHYSIOLOGY OF THE FOOT.

By W. HUNTING, M.R.C.V.S., London.

IN a recent number of the *Veterinarian*, Mr. Greaves has expressed an adverse opinion on some points in the physiology of the foot, advanced by me at the first meeting of the Central Veterinary Medical Society.

Whilst regretting that our talented visitor did not avail himself of the free discussion which followed, I feel bound to reply to the questions he has raised.

Mr. Greaves discusses four questions, one of which I am not concerned with as an essayist; still, as they are all of great importance and interest, it may not be amiss to consider shortly the whole.

As perhaps through the pages of the *Veterinarian* the discussion may widen, I would respectfully suggest that mere assertion be always treated as mischievous and erroneous, and that evidence obtained in the dissecting-room and with the microscope be received with as much respect as though gained in ordinary routine practice.

1st. Are the horn laminae produced by the sensitive laminae?

My reply to this Mr. Greaves believes to be "as great a fallacy as to conclude that the fœtus is produced by the maternal membranes." This comparison, I venture to think, has no bearing whatever, but we have an exact parallel in the relations of the dermis and epidermis, *i.e.*, a vascular and sensitive structure closely applied to a non-sensitive and non-vascular one; neither cuticle nor hoof contains blood-vessels or nerves, yet both are vital and organized.

So far we both probably allow the analogy. I go further, and say that just as the dermis secretes the epidermis, so do the sensitive laminae secrete the horny. Let me offer my reasons for this opinion.

The human nail, according to Sharpey, is produced from a groove in the dermis, but receives, as it moves forward over the laminæ, an additional layer of horny matter secreted by them; thus the body of the nail, as Virchow says, "can easily move forwards, pushing itself over a movable substratum." The wall of the horse's foot is, save in the variety of horn, perfectly analogous with the human nail, and I see no reason why it should be physiologically different. It is easy by this view to understand the passage downwards of the wall, but if the horny laminæ grow from above, how do they obtain their firm attachment? I really cannot understand how a hard substance like the laminæ, if continually moving, could obtain the firm adhesion we know it to possess with the soft sensitive laminæ.

But, to leave all analogy, let me ask why the laminæ are constructed in every way like a secreting structure if not for secretion? Of what benefit to mechanical adhesion can be their copious blood-supply?

Doubtless the sensitive laminæ supply nutriment to their own secretion, but, if the horny laminæ be formed by the coronary band, it is by no means evident that any further nutrition is required.

My last reason for believing that the sensitive secrete the horny laminæ I venture to think invincible.

As the result of injury we frequently find on the inside of the wall a horn tumour. I have examined sections of such, and found them to be merely an hypertrophied condition of the laminæ, formed like them of horn, containing no horn fibres. That these tumours are formed by the laminæ is beyond dispute, and that this formation is abnormal in quality as in quantity I challenge proof.

Again, in cases of removal of portions of wall throughout their whole perpendicular extent, we find a secretion from the laminæ resembling in every particular the horny laminæ. Mr. Greaves calls this "horny excrecence;" he has known it so firm and thick as to safely retain a nail, yet says that in such cases there is "always an absence of horny laminæ." Surely this is a mistake, for if we have an adherent horny layer, it must present an exact mould of the surface from which it is formed, that is, it must have a laminated arrangement on its attached surface. My examinations of this horny deposit lead me to class it with the interfibrous horn found in the wall, sole and frog, and constituting entirely the horny laminæ. Upon this point hangs the whole question, as if under any circumstances a given structure secretes a definite

tissue, we may safely conclude that it possesses that power at all times.

If the sensitive laminae secrete good sound horn at any time, they do so always, and if that horn agrees in structure with the horny laminae, we have, I think, sufficient grounds for believing that both are derived from the same source.

Lastly, if such a function offers a simple, common-sense explanation of sundry physiological and pathological conditions, explainable by no other means, I think we are justified in adopting it as a scientific fact.

I may say that I have never used a microscope with a higher power than a lens with quarter-inch focus distance.

2nd. Can the wall or horny laminae be produced by any other tissues than the coronary cushion and zone?

Here we have two questions which Mr. Greaves answers "unhesitatingly" in the negative. As to the production of the horny laminae we have said enough. The wall I know to be produced from the coronary *band*.

I acknowledge no such secreting structures as "coronary cushion and zone;" the cushion is merely subcutaneous adipose tissue, and zone is no improvement on the word "band," which usage has adopted.

3rd. Are the sole and frog destined by nature to bear pressure?

Mr. Greaves and I both answer this question in the affirmative, but he has added a remark deprecating the bearing of a shoe on the sole.

Now I believe we should always endeavour to follow the indications of nature, and I agree with Mr. Broad that a shoe may beneficially take a bearing on the sole. I rather fancy the difference in this question is more about the expression than the fact.

No one, I think, advocates placing any portion of a shoe on the concave part of the sole, we merely urge that the abutment of the arch, the portion of sole immediately in contact with the wall, should be utilised as bearing surface. This part is of course rendered level with the wall and even by the rasp, so that there is no danger of any limited and uneven pressure if the shoe be well fitted. Of course if a farrier over-reduce a foot, a seated shoe is least liable to do harm, but on a well-prepared foot, a flat, level shoe is beneficial, as it increases the bearing surface and gives functional activity to the sole.

4th. Mr. Greaves urges the evil of rasping the outside of the wall, with which I heartily agree. It is a most mis-

chievous practice, renders the feet brittle and weak, and is the predisposing cause of sandcrack.

Mr. Greaves believes that these injuries result from the removal of an outside skin, and I also think that Mr. Fleming and Colonel Fitzwigram hold similar views concerning the existence of some sort of membranous layer or varnish on the outside of the wall.

The difficulty of obtaining fully developed feet for examination, which have not been rasped, makes me diffident in denying the existence of this structure. I may say, however, that I recognise the frog-band on the upper part of the wall, but have seen nothing more.

I always explain the ill effects of rasping by the removal of the hard, dense external layers of horn, allowing excessive evaporation from and consequent dryness of the deeper parts.

A man who removes the frog-band is either an ignoramus or a fool; and a man who rasps even below the clenches requires some information, unless he is a wretched being like myself, who has to bow to many whims and fancies for the sake of bread and cheese.

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## ACORN-POISONING.

By D. B. HOWELL, M.R.C.V.S., Reading.

WITHIN the last three years the attention of the profession has been called in the autumn to the presumed poisoning of cattle by eating acorns; therefore, with your permission, I will make a few remarks upon the subject. In the first place, it must be remembered that acorns are used, we may say almost alone, for fattening purposes in many parts of the country; therefore, to be so used must prove, after so many years' experience of their properties by agriculturalists, that there cannot be anything poisonous in their nature, or else such poison must have developed itself ages ago, and from the attendant mortality among stock acorns would have been discontinued; consequently we must look for something else in these cases than poison.

For my own part I am not sufficiently expert as a chemist to determine the difference in the proportions of tannin (which can be the only deleterious ingredient in its composition, if any) in the green and in the mature fruit, neither can I determine why only the young animal is affected by it if it be a poison.

That many animals die at this particular time of year is certain, but, judging from *post-mortem* examinations, I do not think we must blame the acorns any more than the leaves, grass, &c., with which, in every case recorded, they have been more or less mixed up. In autumn, from frost and other agencies, the quality of the herbage is greatly deteriorated, and in the early morning does not taste so palatable as later in the day, when the animals, being ravenous for food, eat up hurriedly all within their reach, be it grass, leaves, acorns, cups or pedicles, swallowing at the same time earth and other foreign agents in greater or less quantities.

Again, at the period of the year when acorns fall in the greatest abundance, the animals are moulting, and this moulting produces an amount of debility, especially in the young and growing, but varying in degree, according to the particular constitution and condition of each individual. Those that are the weakest suffer most from the rumen not being sufficiently powerful to throw back its contents for re-mastication, while the mixture of food, &c., remaining cold in its cavity, sets up mechanical irritation of the coats of the viscus, and, as a consequence of such irritation, causing suspension of the vital functions, constipation of the bowels ensues, and as the irritation extends through the alimentary canal diarrhœa follows. The so-called acorn-poisoning is only found in those animals that have been badly done, which are of course more susceptible to this mechanical irritation than the well-fed, in consequence of the latter possessing greater tone in the whole of the functions, and when feeding eating more slowly than the half-starved. It may be asked why pigs do not suffer from this cause equally with cattle? The answer is, because the pig when at liberty picks up his food here and there, keeping up a continual trot, sometimes going miles when feeding, thereby arousing the vital functions, but cattle eat all within their reach almost without moving. That this idea is more correct than the one of there being a poisonous property in the composition of the acorn, is proved, I think, by the fact of the healthiest and strongest animals making acorns their principal food, and this with advantage.

The great preventive to death at this season would be to take care that none of the cattle turned out in any locality should be in an emaciated condition.

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## THE PRINCIPLES OF BOTANY.

By Professor JAMES BUCKMAN, F.L.S., F.G.S., &c.

(Continued from vol. xliii, p. 914.)

*Rye*—*Secale cereale*—though still used for bread in some parts of the Continent, has little claim as a cereal grass for the method of its employment in this country, as, though its seed is not unfrequently grown with us, yet rye-grain is not used in England either as a bread-stuff or as cattle-corn, but is sown principally with a view of obtaining an early bite of green food for sheep, which by its means we are enabled to do in early spring before even the *Trifolium incarnatum* (carnation clover) is ready. When seeded, its tall culms are made use of for thatching, as they make very good reed; the yield of grain is sometimes abundant in such seasons as the past; and rye consequently was a paying crop from the value both of the seed and the straw, the more so as the grain was extensively sown to make up the deficiency in the root crop.

Among the foreign cereal grasses we may mention *Rice*, which is much used with our poultry stock, and is even esteemed for our home chicks.

There is no doubt but that rice would be a valuable food for our poorer people if it could be got at the cheap rate at which it is obtained by the millions who use it in the East. But if we consider that it takes 4 lbs. 13 oz. of rice to equal the nutritive power of 2 lbs. 1 oz. of wheat, and that its average cost is 1s. 2d. as opposed to 4½d., the price for an equivalent of wheat, we can understand how it is that rice has never been popular with the poor, who say that it is "watery and has no proof in it." Viewed, then, as a diluent of the rich man's food, it may be considered wholesome and beneficial, but it can hardly be looked upon as a staying or working man's diet.

The different sorghums or millet-grasses yield valuable seeds, which are used in the East for food for man and the lower animals, but they are of little value with us on account of their price. The stems of some of the species of these yield sugar, and as the *Sorghum saccharatum* is said to be sufficiently hardy to stand our climate, it was recommended to be sown for cattle-food as a soiling plant.

Our experiments upon this grass carried out as long ago as 1859-60, were so curious that we cannot forbear quoting from our Report to the British Association, for 1859 and 1860.

“Plot G<sup>1</sup> is occupied with a grass which has recently excited some attention; it is the *Holcus* (*Sorghum*) *saccharatus*: its seed was drilled early in April, and duly thinned out as it advanced. Early in August it had stooled to about five culms to each plant, of which the main or primitive one was the largest; at this time I gathered some in order to try how the cows liked it; but they uniformly refused it, which was not to be wondered at, when at this time the whole of my plants possessed an intensely bitter taste. On the 1st of September I again made trial with some of the more advanced shoots; they were devoured greedily, but now an immense quantity of sugar had been developed, as the bases of these tasted quite as sweet as liquorice-root. This points to the circumstance that the juices of this plant may be rich in saccharine matter at a later, though not at an earlier stage of growth; if it is ever to be useful as a feeding grass, this must be attended to; but I much doubt whether at any time in the cold climate of the Cotteswolds this species of sugar-cane will yield so much sugar as in a warmer and less exposed position; at the same time, as a first trial, I consider this eminently successful, and I should not wonder to see it more fully tried over a great part of England next season.”

This same year a quarter of an acre of this plant was grown on the farm of the Agricultural College, with such success that the whole plot presented an even mass of stems armed with their broad, flaggy leaves as much as seven feet in height, and, as we estimated at the time, yielding as much as fifty tons to the acre. This year the summer was hot, and the canes absolutely produced sugar, but, alas for the fickleness of our English climate, on repeating the experiment the next year, 1860, the report was—

“*Sorghum saccharatum* scarcely attained six inches in height against seven feet of the previous year.”

The truth is that 1860 was as cold and wet as 1859 was hot and dry, and the experience gained by a repetition of the experiments was of great importance, as showing how, after all, the “North China Sugar Cane” may grow in our country with an exceptionable season, but we cannot acclimatize it to our purpose, a fact which will be brought out more strongly in the following notes on the Indian corn or maize.

*Zea mays* was grown in plots side by side with those just described; and in 1859 we succeeded in growing good “corn” of several varieties, but our report for 1860 was—

“Indian corn not two feet high, and died as soon as flowered.” Notwithstanding this uncertainty, we have year by

year grown Indian corn not only as a matter of experiment but from a love of its beauty, but with ever-varying results. Most seasons, however, we have succeeded in getting cobs, but most of the seeds or grains were infertile; and, as the question is one of great physiological and practical value, we shortly explain the principles involved in the results.

Some years ago the celebrated William Cobbett went wild upon the practicability of growing Indian corn in this country. He contended that, inasmuch as this grew well in the United States, where the winter climate was more severe than with us, we were unwise not to grow it at home.

A "forty-day maize" or dwarf Indian corn was introduced into England, but, as remarked by Mr. Bentham, in Morton's 'Cyclopædia of Agriculture,' "Of great importance to agriculture in rich, deep soil in warmer climates, maize has constantly failed in our own country as an object of permanent cultivation, in spite of the repeated efforts made to introduce it by William Cobbett and others, and notwithstanding the apparent success of partial experiments in exceptional years, when an unusually long and warm summer has allowed of the grain attaining maturity. Even in such seasons we cannot hope to grow it at a profit, so as to compete with that imported from more genial climates. The only case in which it might be of any advantage would be that of the cultivation of the smaller and earlier varieties for the feeding of poultry, for it is to the maize that the peculiar excellence of the fowls, capons, and turkeys of Upper Languedoc in France is mainly due."

Within the last few days we have seen the value of this corn as employed in the feeding of fifty turkeys, so that we can readily believe any statement to that effect.

If we inquire into the cause of our want of success in the growth of this corn in England, we shall find that its long silken tassels which protrude from the cobs are the pistilla awaiting fecundation, which is performed by separate or terminal pistil flowers which grow at the tops of the plants. However, a single cold night blackens the pistils, fecundation is not performed, and the result is the few properly formed seeds one usually finds in a cob of English-grown Indian corn. We take it for granted, then, that we can always import this grain on better terms than we can grow it; and as its value becomes more known, we have no doubt its importation will increase. It would appear that maize in muscle-making qualities comes near to those of wheat, and as regards fattening properties it is beyond it. Taking these things into consideration, and the cheapness with which it can be grown

over a great part of the world, we shall not be surprised at a large increase in its consumption. As regards the value of maize as a soiling plant, we are without any evidence beyond our own experiments, and they lead us to conclude that, even in seasons when the grain has no chance of ripening, a large quantity of green food can be grown, and, as we know from experience that cows relish it exceedingly, we should advocate its growth as cattle food.

‘ We have now come to the conclusion of our notes on the recognised cereal forms of grasses, and, considering the large list of this order of plants in different parts of the world, it is astonishing that the cereal forms should be so few. Still, however, it has been made obvious that what has been wanting in *species* has been amply made up for by a multitude of varieties, these being adapted to almost every soil and climate; and this is especially true with regard to the three most valuable forms, wheat, barley, and oats. Again, these have a wide adaptability to the wants and requirements of man and the animals by which he is surrounded. So that a contemplation of corn-grasses leads us to infer, not that they were originally created in all their varieties for the use of man, but rather that they were originally endowed with such properties as that they could readily be made subservient to man’s use.

The cereals, then, may be said to have an interest for all. Their botany is curious and interesting; no less so their history, a history almost coeval with that of man himself. Their chemistry is now a matter of great moment, for though such a natural family they are very variously constituted, and it is a matter of the greatest moment to those upon whom the well-being of animals depends to study these facts in all their details.

It must be remembered, too, that in considering the uses of the cereal grasses, we have to think of the best products of corn, as flour from wheat, the “offal” as *gurgeons*, and *bran* from the same besides the straw. Straw is every year becoming more important as a feeding material; and as there is reason to think that some years it is worth twice as much as it is in others, we have even in this a matter of grave consideration. The very mention of “fodder” leads to our next subject, namely, pasture-grasses, with which we hope to commence in the next number of the *Veterinarian*.

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## PYÆMIA IN THE HORSE.

By FRED. G. SAMSON, Veterinary Student, Royal  
Veterinary College, London.

ON Sunday morning, August 7th, 1870, I accompanied Mr. H. Hussey, of Devizes, to see a grey mare, two years old, the property of Mr. Large, of Wilsford, which had been sent to graze at the farm of Mr. Lavington, of Poulshot.

The mare had been lame of the off fore leg for upwards of a week. On examination, I found there was swelling of the leg from the coronet to the arm; it was very painful and hard; and when the mare was made to move, not the least weight was brought to bear upon the foot. On a closer examination I found the hair was rubbed off the leg in three places, and from the outer surface of the coronet a thin ichorous discharge was running from several small openings in the skin.

The animal's breathing was greatly accelerated; the pulse was 56 per minute, and hard in character; the appetite was impaired, there was a slight discharge from the eyes, and a profuse running of purulent matter from the nostrils, associated with a slight attack of strangles. I came to the conclusion that the leg had been injured, and this belief was further strengthened by the fact of the mare being found in the adjoining pasture, and that a gate was found broken to pieces in the field where she had been located.

Fomentations were ordered, and these to be followed by a dressing with diluted soap liniment.

August 8th.—Symptoms much the same. I inspected the foot very minutely, but found no disease; the coronet was scarified at the posterior part and the fomentations were continued; I also left some febrifuge medicine to be given twice a day.

12th.—The swelling of the leg was increased; a considerable discharge of pus flowed from the posterior part of the coronet, instead of the thin ichorous discharge; fomentations to be continued to the leg and foot night and day.

15th.—Pulse about 60; swelling had extended upwards, and the mare was very uneasy. An abscess was forming just above the knee on the inside.

The same treatment continued.

16th.—Patient lies down on the near side nearly the whole day, and continually groans from pain. Treatment still continued.

17th.—The abscess above the knee was fully formed. I opened it; quite half a pint of thick pus escaped, after which the mare was very much easier.

18th.—The owner, not being satisfied about the case, wished for another opinion, and accordingly Mr. Buckeridge, of Hungerford, was called in, who with Mr. H. Hussey and myself visited the patient. We found her lying down and groaning from pain. When made to rise a large swelling was observed around and above the shoulder-joint, besides which six or seven small abscesses had formed and broken on different parts of the leg; pus was freely discharging from all of them, also from the posterior part of the coronet.

Mr. Buckeridge gave but little hope of recovery. Indeed, he thought the mare would die in twenty-four hours; but as she had lived so long, and there being a free discharge of pus, Mr. Hussey and I were of opinion that there was a fair prospect of recovery. At length, after a long discussion the owner consented to have the case treated, and this decision having been arrived at, it was determined to adopt measures calculated to promote specific suppurative action in the inflamed part below the elbow-joint. Subsequently, carbolic acid dressings were applied, as the case progressed favorably.

September 2nd.—By this date the patient was feeding very well; the swelling on the shoulder and arm had decreased; the knee and fetlock-joint were, however, still stiff. I opened another abscess on the coronet; the treatment was continued, and the mare turned into a pasture for a few hours during the day, having the leg covered up from the air.

5th.—Swelling around shoulder had entirely disappeared; opened another abscess on the inside of the arm; the knee- and fetlock-joints were still very stiff, and tender on pressure being applied. The mare knuckles over at the fetlock, and walks upon her toe.

6th.—The sole of the foot thin and the old frog removed, a new one having grown beneath. A three-quarter shoe with a large clip at the toe was applied, which greatly facilitated her walking; the knee- and fetlock-joints were stimulated with vinegar of cantharides, and the carbolic acid solution still applied to the wounds.

9th.—Wound on outside of leg healing up, and the discharge diminishing; the leg was thoroughly cleaned with warm water, &c.

12th.—Applied a vesicatory to the leg from the shoulder to the coronet.

15th.—The knee is not so hard nor stiff, but the fetlock-joint is more so, and she is not able to bend it; another

abscess is forming on the inner side of the arm, to which a blister was applied. Argenti Nitras was applied to the edges of the wound on the leg.

16th.—Opened the abscess on the arm, applied a vesicating liniment to the leg, and again dressed the wounds with a diluted solution of carbolic acid.

The owner, thinking the expenses of treatment and keep would be more than the patient was worth, refused to have her attended to any longer; she was then purchased by Mr. Hussey and myself for experiment, as we considered it a highly interesting case. She was removed to a field at Posterne; was allowed a good nutritious diet, as corn, peas, &c.; she had also the option of being either in the field or the stable.

24th.—Patient much better in general condition; evidently one leg is improving; applied a blister to the leg, and continued to give the tonic medicine.

October 2nd.—Opened another small abscess on the inner side of the arm; a quantity of thick pus escaped. The abscess was kept open for six or seven days, and the tonic medicine continued.

18th.—The abscesses and abraded surfaces about the leg are healed, the tip shoe was removed, and a common shoe applied to the off fore foot; the fetlock is still enlarged; the Ung. Hydrarg. Binioididi was applied around the joint; tonic medicine continued as before.

22nd.—Fetlock-joint not so large; the compound iodine ointment applied; tonic powders discontinued, and the following ball given once a day for four successive days:

Iodide of Potassium, ʒiiss;  
Pulv. Canth., gr. vj;  
Pulv. Gentiana, ʒij;  
Pulv. Cupri Sulph., ʒij.

November 2nd.—Swelling of fetlock-joint decreased somewhat. The Ung. Iodine Co. again applied, and the balls as above given for four days.

14th.—The mare trotted round the field nearly sound. A blister was repeated to the fetlock-joint, as there is still an enlargement.

December 3rd.—The mare is going sound; there is a slight enlargement of the fetlock-joint. She was led into Devizes, and had her shoes removed. Subsequently she was put to work on Mr. Hussey's farm. No defect, excepting the presence of the enlargement as mentioned above, now exists.

## TUITION IN OUR VETERINARY SCHOOLS.

By a STUDENT, Royal Veterinary College, London.

GENTLEMEN,—I have seen several papers on the above subject of late in the *Veterinarian*, but none of them to my mind are to the point at issue. I trust, therefore, you will allow me space to state my views, with the hope that they may draw forth remarks in forthcoming numbers of your journal on so important a subject to the student.

I cannot agree with some persons that too much time is wasted over lectures. I am sure the trouble our professors have had to get up their subjects must have occupied them *many years* before they entered college as professors, and consequently they are enabled to condense their knowledge into a concise form, and give us the pith or heart of their labours, instead of our wasting *weeks, nay months*, in poring through works for the same amount of information.

I perfectly agree in all that has been said with regard to our instruction in the laboratories and dissecting rooms. We *must have* practical experience in both, to be able to get on at all. Up to the present time, however, we have no laboratory for the use of the students. The museum also should be open for our inspection. How can we possibly study comparative anatomy from books alone? I am perfectly aware that it may be said specimens would be damaged in the museum, or chemicals wasted in the laboratory, but this can be no excuse. *Make stringent rules and see them observed.* Let the authorities remember they are dealing with young men from nineteen to thirty years of age, and not with a lot of boys.

With regard to the clinical instruction *as it is at present carried out* I think the less said the better. I am not casting any censure upon the clinical professors; they are ever ready to impart information; but is it possible, I would ask, to repeat to over 170 students each symptom of disease? A very simple plan might be carried out, so that every student could see for himself what ails the animal, and how he is treated. For instance, let there be suspended on the wall immediately behind each animal a board, say twelve inches by nine inches, and upon this nail or paste a card with the following headings:—

No.....	Colour .....
Disease .....	
Entered .....	Date .....
Treatment ...	

These headings should be filled in by the clerk in the office on

the admission of a patient, and the treatment should be recorded by the clinical students when they go round with the professor, daily or whenever there might be any change.

We also want an operation theatre sadly ; at present perhaps not one out of fifty satisfactorily witnesses an operation. I cannot see anything very difficult in the construction of a place for this purpose, although I am told a difficulty exists.

Every *post-mortem* should be demonstrated to the students as a class, and not left for them to fish out things for themselves.

Finally, as regards the examinations, and this I think the most important of all. We pass a written examination to enter the college; and we ought to have written examinations substituted for the present *viva voce* preliminary and the final examination for diploma. The present system, I contend, is unfair *in the extreme* to the student. He is naturally at this period nervous and anxious, gives hurried replies, and, may be, is rusty on the subject put to him individually, although he probably could have answered the question put to the last student as well as, or even better than, he did. What is the consequence? He is put back another session.

Let our preliminary and final examinations be written replies to a set of questions dictated or printed, and *the best man must win*. Every one will have an equal chance, time to collect thought, recover nerve, and study well his answer before putting it upon paper. There are other benefits which will accrue from this : our professors will be able to continue their course of lectures, instead of having to break off for the examinations. Time will thus be gained by the remaining students, and the men themselves will come better prepared.

If necessary, raise the entrance fee £5 5s. No one would begrudge this, if they knew they would reap the benefits which they now stand most in need of.

Our profession has entered upon a new era as regards the examinations, and, as a consequence, we require more help in our studies. We do not attend the college simply to obtain the diploma, being already good sound veterinarians ; but as young men having only a smattering of practical knowledge, and eager to make ourselves proficient in our work, through the extra experience of those set over us, that we may be enabled in time to become ornaments of a profession which we acknowledge to be *second to none*.

I hope these remarks will be taken in the spirit in which they are offered by those immediately concerned, and not as an outcry of dissatisfaction for what is already done ; but having heard that the present system is to be altered, I have felt myself justified in offering them. I am, &c.

*To the Editors of the 'Veterinarian.'*

## A FATAL DISEASE AMONG CATTLE IN DORSETSHIRE.

By "AGRICOLA."

As in every direction near here cattle of various ages have during the present autumn and winter season succumbed to a most intractable complaint, I beg to direct your attention to the matter.

Having had some calves die quite suddenly, I, as usual, made a *post-mortem* examination, and was astonished to find that none of the great organs presented any signs of lesion. The rumen, however, was distended with what seemed to be a crude kind of food; and on looking over the article "Ox" in Morton's 'Cyclopædia of Agriculture,' I hit upon the following, which so exactly met my case, that I cannot forbear quoting it:—

"*Distension of the rumen with food*, though not usually attended with such acute symptoms in the early stage (as in meteorisation), is still more formidable, being more difficult to relieve. It is fortunately, however, much rarer to be met with, and occurs principally with stall-fed beasts. It is important to distinguish between distension of the rumen with gas and with food, although it is somewhat difficult to do so, the symptoms being rather similar. When, however, the distension is produced by solid matter, the swelling of the abdomen is not so great, and the distress is not so urgent, although the danger may even be greater."

In our own case we found the final scene was heralded by coughing and difficulty of breathing, upon which the animals died so suddenly that two dropped dead in the road on their way to the shelter of the farm buildings.

What is curious is that the six strong calves which had been done well during a trying season, and had all got through the foot and mouth disease most favorably, were seized one after the other at intervals of a few days, and with all the symptoms were so alarming that all we could do was powerless for good. We have since learned that our neighbours have suffered to even a more alarming extent, losing cattle of all kinds and ages.

The matter may perhaps be considered to possess more than ordinary interest now, inasmuch as if any of the cattle so seized had been eating acorns the results would have been referred to that cause.

It is, indeed, likely that the cause is not altogether unlike, if we take into consideration the fact that during the past summer the pastures of the south were so absolutely bare that stock had to be fed on hay, cake, and corn. On this they did well; but it is worthy of remark, that in all the cases of mortality which have come before us the animals had been kept up extra well during the drought.

When, however, the latter rains brought some speedily grown herbage, perhaps the animals were turned into it too quickly, and from greedily eating the fresh grass with the "fog," the symptoms described might have arisen. But from whatever cause, there is no doubt that many cows became affected with a depraved appetite, as when brought in from the field and put into warm sheds they were found to eat their straw beds with the utmost avidity.

## Pathological Contributions.

### ACORN-POISONING.

SINCE our last report we have not heard of any fresh attacks, but further communications have reached us respecting outbreaks of the disease referred to as acorn-poisoning during the autumn. The subject has been much discussed by agriculturists, and, as a matter of course, different opinions have been expressed.

At the dinner of the Tenbury Agricultural Society,

Lord Northwick said he had lost a number of cattle from the acorn disease, and at Northwick several of his neighbours also lost cattle, as did many persons in Gloucestershire. His veterinary surgeon wrote a description of the *post-mortem* examination of the cattle, and he—Lord Northwick—sent it to Professor Simonds, veterinary surgeon to the Royal Agricultural Society. The Professor replied to the following effect: "His attention had been directed to the subject by numerous cases of the same kind during the last few weeks. The whole matter was under searching investigation. It was not until the autumn of 1868 that any suspicions seemed to have been entertained that acorns contained any deleterious principle. The consequences attending the eating of them by the cattle as they fell from the trees proved that in large numbers they were decidedly poisonous. The experience of two years had thus shown the

same thing. It did not appear that the cups alone contained the deleterious material, for in many instances they had not been partaken of by the animals which had died from acorn disease. It was also a mistake to suppose that the cattle died from the mere stringent effect of the acorns acting on the bowels. In the larger number of cases the bowels were relaxed. Carefully conducted *post-mortem* examinations had showed that the poisonous matter was absorbed into the blood, which was thus rendered unfit for the purpose of maintaining life. An antidote for this poison had yet to be discovered. He was inclined to think that, when fully ripe, the acorns lost much of their poisonous quality, and that more especially when they became quite dry they could be eaten with impunity in moderate quantities. He had frequently fed sheep and pigs with them during the winter months, and had always found them a valuable addition to other food, but the quantity he had given did not exceed a pint and a half. The plan his lordship proposed, of kibbling them and blowing away the husks with a winnowing machine, would, he thought, prove advantageous. If they were thus used with mangolds in limited quantities he had no doubt that beneficial results would be obtained. If given only to sheep, pigs, and deer, such preparation might not be required. If his lordship would use his influence to have an animal or two, as soon as the symptoms were observed, forwarded to the Veterinary College, considerable assistance would be given to their exertions."

Lord Northwick, in reference to the concluding sentence of the letter, said that, unfortunately for science, some of his animals had died, and the others had not been attacked since. Acorns could be gathered for 10d. or 14d. per bushel, and no other food could be got for anything like that price. It appeared they were very good food for sheep and pigs, and there was every reason to suppose that they were good for cattle if given in moderate quantities, and mixed with other things. There was no food so cheap or so plentiful this year.

Mr. Mainwaring said the valuable ingredient in the acorn seemed to be very much the same as in the potato, and was more fully developed by boiling. Starch was a valuable constituent in the acorn, and that must come under the influence of heat. He thought it would be well to try the experiment of boiling the acorns. He knew they had been collected very largely, and they were the cheapest food which could be given. He had got together a large quantity, for everything would be needed this winter.

Mr. Sweet said that from the want of other food the

acorns had been eaten greedily. They were swallowed whole, had fermented from the heat of the stomach, and could not be thrown up for chewing the cud. The farmers need not be afraid of using acorns if they were bruised.

Mr. Mason said, with regard to the acorn disease, his opinion was that the cups were hurtful. Two years ago he lost five beasts. When they had plenty of acorns they did well; but when they came to the cups they became unwell. When cattle were sick he recommended castor oil or sweet oil in preference to linseed oil.

Mr. John Symes, M.R.C.V.S., of Wincanton, writes us as follows :

I have forwarded to you a few notes which I took on some cases of acorn-poisoning, to which my attention was called a little time ago.

The land on which the animals had been feeding is poor, the keep very scanty and of a very rough character; it is surrounded by a wood, and the fields are almost full of oak trees. The beasts had been feeding on the same pasture a fortnight previously to any attack of disease; they looked thin and poor in condition. At the end of that time we had very rough weather, and a large quantity of acorns fell; in a day or two after there were a great number of cases of acorn-poisoning in this district. Previously to this all the surrounding farmers had been feeding their cattle on acorns, not limiting them to any specified quantity, but allowing them to pick up any quantity that might have fallen from the trees, which seems to show the reason for so many cases to be due to partaking of excessive quantities. The animals I have had under my treatment vary from a twelvemonth to two years of age. I have had from twenty to thirty cases, but not one adult, although they formed the greater part of the number pasturing together. The symptoms I record more especially existed in two animals I last treated, and the *post-mortem* appearances are those of three animals which were dead when I was called in.

*Symptoms.*—Animal dull and dispirited; when lying down rests its nose on the ground; ears lopped, sunken eyes, dejected appearance; horns and ears varying in temperature, sometimes hot, at others cold; dry muzzle, and slight discharge from the eyes; the animal grunts; pulse hardly perceptible. The *fæces* passing in small quantities and of a slimy character, sometimes tinged with blood; the urine frequently voided in small quantities, and almost as colourless as water. This irritability of the kidneys is especially shown on the approach of a stranger, or when you commence examining

the animal, when you may be sure of seeing it. There is great tenderness across the loins; with slight pressure it would almost bend its back to the ground. In neglected cases, and those which were almost sure to terminate fatally, there was a good deal of discharge of blood and yellowish matter from the nostrils. The cases above recorded were the worst, and had to be treated, but finally recovered. They generally terminate one way or the other in about four or five days.

*Post-mortem.*—Rumen enlarged; full of a brownish material, which on close examination proved to be acorns combined with rough grass and leaves; some of the acorns were only broken in half; mucous membrane highly congested, and in some places destroyed; reticulum empty. In each animal there was a large coagulum of blood (in one instance, two) at some part of the body, generally near to the kidneys or the stomach; the omasum was full of hard feculent matter, the mucous membrane readily peeling off. The mucous membrane of abomasum highly congested, and full of fluid. Heart and lungs healthy; no effusion in the chest. Intestines only slightly discoloured, and almost empty. The kidneys showed great destruction, being black in colour and easily broken up; in some instances this discoloration extended into the muscular structure underneath. The liver seemed pretty healthy.

From Mr. F. Earl, of Shifnal, we have received several communications, from which we quote the following remarks:—

I was this morning called to Patshull to see some beasts—they have lost several, I think, from eating acorns. The animals have been feeding in the park for some time past, and present a very poor appearance indeed; they look very dull and dispirited, their bellies are tucked up, giving them a very gaunt appearance; there is an entire loss of appetite; they do not appear to be in much or any pain; the breathing is natural, and the pulse but slightly quickened and rather feeble, but when moved they show symptoms of cerebral disturbance, staggering gait, &c., and if driven for a short distance reel about like a drunken man, fall and die as it were of apoplexy. I opened one this morning five minutes after death, and much to my surprise found the three first stomachs in a perfectly normal state, also the whole of the viscera, with the exception of the abomasum, which was in a highly inflamed condition. The whole of the intestines, especially the large ones, were of a deep purple colour. The omasum, as before observed, was quite healthy; there was a small quantity of soft ingesta between the leaves, but no hard impaction whatever; the

rumen was tolerably full of soft ingesta and contained a few acorns. I saw the contents removed from the rumen of an animal that died yesterday. There was in the ingesta a large quantity of acorns.

Since my last letter a number of cases of acorn-poisoning have come under my notice. I say acorn-poisoning, because I do not agree with those who are of opinion that acorns only cause death by producing impaction of the third stomach; and I am led to this belief because in a number of cases that have proved fatal, occurring among animals joisted at Patshull park, and elsewhere, a *post-mortem* examination has clearly demonstrated that no impaction existed. The three first stomachs were in a perfectly healthy state, as also the whole of the viscera, with the exception of the kidneys; the abomasum, and also the whole of the intestines, were of a deep purple colour. In these cases, as I observed in my last letter, the leading symptoms were as follow:—A peculiar staggering gait, as though the animal was partially paralysed; extreme dulness, and a very dejected state; appetite gone; breathing natural; pulse quickened and weak; slight weeping; a peculiar tucked-up appearance of the abdomen, staring coat, &c. If the beast be driven for a short distance the brain becomes affected, the animal reels about like a giddy sheep, the eyes become wild and staring, and at last the poor thing falls and dies in convulsions.

This is, I think, a tolerably correct description of a case of acorn-poisoning, where the animal has not been able to get sufficient acorns at one time to cause impaction, but amply sufficient, when taken day after day, to act as a slow but sure poison, with which the blood becomes thoroughly impregnated. When acorns are obtained in large quantities at one time, we get impaction of the omasum, the symptoms of which are, besides those mentioned, difficulty of breathing, accompanied by a grunt, pulse very quick and hardly perceptible, cold horns, ears, and legs, frequent evacuations of a semifluid character, small in quantity, black, and mixed with blood; *the animal obstinately stands*.

*Post-mortem appearances*.—The omasum sometimes full of impacted acorns, which look between the leaves like oilcake; patches of an intense red colour exist, and occasionally extensive ulceration of its leaves. Abrasion of the mucous lining of the rumen to a great extent, also of the reticulum, is sometimes present; the abomasum is also highly inflamed, as are the intestines.

I have heard of a number of cases of pigs dying from eating acorns. There are a great quantity of oak trees

in the hedgerows about here, and the poor people collect the acorns and sell them to farmers and others for feeding pigs and cattle.

In confirmation of my opinion that acorns, when taken in small quantities for a length of time, act as a slow but sure blood poison, I would mention that of the only three surviving beasts originally joisted in Patshull park, two have since died from the effects of the poison, exhibiting all the symptoms which I before mentioned. These three beasts showed slight symptoms of the disease when removed from the park, viz., dulness, and a slightly staggering gait. They were attended by a veterinary surgeon, were well nursed, and had every care and attention. Besides the animals joisted in the park, Earl Dartmouth's people have lost twelve of their own beasts, not one of which died from impaction; but all exhibited the same *post-mortem* appearances as the joisted animals.

"A Dorset Farmer" is not disposed to admit that acorns are poisonous. He writes:—

I have lost three young beasts by distension of the rumen, as I take it distinct from "blasting," as little, if any, gas is found. The animals had just recovered from the foot and mouth disease, and they seem to have such vitiated appetites that they incline to eat straw, and all other rough stuff that they cannot digest. The result has been that one died outright, the other was scarcely *saved* by the butcher, and the third was killed to save her. They were all in good condition, and in so far as I could find out every organ was perfect, but the stomach of each was filled with a not over dry mass of food.

Had these creatures been eating acorns, it would have been put down to this cause, but young things are going in every direction without having had acorns, though it is just possible that as in this county lots of animals are turned into meadows, where now they get a bite for the first time, they may eat too greedily.

In our experiments with acorns we have not succeeded in producing a fatal result; one animal, a heifer, remained for some days in a critical condition, but subsequently recovered. It is necessary to observe that the acorns which we employed were ripe, quite dry, and also that they were mostly crushed before being given in moderate quantities. Notwithstanding these favorable circumstances, the symptoms which presented themselves in a few days after the experiment commenced were precisely those which have been observed in the early stages of acorn-poisoning. The details of the experiments we reserve for future reference.

## PLEURO-PNEUMONIA.

LITTLE alteration has taken place during the past month with reference to the extent of this disease. A slight increase of cases is reported, but the centres of the contagion have somewhat diminished. In the neighbourhood of London, and also in the metropolitan dairies, many cows are suffering from the malady, and this is also the case in Dublin and its suburbs. The *Irish Farmers' Gazette*, December 10th, states that—

“ At the meeting of the Public Health Committee of the Corporation of Dublin, held on Friday, December 9th, Dr. Cameron, the city analyst, announced that during the week ending on the 6th inst. no less than 10,000 pounds of diseased and otherwise unsound animal food had been confiscated, and either boiled down to extract grease from it, or sent to the Zoological Gardens. This is certainly a startling announcement. 10,000 lbs. of meat condemned in a week is at the rate of 520,000 lbs. per annum. Half a million pounds of valuable food destroyed nearly altogether by the ravages of epizootic diseases !”

“ It would appear that by far the greater portion of the meat referred to by the city analyst was the flesh of cows affected with pleuro-pneumonia, generally of a very bad type. In most cases the animals were the property of the Dublin dairymen. These stockowners are by far the heaviest sufferers from contagious lung distemper. There are no accurate statistics available from which we could learn the actual losses sustained by the dairymen; but from careful inquiries which we have instituted, we have no doubt that at least 8 per cent. of the dairy stock perish annually from pleuro-pneumonia.”

Very recently public attention has been directed to the use of carbolic acid both as a preventive and curative agent. For some years past we have given trial to this compound without being able to satisfy ourselves that it possessed any curative power; but in numerous instances it has proved useful as a disinfectant. In conjunction with the adoption of strict sanitary principles for arresting pleuro-pneumonia and other infectious diseases, carbolic acid ought to be employed; but apart from these, our present experience does not warrant the conclusion that it is a prophylactic.

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## FOOT AND MOUTH DISEASE.

COMPARING the time at which we write with the corresponding period of last month, a considerable diminution has taken place in the attacks and also in the centres of this malady, although the affection exists in a larger number of counties. If this diminution be followed up by energetic action on the part of the local authority throughout the kingdom, it may be expected that foot and mouth disease will soon assume its ordinary proportions. In another place we have called attention to an outbreak of the affection in the Agricultural Hall on the last day of the Smithfield Club Show (see Leader).

Some diseased cattle have been imported, and Hamburg, Bremen, and Antwerp have sent us cargoes of pigs, among which many cases of the malady were detected. In each instance the diseased animals were slaughtered at the port.

The widespread existence of foot and mouth disease is also shown by the circumstance that accounts have been received of its prevalence in Uruguay and Brazil, and likewise in several places in North Africa.

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## CATTLE PLAGUE.

EVEN before our last number was in the hands of the publisher, the fears which we expressed of the cattle plague extending from France to Belgium had received full verification. The disease had already crossed the frontier and established itself at La Hailante, in the commune of Jamoigne, Belgian Luxembourg. This threatening state of things was promptly met by the Government, and an Order of Council was issued requiring the slaughter of all cattle, sheep, and goats imported from Belgium, as was already the case with those from the ports of France and the North German Confederation. This extension of the cattle plague from France to Belgium was quickly followed by a second outbreak of the disease at Signeulx, in the commune of Bleid, not far distant from the French village of Sapogne. Since then no further information has been received of other outbreaks, and as the disease was vigorously dealt with in both instances, it may be hoped that Belgium is once more free of cattle plague.

The accounts received from France are, however, very

discouraging. Alsace and Lorraine, and the valleys of the Meuse, the Marne, and the Seine contain many centres of the disease, while under existing circumstances the means of its extermination cannot be rigorously enforced.

Although suppressed in several of the German states, fresh outbreaks of the plague continue to occur along the route of the army, and it is much to be feared that these will be supplemented by infected cattle drawn from Galicia and Poland. Both these countries are suffering to a most alarming extent, and the same may be said of Transylvania and Bukowina. The disease also prevails in Roumania and other parts of Turkey in Europe.

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### SHEEP-SCAB.

THE accounts both from home and abroad indicate that sheep-scab is very prevalent at the present time. Whether, however, it is really more rife than common, the want of accurate statistics does not enable us to say. During the past month several importations of sheep affected with scab have taken place. Infected cargoes were detected as coming from Bremen, Hamburg, and Antwerp. In every instance the animals were slaughtered at the place of landing.

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### INJURIOUS EFFECTS OF EATING WHEAT.

MR. BROAD, M.R.C.V.S., Bath, writes us as follows :—

“ A professional friend has told me that he was called a short time since to attend three cart-horses which had broken loose in the night and eaten a large quantity of wheat. When my friend saw them on the following morning, the animals appeared partially paralysed, and it was with much difficulty that they could be induced to move. Tympanitis was present, and the animals were suffering considerable pain. The pulse was about 60, and the visible mucous membranes highly injected.

“ The treatment consisted in giving to each horse during the day about two pints of linseed oil and two pounds of melted lard; oatmeal gruel with treacle, and injections of warm soapy water were added. For above sixty hours the horses suffered considerably, after which time the wheat began to come away in large quantities, when an abatement in the

severity of the symptoms soon took place. About four pints of linseed oil and from three to four pounds of lard were administered to each horse. In the course of a week they all had recovered, without leaving behind any ill effects of the engorgement."

### THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of November, 1870, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	NUMBER OF ANIMALS AFFECTED.					DISPOSAL.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered by Order of Customs.
Bremen .	London	Sheep-scab	...	23	...	...	23	23
Husum .	London	Foot-and-Mouth	10	...	...	...	10	10
Rotterdam	London	„	1	...	...	...	1	1
Total . . .		Foot-and-Mouth	11	...	...	...	11	11
„ . . .		Sheep-scab.	...	23	...	...	23	23
Total . . .			11	23	...	...	34	34

“ALEXANDER WILLIAMS,

“ Privy Council Office,

Secretary.

“Veterinary Department, 12th December, 1870.”

## THE VETERINARIAN, JANUARY 1, 1871.

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Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

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### FOOT AND MOUTH DISEASE AT THE SMITHFIELD SHOW.

SINCE the cessation of cattle plague the restrictions of the *cordon* round the metropolis have been thrice relaxed in favour of the cattle exhibited at the annual show of the Smithfield Club, and twice out of the three times the concession has been rendered unavailing in consequence of an outbreak of foot and mouth complaint.

On the first occasion, in December, 1868, the principal apprehension was felt on account of the recent prevalence of plague, and the uncertainty as to the presence in the country of latent infection which might be developed in the midst of the assembled stock, and convert the exhibition hall into a large slaughter house. Nothing occurred, however, to mar the success of the show, and the animals were allowed to leave the metropolitan boundary with a special police-licence, which was granted upon the production of a certificate of health signed by one of the veterinary surgeons appointed in that behalf. In 1869 there was no fear of cattle plague to disturb the arrangements of those who had the conduct of the exhibition, but the metropolis continued to be an "infected place" and the *cordon* still existed, therefore cattle could only be removed out of the district by special licence. On that occasion the animals were examined on the last day of the show, and no indications of infectious diseases were detected. Accordingly the certificates of health were signed, and the removal of the cattle commenced; but on the following morning one animal of those which remained in the Hall was found to be the subject of foot and mouth disease, and on the fact being reported, the Commissioner of Police exercised the power which was conferred by the rules under which the show was held, and revoked the licences for the removal of cattle from

the metropolis in respect of the forty or fifty beasts which still remained.

The exhibition of 1870 went on smoothly enough until the last day. During the afternoon, however, of Friday, Dec. 9th, when the cattle were inspected, one ox was found suffering from foot and mouth disease, and, as on the previous occasion, the Commissioners of Police at once revoked all licences for removal of cattle from the metropolis.

An appeal to the Government from owners and purchasers, however, subsequently led to an arrangement being made for the removal of cattle into the country. A trustworthy person was put in charge of each animal, who was required to remain with it until slaughtered. About fifty owners availed themselves of the conditional permission to take their animals out of London.

The necessary arrangements occupied some time, and the Hall was not cleared until the Thursday after the termination of the show; meanwhile the disease extended to eight animals besides the one first attacked, and exclusive also of diseased animals which were removed into the metropolis, and of which no account was taken.

No satisfactory evidence of the origin of the outbreak was obtained in either this or the former instance. According to the theory which ascribes all infectious diseases of stock to foreign importation, the malady was due to contact of the animals with some Dutch cattle at Maiden Lane Station. On the other hand persons who take an unprejudiced view of the whole situation do not fail to appreciate the fact that foot and mouth disease is much more prevalent in our own country than it is on the continent, and that, therefore, cattle *en route* to anywhere run far greater risks of infection from contact with home-bred than with foreign stock. Further, there is the medical aspect of the question, which has been often insisted upon, but which is nevertheless constantly ignored, the period of incubation of foot and mouth disease is very short. If we allow four days from the time of infection to the manifestations of decided symptoms of illness we shall exceed the limits of the incubative stage in by far the majority of cases; yet

in both the outbreaks of disease to which we have referred the animals remained in the Agricultural Hall for seven days after admission without showing any signs of disease. All the facts point to indirect infection occurring after the commencement of the show, and so long as infectious diseases prevail among cattle and sheep in the metropolis and in various parts of the country, it is impossible to entirely avert the danger which is incurred whenever animals are collected together for the purpose of sale or exhibition.

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### Extracts from British and Foreign Journals.

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DR. RICHARDSON "ON THE FUTURE OF PHYSIC."

At a special meeting of "The Saint Andrew's Medical Graduates," held at the Freemasons' Tavern, December 2nd, Dr. Richardson, the President, gave the following address: it was, perhaps, more poetic and telling than any of his former addresses. "Indulging one day in a luxurious day-dream by the seaside, it came to me that it would be a pleasing and useful task to devote occasional hours to the construction of a history of the science of medicine of the Victorian era . . . to write of the men who, moving actively amongst us at home and abroad, were worthy the pen of the honest historian . . . to narrate the natural history of the diseases we see now around us in our daily tasks, that they who come after us may know with what we had to contend, and may compare our present practice with their own . . . that they may measure faithfully the course and progress of curative art, from this epoch to theirs. So vividly did the scope and character of the work appear before me that, even to minuteness of its detail, the plan was fixed in my mind; and since then I have found the labour of carrying it out a natural and agreeable pursuit, the which, if I like to accomplish it, will perchance yield a work likely to live long when I am dead. As I have been writing on the past and present, a vista has often opened of the future of medicine, of the courses which medical science will take under the influence of changes of thought respecting the physical forces of the universe; of the new bases of the science, and of the perfections that will spring from them; of the greater knowledge of life and functions of life; and of the more certain modes of pre-

venting and curing disease. Therefore I have been led to ask, what can we who now exist do for the future? What are we doing for it? Are we doing the best we can for it, or can we amend? In these contemplations I have founded the subject of the present discourse. At first sight the position of the present, from which we start, is neither assuring nor promising. A severe critic, with no intention of untruth, might say of us that we live and breathe in uncertainty; that, socially, we appear to dabble with questions of legislation without either teaching or influencing the legislator; that we appear to trust to Government protection for the right to apply our skill, and, instead of aiming to cast away the oppressive shield it loans to us at bitter interest, are ever wailing for the shield to be made stronger and heavier; that we appear to rise to practice on the paper wings of advertised emptiness, filling the sheet not with painful touch of scientific industry and unsparing fact, but with the egotism of belief that each of us has done what others have not done and cannot do, though they religiously strive to follow our lead; that, scientifically, we are incoherent and chaotic, and, like all chaozes, jarring, without reason; over proud of what we really do, and deaf to the demand that we must do more or be trusted less. . . . Be it my duty to indicate a leaf or two of the day-book of our life that may be revised wisely, a leaf or two that may be torn out wisely, or elaborated before that book passes into that unknown where it is ours no longer, either to cast, tear up, revise, or preserve. If we begin with what may be torn up, we come to a heap of mouldy leaves, supposed to contain some hidden virtue for making us powerful and respectable, but chiefly powerful in the world. They are docketed as papers between the profession and the State . . . papers that have cost us more trouble and more money during the present century than all our scientific and practical work since we became a profession. For the purpose of cultivating these leaves, or preparing soil for them, great voluntary organisations have been instituted during the era, which bodies, in one way or another—in eating, drinking, travelling, speaking, organising, disorganising, quarrelling, fraternising, writing, advertising, and printing—have, within her Majesty’s reign, disgorged themselves of not less than one quarter of a million of her Majesty’s portraits in sovereign gold. While another legal organisation, more compact, much more practical for itself, and much more determinate, has skilfully extracted by and for these same leaves some tens of thousands more. The leaves themselves have simply taken from

us that patience of steady endeavour which trusts for the development of the most natural of sciences on the pure development of natural knowledge, and have produced amongst us separation of interest and galling unbrotherly bonds; they have drawn our men of genius for natural research from the noblest to the commonest work. . . . In suggesting the entire isolation of medicine from the trammels of bad legislation, I refer to the separation of science only. Present legislation leads to the existence and sustenance of rival boards, having rival powers and privileges, that induces us to make endless, wearing, and useless efforts to put down quacks by the power of law as against that of knowledge, and that fosters a stubborn belief in our security as a class, which crumbles to the dust whenever it comes in contact with the stern realities of life — with the sympathies, the fears, superstitions, and prejudices that make up the soul of human kind. For the future of physic, when we have a statesman born to us, he must be a statesman of the State, and not a statescraft man of our particular craft. . . . Of all professions and liberal callings, ours is the only one that has failed to produce a State Minister. . . . It is so because such of our body as have had the qualities and opportunities have trickled away in the miserable gutter of medical legislation, instead of plunging into the great politics of the nation, and studying the national in preference to the professional welfare. In the future we shall have great statesmen. We had at one time, and for many a year, a man who was as naturally strong as Bismarck, clear-sighted and light-hearted as Palmerston, eloquent as Peel, industrious and bold as Cavour, and who, but for the professional trammels by which he was held down, and the almost mortal professional fights in which he engaged, might have rivalled any of those Ministers in fame—a man whose life I will depict in my history, be it only to show what human strength can do, and what ill-judged professional restraint can undo. . . . The political, however, is only an accidental source of our power; the real source lies in the steady improvement, development, and simplification of medicine as a science and art. A William Harvey—he whose figure, by our sculptor Durham, this year adorns the capitol of science of the capital of the nation—reformed medicine more than all the medical political preachers that ever lived; and this reference leads me to the leaves of our book that require, not excision, but revision. To begin with simple things, the first act required for the future of physic is the simplification of the language in which we professionally communicate with ourselves and the world.

. . . Any man, or society of men, or council of many societies, that should set itself to work, in ever so small a way, to bring into use a simple and reasonable scientific language, would do a most important service to physic. . . . For the future of physic it is essential to revise our method of receiving and criticising what is brought to light as real or assumed novelty of knowledge. It is a marvel how physic is daily, and with infinite labour, rewritten; still more, how this is criticised. Now the popularity of the literary business, I cannot call it literary art, absorbs every man; and sedentary force, force developed *in situ*, is, as compared with force *in motu*, all-prevailing, while criticisms have become mere impulses—bastards of love and hate, boldness and fear, adulation and objurgation, industry and ignorance, flux of generosity and flux of selfish conceit. . . . As a nation we have a national fatuity for ignoring the history of our own country, and we are the most unpatriotic historians on the face of the earth. . . . These errors of the Victorian age must be reformed resolutely. Giving due, and even handsome, credit to all fellow-workers wherever they may be, we must become, in England, just to ourselves. For the future of physic it is essential that some revision be made in the system of training our sons for the work of our profession. . . . I leave the subject with satisfaction here because of the prospect, clear in view, of two or three great central schools for physic in London, and one or two more in the provinces; with the prospect of professors vying with each other in celebrity, and living by their work; and with the further prospect of students from the remotest parts of the earth trooping to our Asclepian temples, where the light always burns with increasing lustre.”

Dr. Richardson next proceeds to speak of the necessity of revising and extending our methods of medical observation by the light, for instance, of the laws of dialysis; of the need of an improved field of research in reference to the functions to the nervous system; the governing power of the sympathetic over the blood-vessels; the molecular changes in nervous structure; the directness of morbid impressions through the expanses of the nerves; and of the primary origin of disease by instant change of nervous physical state, in accordance with the recent researches of Dr. Brown-Séguard. Speaking of curers and cures, Dr. Richardson observed:—

“The influence of race on vitality; the estimation of individual and natural life-values, on some more certain methods than at the present time is known; the classifica-

tion of disease geographically . . . are matters demanding inquiry ; and as regards the actual cure of disease, what is our prospect touching the task that, between the first natural appearance of the human living thing on the earth to its last natural appearance, it shall not die from unnatural causes, nor from natural causes that come within the governance of man? It is good. It is good because we are learning 'definitely not to lose trust in remedies for the reason that we cannot apply them at once with accurate judgment, but to believe in them as powerful means of cure that are yet to be accurately employed. . . . Because we are seizing certain agents, and are forcing them to tell us what they perform on the body, what is their physiological action, and what antagonism of action they offer to the phenomena of disease. . . . Because we are learning, in respect to remedies, that their physical action on the process of animal natural dialysis, or action in controlling or exciting nervous systems, may be learned by methods of physical research, that wait but to be tried to be proved as true to us as other physical inquirers. . . .

"In the future of physic, as we advance in the directions I have tried to signalise, we shall stand firmer and fairer with the world. But our success shall not be perfect until yet another, and of all the mightiest, truth breaks upon us—namely, that the solemn and august secret of our power is, not in the amassment of wealth by our professional exertion,—not in the amassment of popularity by it—not even in the creation by it of that future fame and name in history which all men of noble instinct and noble nature would die to secure,—but in the accomplishment by it of one simple end, *the happiness of mankind*. In this accomplishment lies our own happiness, and with it all true and worthy power, all true and lasting glory. Meted out ever for this end, we require no other incentive for research, no other corrective for research, and no other protective against schismatic foes; nay, we require not even reward of gratitude, grateful though that may be when spontaneously it flows at our feet. It is a simple formula of living action this ; but how potent! Is this professional desire, is this act, is this practice which we daily do, in desire, in act, in practice, is it for the happiness of the individual, of the race? Shall the conscientious answer be Yes? Then is the act strong, unassailable, and, though it even partake of error, holy. Shall the answer be No? Then is the act weak, easily controverted, bad. This is not moral axiom, it is scientific truth. To many in all time it hath been known, medicine hath lived upon the knowledge; to

many it is known now, and medicine is sustained by the knowledge; but in the future *all* must know it; it must be the perennial force hidden in our hearts; our unspoken secret, worthless were it revealed. It must be the bond between ourselves, holding us as brethren in such subtle sympathy that envy shall be an instantly detected deformity, repulsive and retreating. It must be the bond between ourselves and the world, by which the world shall hold to us neither from wonder, nor admiration, nor other doubtful quality of recognition, but from confiding, habitual, abiding trust. Above all, it must be the fountain of our inspiration from the Lord of nature, whose whole scheme and design of creation, however strange it may seem, and to feeble sight devious, is ever toward and for the perfected happiness of His worlds of life."—*Lancet*.

## EDINBURGH VETERINARY COLLEGE.

### THE MATRICULATION EXAMINATION.

MY DEAR SIR,—I send herewith the result of the preliminary examination of the students commencing their studies at the Veterinary College. Most of the exercises given in were perfect, and show that the students could have stood a much higher test than that to which they were subjected. Indeed, the impression left on my mind was, that most of those who joined the College were much more cultivated than they are generally believed to be; and I feel convinced that if the examination now instituted is continued here and in Glasgow, and by degrees made higher, you will have as candidates for the veterinary profession a body of gentlemen who will be sure to command the respect and confidence of the public.

A few of those examined were somewhat deficient, especially in parsing, as you will see by my marks; but almost all these assured me that they had just come up from the country, ignorant altogether of the examination to which they were to be subjected.

Wishing all success to this most praiseworthy effort to raise a profession which, from its demand for a scientific culture, ought to be among the most honorable of professions,

(Signed)

I am, &c.,  
JAMES DONALDSON.

Principal Williams.

#### LIST OF STUDENTS.

John C. Atkinson	.	.	Crewe.
James Mills	.	.	Glasgow.
C. B. Markings	.	.	Saffron Walden.
William Martin	.	.	Newport, Fife.
John Anderson	.	.	Aberdeenshire.
William Wheatley	.	.	Shotley Bridge.
Arthur Macfarlane	.	.	Greenock.

Thomas Wilkinson . . .	Dipton.
William Haselden . . .	Bolton.
William Beckett . . .	Naburn.
Charles Peebles . . .	Perthshire.
Alexander Lawson . . .	Manchester—Also in French
John Ironside . . .	Banffshire.
Andrew Balfour . . .	Kirkcaldy.
William Campbell . . .	Dumfries.
John Cammack . . .	Boston—Also in Latin.
Robert McConnell . . .	Castle Douglas.
George Tait . . .	Elgin.
George S. Heatley . . .	Dalkeith.
G. E. Bowman . . .	Elvington.
Thomas Reilly . . .	Ireland.
Samuel Leed . . .	Keighley.
John Proctor . . .	Bradford.
Andrew Kershaw . . .	Oldham.
Francis Balfour Byrne . . .	Bridgnorth.
William Donaldson . . .	Fife.
Peter McConie . . .	Auchmar.
Justus Littler . . .	Long Clawson.
George Philp . . .	Dunfermline.
Adam Walker . . .	Luss.
James Hume . . .	Edinburgh.
George James Richards . . .	Scarborough.
William Johnston . . .	Dumfries.

## EDINBURGH METROPOLITAN VETERINARY MEDICAL SOCIETY.

THE quarterly meeting of the above Society was held on the 30th November, in Mrs. Cummings' Hotel, Lothian Road, Edinburgh. There were present Professor Williams, Veterinary College, Edinburgh; Messrs. W. Connachie, Selkirk; William Cummings, Edinburgh; C. Cunningham, Slateford; J. Borthwick, Kirkliston; —Balfour, Kirkcaldy; and the Honorary Secretary. Messrs. McLean and Findlay were also present as representing the army.

A letter of apology was read from Mr. Robertson, President, who in consequence of professional engagements was unable to attend. Professor Williams, in the absence of Mr. Robertson, was called to the chair. The secretary read the minutes of the previous meeting, which were approved. Mr. Cummings was then called upon to read the paper of which he had given notice, "On the Germ Theory of Infection, and the use of Carbohc Acid as a Disinfectant." The subject being a very interesting one, elicited an animated discussion, in which all present took part.

The election of office bearers was afterwards proceeded with, when Mr. J. Borthwick, Kirkliston, was unanimously elected President,

and Messrs. Balfour, Kirkcaldy; Connachie, Selkirk; Professor Williams, Veterinary College, Edinburgh, Vice-presidents for the ensuing year. The treasurer, Mr. Baird, and the secretary, Mr. Mitchell, were both re-elected.

A cordial vote of thanks was awarded to Mr. Cummings for his able and instructive paper, and also to Professor Williams for his conduct in the chair, which terminated the proceedings.

The next meeting, being the annual meeting of the Society, will be held on the second Wednesday of February, 1871, at 2 o'clock p.m., when the President will deliver an inaugural address. At the close of the meeting the members will hold their first annual dinner, to which professors of veterinary colleges and all connected with veterinary science are cordially invited.

JAMES MITCHELL, *Secretary.*

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## CENTRAL VETERINARY MEDICAL SOCIETY, LONDON.

A SPECIAL General Meeting of this Society was held on Tuesday last, F. J. Mavor, M.R.C.V.S., in the chair.

After the preliminary business, the Secretary read a communication from a Fellow of the Society, directing attention to the anomalous position into which veterinary surgeons are likely to be plunged by a Medical Bill now sought to be obtained by the sister profession. Considerable time was devoted to the question, and at length the Secretary was requested to forward the letter to the Council of the Royal College of Veterinary Surgeons, calling the attention of that body to the importance of the subject, with the view of effecting, if possible, some amelioration of the conditions.

*Mr. T. W. Gowing*, sen., exhibited a case of instruments for firing and also for castration, in which usefulness, portability, and security against loss and displacement were admirably united.

*Mr. F. J. Mavor* exhibited the pelvis of a horse which had been fractured from a fall. The symptoms were not sufficiently marked at the time to admit of a precise diagnosis being formed, but at a later period the fracture was accompanied with great displacement and distortion of the haunch. After a period of three months the animal died rather suddenly.

The case possessed many points of scientific interest, which were successively dilated upon by the Fellows present. Probably one of the most remarkable features being the small amount of ossific deposit which had taken place during the lengthened period the animal had lived after the accident. This circumstance, doubtless, was to be explained by the fact, stated by Mr. Mavor, that the animal was in such low condition that the reparatory power was very deficient.

## ANTISEPTIC TREATMENT OF WOUNDS.

The *Secretary* (G. Armatage) afterwards, at the request of the chairman, introduced for discussion "The Treatment of Wounds by the Antiseptic Method," and in the course of his remarks pointed out the various conditions in the several kinds of wounds, which are thought to be inimical to the process of healing by the first intention. The presence of dead or devitalised tissue occasioned by the primary injury, and the action of offending particles of microscopical characters floating in the atmosphere of stables, cow-houses, &c., as well as irritating agents of a material character ever present in places where animals are confined, were successively discussed. The consequences of such action, the speaker endeavoured to show, are, respectively, greater irritation, obstruction of the healing process, extended injury to surrounding tissues by ulceration, sloughing, and the subsequent opening of joints, when the injury has been inflicted in their vicinity, with inevitable loss of usefulness, and even death from irritative fever, pyæmia, &c., all of which he contended could be greatly, if not wholly, averted by the timely use of the so-called antiseptic method. The views of Harvieux, Lister, and Barlow were given and dilated upon, all of which tended to show that pus is not necessary to the proper cicatrisation of wounds. The opinion is by no means new; it is, however, tenaciously opposed by those of the old school who cling to the belief that reparation is in proportion to the discharge of pus. The speaker concluded by giving an outline of the method pursued in the different cases coming under his notice, as well as details of collateral treatment, which form essential items in the category of the system, and require as strict observance in their fulfilment as any other.

The debate which followed was sustained in an animated degree, for a considerable time; the tenor of the discussion was certainly not in favour of a departure from the present generally pursued plan. The possibility of carbolic acid having any antiseptic power upon wounds was questioned by Mr. Mavor. Mr. Hunting considered wounds discharging laudable pus required no antiseptic; others variously gave their opinions on the power or inability of carbolic acid to arrest or promote the secretion of pus, and the majority shared the opinion that the proper cicatrisation of wounds could be carried on without the so-thought needful formation and discharge of that fluid.

*Mr. Armatage*, in reply, observed that, if minute particles having ritant properties are to be found in the atmosphere of buildings where purity and cleanliness are scrupulously attended to—if in such places from those microscopical germs gangrene and death frequently arise—how much more likely would they be found in the air of dirty stables and cow-houses. And, conversely, if recovery is more certain; death in reality being robbed of its victims among human patients, then veterinary surgeons are called upon to use means which are likely to secure similar immunity to their patients. Prejudice against a system often arises from non-acquaintance with

its details, and whatever may be the means proposed, the test of trial should be made before they are discarded. The antiseptic treatment of wounds promises well in all those of an extensive and aggravated character. Numerous instances can be adduced, showing that in comparison with the ordinary method of treatment, the aggregate number of chronic cases may be remarkably lessened, extreme conditions avoided and lives saved, where now loss and inconvenience result. Mr. Armatage concluded by urging attention to the principles of antiseptic treatment; feeling assured from his own experience that the subject deserved a much more extended trial and investigation than had hitherto been given to it by veterinary surgeons. Emanating from the Central Veterinary Medical Society, it would give rise to a wider field of operation, and likewise secure more definite results than would be likely to occur from other means.

The meeting adjourned, after a vote of thanks to the President and Secretary respectively.

At the next meeting, on January 5th, Mr. Rowe will read a paper on "The Diseases of the Liver of the Horse."

## MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE seventeenth meeting of this Association was held at "The Bell" Hotel, Leicester, on Monday, November 28th, under the presidency of Mr. H. Pyatt, of Nottingham. There were present—Messrs. Garrard; Baily, sen.; Cave; Cowlshaw; Wiggins; Perrins; Hill; Ison, and the Secretary.

Letters having been read from various absent members, the minutes of the last meeting at Burton-on-Trent were read and confirmed. A motion to confine the meetings of the Association to one of three centrally situated towns in the Midland Counties was, owing to the smallness of the meeting, and the absence of Mr. King the proposer, adjourned to the next meeting, which it was agreed should be held at Lichfield, in the month of March, 1871.

*Mr. Hill* read the following essay on "Hæmo-albuminuria in Cattle."

MR. PRESIDENT AND GENTLEMEN,—In bringing the subject of this paper before you it is not with the feeling that I am introducing anything new to your notice, but with the hope of gaining some fresh knowledge from gentlemen whose experience has been longer than my own.

The disease now termed hæmo-albuminuria is not new; it is also far from being an uncommon one. During the time I was in Yorkshire it was my lot to see many cases of this malady; and as there did then and still now does exist much difference of opinion amongst practitioners as to its nature, cause, and treatment, I have simply put forth my feeble efforts to lay before you my own ideas in connection with it in exchange for perhaps the more valuable ones of my brother

practitioners. Without further trespassing, gentlemen, upon your time, I will at once introduce my subject.

Hæmo-albuminuria in cattle is commonly known by the term red water, also bloody urine, moor-ill, black water, hæmaturia, &c. The former term, signifying that hæmatine and albumen exist in the urine, thus almost at once, as it were, describing the nature of the complaint, is one for which we are indebted, I believe, to Professor Simonds.

Perhaps of all the category of diseases which come within the scope of the veterinary practitioner, there are few of so old a type as red water. In our ancient works on farriery, before colleges were instituted, or perhaps thought of, we read of this disease; and in our modern works on cattle pathology it still occupies a prominent place in their pages.

It affects both young and old stock of all breeds, male and female; but according to Professor Simonds it prevails, at least in some parts of England, more amongst cows than oxen, and particularly after parturition. One of the reasons he assigns in part for this is—the change of food and management to which the animals are subjected, viz., the cow having prior to calving been kept on short commons, and then immediately after bringing forth her young being supplied with abundance of rich food, in order that she may give a great quantity of milk. The digestive system, unprepared for this, is consequently unable to sustain so sudden a change. It gives way, and thus cows, being subjected to this treatment, are more generally affected than oxen.

But another idea as to the cause of this malady, and I think the prevailing one, is that of cattle being placed in low and wet pastures; and this, in my opinion, has a great deal to do with it, as is pretty plainly shown by the malady being so frequent in the undrained parts of England, and likewise taking place in those seasons of the year when we expect changeable weather, viz., spring and autumn. Mr. Ford, in a letter to Mr. Youatt, which is mentioned in his work on “Cattle Pathology,” states that red water used to be very prevalent in the neighbourhood of Etruria in Staffordshire. About twenty years from the time he wrote, and before the wet lands were drained, in a dairy of twenty or thirty cows two thirds of the number, he says, were afflicted with disease annually; but since the draining, not more than one or two animals have annually been attacked by it.

Mr. Nobbs likewise, in writing to Mr. Youatt, states a case where a dairy was removed from a farm on a flinty soil to one on a strong clay, and every one of the cows, consisting of seventeen, were affected; three of them dying, although they had all been charmed (an old custom which is happily dying out, and giving place to more sensible ideas). These two instances, with many others which I might enumerate, go a great way to prove that damp seasons and wet pastures have much to do in the production of hæmo-albuminuria. But again, we must not lose sight of the food as participating in the cause; for as in cows, so in oxen, this, though not perhaps in the same way, may assist in producing hæmo-albuminuria,

such as the change from poor to luxuriant pastures, or partaking of plants whose acrid properties irritate and inflame the mucous surface of those organs in which digestion is carried on (viz., the stomachs), and thus interfere with their natural functions, and secondarily through them the kidneys. Professor Simonds says, he has known it occur from the substitution of cotton cake for oilcake, which from its coarseness causes diarrhœa, and thus by impairing the digestive system lays the foundation for this disease.

But the conclusion, I think, we must most of us come to is that the immediate cause of the malady is—a vitiated condition of the blood produced by the quality of the food, which food upsets the whole digestive system, and through that alters and deteriorates the condition of the blood and other fluids of the body.

*Symptoms.*—The disease is generally ushered in with diarrhœa, followed by a constant endeavour on the part of the animal to urinate, the fluid of which is a claret colour, becoming deeper as the disease proceeds; then the very opposite of diarrhœa takes place, viz., the non-passage of fœculent matter, but which is not so much from a constipated as a torpid state of the bowels, because the colon and rectum after diarrhœa are generally empty, so that though there may be a constant straining, there is really nothing in the shape of fœces to come away (and in the treatment of many of the diseases we are called in to attend, this should be particularly borne in mind, especially when about to administer purgatives, and those of a drastic kind).

The pulse, which is at first quick and small, becomes nearly imperceptible, and the beating of the heart is easily increased in its rapidity by alarm.

The secretions generally are suspended. In cows the lacteal fluid has an unusually yellow tinge. The skin of the udder, and particularly on the inside of the thighs, where it is thin, and naturally of a whitish colour, has also a yellow hue. This yellowness, says Professor Simonds, is not from the absorption of bile, but from a reddish-coloured *liquor sanguinis* flowing in the capillaries. Upon this point the minds of veterinarians are at variance, and I feel myself incompetent to satisfactorily answer the question; nevertheless, with all due deference to Professor Simonds, I am inclined to differ from him, and to think that this yellowness is due to the absorption of bile into the system.

But I will now for a moment direct your attention to the most prominent and striking symptom of the disease, viz., the red urine, dwelling for a short time upon the nature of the discharge evacuated, and the cause of its peculiar colour. This, as we have previously seen, does not commence in the earliest stage of the malady, but generally sets in after the diarrhœa has ceased; it is first of a claret colour, gradually deepening as the disease proceeds, becoming in the latter stages of a dark-brown colour, and still deepening until it has become nearly black; hence it has been termed at this stage black water, but which in reality is the concluding stage of red water, and is considered by many practitioners to be a favorable symptom; but of this I will speak hereafter.

Next, as to the cause of the red tinge of the urine. (This, could it be absolutely proved, would be the keystone to the whole affair.)

Various theories with regard to it are afloat, the oldest and most prevalent of which is that hæmorrhage from the kidneys is the cause; but, says Professor Simonds, we must bear in mind one thing—if there is any blood in the urine it will clot, no matter how little the quantity, while we find in this disease the urine to be quite transparent. This alone, he thinks, should convince us that there is no escape of blood from the kidneys. Another idea which at one time prevailed was that bile in the urine was the cause of the change of colour, but tests for this fluid being resorted to, the idea proved to be erroneous; a third opinion was that imperfectly formed blood had got into the urine, and thus imparted to it that tinge.

Professor Simonds' view, and the one which I myself take, is that deteriorated blood is the specific cause, and that the hæmatine or colouring matter of the blood leaves the red cells by the law of exosmose, and, contaminating the liquor sanguinis, thus tinges the urine. This, however, though in my opinion the most feasible, has yet to be fully proved, and which I think the transparency of the urine has partly done. Certainly it is a peculiarity that belongs to no other disease, and the very fact of its being so affords plenty of food for discussion, and a large field for the inquiring mind of those gentlemen who feel an interest (and I believe we all do) in seeking out the causes and effects of the numerous and peculiar pathological changes that take place in those cases that come under our notice.

The duration of this disease is from about five to six days; should there be no diminution of the symptoms by the third or fourth day, our prognosis must be unfavorable.

*Post-mortem.*—Firstly, as to those organs which are considered by many persons to be the chief seat of the disease, viz., the kidneys (though they are but the part from which this red fluid issues, their function being to secrete the urine in whatever state it may be formed); these, if the animal has lived five or six days, are in a soft condition, and on pressure a reddish fluid oozes out. On dissection the ureters are found to be stained the same colour, but the organs themselves are rarely inflamed. The liver is likewise softened and dark coloured, and its structure easily broken up, and the gall-bladder is generally full of bile, which may be accounted for by the suspension of rumination, and therefore, not being called into want, the bile is not thrown out. The digestive organs themselves are in an abnormal condition, but there is really no organic disease. The stomachs are often found full, particularly the maniplus, or third stomach, the contents of which are hard and dry, possessing a baked appearance. The skin and tissues underneath are of a yellow tinge, and which colour appears in many other parts of the body. Beyond what I have mentioned there is very little else to notice.

And now as to the treatment of the disease.

Bleeding has been strongly advocated by some practitioners as the first thing to be resorted to, and as strongly condemned by others. I for one am very averse to bleeding in large quantities; but I do

not object to it if done cautiously, as it tends, in my opinion, to alter the condition of the blood, by unloading it, to a certain extent, of its morbid matter (or, to use Professor Simonds' words, we remove the disproportionate and undue amount of fibrine existing in the blood, in consequence of the loss of the serum through the kidneys).

But apart from this, I think we should put more faith in our internal remedies. Here, again, we have great diversity of opinion, some strongly advising astringents, and others purgatives, followed by diuretics; and though I myself was taught to use the latter, I disagree in part to it. With regard to diuretics, I think they only tend to excite (in this disease) an already abnormal condition of the kidneys into an inflammatory one, and thus retard rather than aid Nature's efforts to bring about a healthy state of the blood. Astringents I am more favorably inclined to, but in the use of these I should go no further than the Ferri Sulph. or Tr. Ferri Mur., which, in my opinion, is the best agent we can use to constrict the blood-vessels and so prevent the escape of hæmagine. My first object, however, is to unload the stomach and bowels, and to accomplish this I administer saline purgatives. My reason for choosing this class of purgative is that I may at the same time supply the blood with the salts which it requires; and when we have once got the bowels to respond to the action of the medicine, we have, by removing the suspension of their functions, overcome one of the chief obstacles.

Enemas at this juncture may be used with benefit, as they soften any hard dung that may be left in the rectum, and act as a local fomentation to the parts.

Diffusible stimulants may also now be administered, such as Spt. Æth. Nit. and Liq. Ammon. Acet. twice or three times a day.

Equalise the temperature of the patient by rugs and warm housing, and thus by good nursing (which is one of the chief things), together with the treatment laid down, and the occasional administration of vegetable tonics, we shall, I think, find that this malady is really not so fatal as it is generally supposed to be.

Amongst the names given to this affection, I mentioned in the earlier portion of my paper that of Hæmaturia, and as Hæmaturia and Hæmo-albuminuria are two totally distinct diseases, arising from quite opposite causes, it may not be amiss on my part if I crave your attention for a few moments to explain the difference.

That it is considered one and the same disease we may gather from different authors. Mr. Blain, for instance, tells us that the symptoms of red water, or hæmo-albuminuria, in cattle are precisely akin to those of the same disease in the horse, and which in the latter animal he terms hæmaturia, and advises the same treatment for a disease which I hope presently to show is totally different.

Mr. Finlay Dun, to whose valuable work we are much indebted, mentions hæmaturia as one of the terms given to red water.

And again, Mr. Harrison, in the *Veterinarian*, May, 1833, p. 244, speaks of it under the term Hæmaturia.

Firstly, then, as to the derivation of the two words. Hæmaturia is derived from two Greek words, viz. Αἷμα (blood) and Οὐρον

(urine), signifying blood with urine. Hæmo-albuminuria signifies blood with albumen in the urine, but which for blood we substitute hematine, or the colouring matter of the blood. The word albumen being derived from the Latin word (*albus*), meaning the white of an egg, which is formed principally of albumen; therefore the terms alone imply a distinction between the two maladies, and the only resemblance is in the colour of the discharge evacuated.

But next, as to the causes of these diseases. Hæmo-albuminuria is caused, as we have seen, by atmospherical influence, damp pastures, coarse or the other extreme—rich food—after low diet—in fact, it is mostly traceable to things that impair the digestive system; whilst hæmaturia is generally brought about by external violence, such as blows to the loins, falls, bruises, or great strain of the part or parts immediately connected with the kidneys; or it may and does frequently occur from calculi in those organs or their ureters, which impede the flow of urine and set up inflammatory action, or by their irregular edges wound the inner coat of the ureters, and thus cause the discharge of blood. Not merely hæmatine but absolutely coagulated blood is passed with the urine, which I have previously shown does not exist in true red water. And therefore, gentlemen, I think there can be no doubt left on our minds that these two terms signify, or ought to signify, two separate diseases, and according to that difference so must our treatment be.

Hæmaturia demands from us prompt and active measures; nothing irritative must be administered. Drastic purgatives and diuretics must be avoided, and in their stead mucilaginous drinks should be given, together with the use of hot fomentations to the loins. Sedative enemas and preparations of iron and gentian should also form the chief part of our medicinal treatment.

I trust, gentlemen, you will pardon me for dwelling on this point, but when we see two different complaints spoken of and written about as one and the same, I think we cannot but feel that confusion of cases must naturally follow, and thus lead astray those who are learning and following up our profession.

I think technicality was studied a few years back too much without reference to the meaning of the terms, for every technical term has a derivation, and that derivation points out at once what is meant; therefore hæmaturia cannot mean hæmo-albuminuria, or *vice versâ*.

The sequel of this disease, which I have before briefly alluded to, is black water. This like the former derives its name from the colour of the urinary discharge; but I will not detain you with a long description of it, as, being but the concluding stage of the former, it would be almost like repetition to dwell long upon it. Suffice it to say that I am of opinion this black hue is due, if I may so express it, to death of the hæmatine, viz., that as it ceases to escape from the vessels, so does the inclination of the animal to urinate subside, and thus the colouring matter being retained a longer time in the bladder, affords opportunity for this change to take place. Should we be called in to attend a case of this kind,

diuretics and tonics will I think be found the most effectual remedies, as Terebinth. and Ferri Sulph., together with good nutritive diet.

And lastly, as to the prevention of hæmo-albuminuria. I would advise keeping our animals on well-drained pastures, avoiding sudden changes in their diet, and not unnecessarily exposing them to inclement weather. These few simple but very important rules will I think, to a considerable degree, help to lessen the number of cases belonging to this class of disease.

And now, Mr. President and Gentlemen, having exhausted my subject, and doubtless your patience, allow me to thank you for the kind and attentive listening you have given me, hoping at the same time you will excuse any imperfections that may be apparent, as I can assure you that the writing of this paper has been solely with the view of producing a good discussion, in order that I might gain fresh knowledge upon a subject of so vast importance in our agricultural, and particularly our grazing districts; therefore, if my imperfect remarks only cause a free interchange of opinion, I shall feel amply rewarded for my trouble.

In the discussion which followed, *Mr. Pyatt* strongly recommended a complete change of food as a measure adjunctive to the medical treatment of the disease.

*Mr. Garrard* considered that derangement of the digestive organs was one of the causes tending to produce the disease, and that in its treatment it was essential to impart tone to those organs.

*Mr. Perrins* had chiefly seen the disease prevailing on cold clay lands in the month of March, and most frequently in cows after parturition.

*Mr. Barry* had found the disease in the district surrounding Litchfield to prevail chiefly in young stock two and three years old, living on large quantities of roots and straw in yards or sheds. The discussion was continued for some considerable time.

Subsequently an animated conversation also took place on the subject of acorn-poisoning, when eventually *Mr. Perrins* agreed to introduce the subject for discussion at the next meeting of the Association at Litchfield.

A vote of thanks to the Essayist, and also to the President, terminated a very pleasant meeting.

WM. BARRY,

*Hon. Sec.*

## NEW MEMBERS OF THE PROFESSION.

At a meeting of the Court of Examiners of the Royal College of Veterinary Surgeons, held on Dec. 21st and 22nd, the following students from the Royal Veterinary College were admitted members of the body corporate.

## DEC. 21ST.

Mr. Michael Henry Comerford . . .	Leyton, Essex.
„ Thos. Jonathan Symonds . . .	Cambridge.
„ Edwin Hill . . . . .	Somersham, Hunts.
„ Lister Swann . . . . .	Urswell, Wisbeach.
„ Henry Wellburn Maw . . . . .	Thornton-Pickering.
„ Herbert Rangeley . . . . .	Unstone Grange, Sheffield.
„ George Bone . . . . .	Petersfield, Hants.

## DEC. 22ND.

Mr. James George Burden . . . . .	Beaulieu, Southampton.
„ George Holtham . . . . .	Gloucester.
„ Laurence Hunter . . . . .	Dublin.
„ John Jas. Augustus Francis . . . . .	Walham Green, Fulham.

## Veterinary Jurisprudence.

### CONVICTIONS FOR USING GLANDERED HORSES.

*William Burd*, a cab proprietor, and *Joseph Wild*, a driver in his service, appeared before the Lord Mayor, at the Mansion House, on November 25, on summonses under the Contagious Diseases (Animals) Act, 1869, taken out at the instance of the Royal Society for the Prevention of Cruelty to Animals, and charging them respectively with causing to be driven, and driving a horse afflicted with glanders in the public thoroughfares.

Mr. Richard Harris, barrister, conducted the prosecution; the defendants, who pleaded "Not Guilty," were represented by Mr. Washington, solicitor.

Mr. Harris, in opening the case, explained that the proceedings were taken under the 57th section of the Contagious Diseases Act.

*William Peck*, an officer of the Society, deposed that on Saturday week, about 9 o'clock in the morning, he saw the defendant Wild driving a cab in Cannon Street, drawn by a light bay gelding. He noticed that from its nostrils a quantity of mucus was running. He asked the driver why he brought the horse out in that state; to which he replied that there was nothing the matter with it, and that it had been in that condition for three years. Witness said the animal was glandered, upon which he repeated there was nothing the matter with it. The defendant Burd, who was driving another cab, came up at the time, and he explained that he was the owner, and that he had purchased the horse three or four years ago from a farrier, named Scott, who told him there was nothing wrong about it, with the exception of a cold. The price was £7 10s. He also stated that he had not taken it to a veterinary surgeon, and that he was not aware that it was glandered, adding that some years ago five of his horses suffering from that disease were slaughtered under an order of the district sanitary inspector. Witness advised the defendants to take the horse home, and not work it again, which they promised to do. Wild, however, drove it into the yard of the Cannon Street Station, and there obtained a fare. Next day witness went to Paragon Mews, New Kent Road, and saw the horse. The defendant Burd, in answer to a question, said his driver carried a pail in his box,

and had done so for three years, so that the other cabmen might not complain. The horse was then slaughtered. Afterwards witness saw Wild, and told him there was no doubt it was a case of glanders. He replied that he had done all he could, and that he had carried a pail for three years.

*Mr. Arthur Cherry*, a veterinary surgeon, said he examined the horse at Paragon Mews, and found it suffering from chronic glanders. The fact would be palpable to any one who had the slightest knowledge of horses. The nostrils were ulcerated, and the discharge was a sign of extensive disease. Burd told him he had had the horse between two and three years, and that when he bought it, it was suffering from "nasal gleet." That phrase was only used as an evasion of the term glanders. He subsequently made a *post-mortem* examination, and found the glands much enlarged, and the lungs much diseased. It was a clear case of chronic glanders, and the disease had existed for two or three years. The state of the animal would have been perfectly plain to any person of ordinary intelligence.

For the defence it was urged that the proprietor Burd exercised the greatest care with his horses, and that his stables were the cleanest and healthiest in the mews.

*The Lord Mayor* said the case admitted of no doubt. It had been clearly proved that the horse was badly glandered, and that both the defendants must have been aware of it. They had not taken reasonable care in the matter, and they had been guilty of a grave offence against the community at large. He hoped the prosecution in this instance would act as a warning to other people, as they would certainly be punished if they came before a magistrate. He held that the owner, Burd, was principally to blame, and he fined him £5, with the alternative of fourteen days' imprisonment. The other defendant would be fined 10s. Both defendants paid the fine, and were discharged.—*Times*.

ON THE SAME DAY, AT CLERKENWELL POLICE COURT, *Mr. Joseph Good*, a carrier, of Tottenham, was summoned before Mr. Barker to answer a complaint which charged him with conveying a glandered horse through the public streets.

*Mr. Charles Fry*, solicitor, prosecuted.

*Mr. Allen*, M.R.C.V.S., said that on the 24th of September last, he was passing along the Seven Sisters' Road, Holloway, when he saw the defendant leading a horse which appeared to him to be glandered. Shortly afterwards he traced the horse to Atcheler's yard, where he found it dead. *Mr. Hunt*, the inspector of slaughtered horses, saw it at Atcheler's, and told the defendant it was glandered, and that he must have it destroyed at once; and, when asked why he had led it through the public streets, when he could have sold it to a horse slaughterer, at Tottenham, where he resided, he said he had brought it to town because he could get a better price for it than he could there.

*Mr. Barker* said it appeared these cases were on the increase.

*Mr. Allen* said it was so, and in this case if the horse that the defendant had led had come into contact with any other, it would have infected it with disease.

The defendant said that he was very sorry, but he was not aware that there was anything the matter with the horse, except that he was old, lame, and worn out.

*Mr. Barker* said that a stop must be put to such a dangerous practice, and ordered the defendant to pay a fine of £10, and 2s. costs, or, in default, to be imprisoned in the House of Correction for two calendar months.

## ROCHESTER PETTY SESSIONS.

## FOOT AND MOUTH DISEASE.

*James Stedman*, miller and farmer at Gillingham, was summoned by Superintendent Merritt for having in his possession two cows affected with foot and mouth disease, and with unlawfully neglecting to give notice as soon as possible to the police, on the 3rd of November.

Mr. Merritt said he found that Mr. Stedman had two cows with the foot and mouth disease, and as the disease was on the increase the chief constable directed that these proceedings should be taken as a warning to others.

Mr. R. Prall appeared for the defendant.

Police-constable *Button* said on the 3rd Nov. last he visited Mr. Stedman's farm at Twedale in the parish of Gillingham, and saw the bailiff. Asked him if the cattle were healthy. He said there were two cows which were slightly afflicted with the foot and mouth disease; the bailiff said it was not worth while to report it. Told him he must report it. This was the first intimation he had had in respect to the present case.

By Mr. Prall—It was on the 3rd Nov. when he called. Mr. Stedman was not there when he called. Did not usually ask to see the master; inquired as to the state of the cows from the bailiff.

*Mr. J. B. Martin*, inspector of this division, said he received notice on Nov. 3rd from the last witness to visit defendant's stock. He went to Twedale farm on the 4th, and found six heifers that had nearly recovered from the foot and mouth disease, and two cows then suffering from it. They were all together in the farm-yard. Asked the bailiff, Mr. Pearce, how long they had been afflicted, and he said ten days. Inquired for Mr. Stedman, but he was not at home.

By Mr. Prall—He believed they had all been treated for the disease.

Mr. Prall contended that there was no evidence in this case, and that no information ought to have been made; if their worships looked carefully at the facts, he (Mr. Prall) had no doubt but that they would be of his opinion. He then referred to the Act, from which he considered that no offence had been committed. There had been no concealment in the matter; Mr. Manning was attending the cows, and there was no intention on the part of the defendant to commit a breach of the order. He called

*Mr. J. Manning*, Rochester, who said he had had great experience for twenty-seven years; was sent for to Mr. Stedman's on the 26th October to attend nine cows with the foot and mouth disease; they recovered very quickly. The bailiff told him that he had given notice to the police, and he (witness) told the bailiff that it would not be necessary to make any further report.

Mr. Merritt merely asked for a nominal fine, as he believed the defendant had committed the offence in error.

Fined 2*l.*, including costs. The bench would inflict heavier penalties in future.

*Mr. John Manning*, the witness in the case, was then charged, on a summons, by Mr. Supt. Merritt with aiding and abetting *Mr. Stedman* in committing the offence for which he had been convicted.

Mr. Prall appeared for the defendant.

Mr. Merritt stated that the summons had been taken out in consequence of his having received information that the defendant had advised parties that it was not necessary to make a report as to the state of the cattle, which was very detrimental in their carrying out the provisions of the Act.

*Mr. Stedman*, defendant in the last case, said he knew the defendant. He attended his cows during the time they were diseased. Told him that

Mr. Martin, the Inspector, had been, and had told them that they ought to have given notice. Mr. Manning said there was no necessity of giving further notice, that it was all right, and that he would take the responsibility on his own shoulders.

By Mr. Merritt—Could not say what day this conversation took place; it was about a month ago; before the 12th Nov. that he had spoken to Mr. Manning.

By Mr. Prall.—At the time he spoke to Mr. Manning did not know that it was necessary to give notice; first knew that it was so when the Inspector produced his book. Mr. Martin had been over before he (witness) had the conversation with Mr. Manning.

Mr. Prall said he had spoken warmly on the previous case, but he should speak more warmly on this occasion; he was astonished at this case having been brought forward. He spoke of the indignation his client felt at having been served with such a summons, which set forth that he wilfully aided and abetted the defendant Mr. Stedman, to commit the offence with which he had been charged. He referred to the ability of Mr. Manning, who had been with Mr. Fletcher, veterinary surgeon of Rochester, for twenty-seven years. He well knew and thoroughly understood his business. His client knew nothing about the notice, and how, he asked, could he be guilty of aiding and abetting in a case before he knew that it had taken place. He had no doubt but that the bench would, on considering the case, dismiss the summons.

The case was dismissed.

Captain Savage said if the advice had been given by the defendant at an earlier stage, he must have been convicted. He was cautioned not to give advice in future.

## SMITHFIELD CLUB CATTLE SHOW.

At the Cattle Show, which was held at the beginning of the past month in the Agricultural Hall, Islington, the following awards were made of the "Champion Plate" and "Silver Cups."

### CHAMPION PLATE.

A Piece of Plate, value £100, to the Exhibitor of the best Beast in the Show (Extra Stock included), to No. 211, Thomas Pulver, of Broughton, Kettering, Northampton.

A Piece of Plate, value £50, to the Exhibitor of the best Pen of Sheep in the Show, to No. 284, Lord Walsingham, of Merton Hall, Thetford, Norfolk.

### SILVER CUPS.

Silver Cup, value £40, to the Exhibitor, for the best Steer or Ox in any of the Classes, to No. 18, William Taylor, of Glynley, Westham, Sussex.

Silver Cup, value £40, to the Exhibitor, for the best Heifer or Cow in any of the Classes, to No. 29, Trevor Lee Senior, of Broughton House, Aylesbury, Bucks.

Silver Cup, value £20, to the Exhibitor, for the best pen of Leicesters, Cotswolds, Lincolns, Kentish, or other long-wooled breed, in any of the Classes, to No. 238, Lord Berners, of Keythorpe Hall, Leicester.

Silver Cup, value £20, to the Exhibitor, for the best pen of one year old Southdowns, Hampshire, or Wiltshire Downs, to No. 284, Lord Walsingham, of Merton Hall, Thetford, Norfolk.

Silver Cup, value £20, to the Exhibitor, for the best pen of one year old Shropshire, Oxfordshire, Cross-bred, or any other breed of Sheep (not specified

in Prize List) in any of the Classes, to No. 392, John Overman, of Burnham Sutton, Burnham Market, Norfolk.

Silver Cup, value £20, to the Exhibitor, for the best pen of Pigs in any of the Classes, to No. 440, A. Benjafield, of Stalbridge, Blandford, Dorsetshire.

## LIVE WEIGHTS OF THE CATTLE.

No.	Weight.			No.	Weight.			No.	Weight.		
	cwt.	qrs.	lbs.		cwt.	qr.	lbs.		cwt.	qrs.	lbs.
1	12	3	25	50	18	1	22	99	18	2	15
2	10	2	6	51	19	2	16	100			
3	10	3	25	52	18	3	21	101			
4	11	1	7	53				102	19	1	23
5	11	3	10	54				103			
6	9	3	18	55	19	0	22	104	23	2	21
7	10	2	26	56	20	0	0	105	16	2	15
8	12	3	1	57	17	3	5	106	18	1	7
9	11	1	6	58	19	3	8	107	17	2	10
10	13	2	7	59	21	2	10	108	15	3	16
11	13	0	26	60	20	2	11	109	14	1	4
12	15	2	6	61	17	1	7	110	15	0	0
13	14	3	20	62				111	14	1	12
14	12	0	20	63	14	0	17	112	15	0	10
15	16	0	6	64	13	3	24	113	17	2	16
16	17	0	19	65	15	1	0	114			
17	17	1	8	66	14	0	17	115	15	2	7
18	16	2	12	67	12	3	13	116	16	2	15
19	14	1	3	68				117	18	3	3
20	16	2	14	69	15	1	25	118			
21				70	15	3	17	119	17	0	10
22	17	1	24	71	16	3	21	120	19	0	6
23				72	17	1	17	121	21	0	27
24	16	2	1	73				122	17	3	22
25	13	3	14	74				123			
26	13	0	14	75	17	1	16	124	14	0	19
27	13	1	9	76				125	14	3	1
28	15	0	14	77	16	0	18	126	17	1	20
29	14	3	19	78	15	0	7	127	13	3	14
30	11	0	0	79	16	2	1	128	17	3	0
31	12	0	8	80	16	0	21	129	17	0	17
32	12	2	17	81	15	0	25	130			
33	13	3	23	82				131	22	3	2
34	15	1	20	83	17	1	7	132	20	2	0
35	15	0	5	84	15	2	9	133	19	0	1
36	12	0	25	85	18	1	12	134	19	3	16
37	12	0	19	86	18	0	14	135	16	3	8
38	14	1	6	87				136	14	2	1
39	16	3	27	88	16	1	22	137	13	0	0
40	14	3	20	89				138	16	0	7
41	17	0	15	90	16	3	8	139	14	2	10
42				91	17	3	4	140	13	3	25
43	17	2	13	92				141	13	1	7
44				93				142			
45				94	16	2	26	143	15	3	2
46	13	1	13	95				144	16	3	19
47	19	2	17	96	17	3	23	145			
48	22	0	8	97	19	3	20	146	15	0	14
49	20	2	18	98	18	2	9	147	15	3	4

No.	Weight.			No.	Weight.			No.	Weight.		
	cwt.	qrs.	lbs.		cwt.	qrs.	lbs.		cwt.	qrs.	lbs.
148	16	0	25	178	19	2	5	208	18	0	0
149	19	2	27	170	18	2	15	209			
150	17	3	17	180	18	1	13	210	20	1	3
151	14	1	9	181				211	20	3	14
152	14	2	2	182				212	17	3	26
153	16	2	8	183	13	0	26	213	15	3	0
154	14	3	13	184	18	0	27	214			
155	19	1	6	185	17	2	26	215	17	0	2
156	17	1	3	186	11	3	22	216	17	2	20
157	15	3	20	187	17	3	14	217	16	0	19
158	16	2	5	188	15	3	20	218	17	0	27
159	18	1	13	189				219	17	2	20
160	15	0	8	190	15	1	17	220	17	3	21
161	20	0	10	191				221			
162	16	2	14	192	20	1	17	222	20	1	18
163	11	3	6	193	17	2	12	223	15	2	22
164	17	1	23	194	18	0	20	224	14	0	17
165	16	2	6	195	18	1	13	225	16	3	6
166	17	3	5	196	20	1	18	226	17	2	0
167	13	3	26	197	14	3	13	227	14	2	10
168	12	1	1	198	21	0	8	228			
169	15	3	0	199				229	17	1	16
170	9	1	15	200	21	0	12	230	16	1	12
171	16	3	9	201	21	3	20	231	20	1	13
172	16	0	5	202	16	1	8	232	17	3	23
173	20	2	26	203	20	1	19	233	17	3	16
174	24	3	23	204	25	0	0	234			
175	18	3	27	205	17	2	9	235	16	2	5
176				206	20	3	12	236	13	0	7
177	19	0	11	207	16	0	0	237	13	0	2

## ARMY APPOINTMENTS.

WAR OFFICE, *Nov. 29th.*

ROYAL ARTILLERY—Acting Veterinary Surgeon, Benjamin Lucas Glover, to be Veterinary Surgeon.

## MISCELLANEA.

[We have been requested by Mr. J. Broad, M.R.C.V.S., of Bristol, to publish the following letter and accompanying extract.—EDS.]

The enclosed "extract" will be of interest to many English veterinarians who have been fortunate enough to pass any time at the *Ecole Imperiale Vétérinaire*. The *chef* of the *café* alluded to

was Mr. Feurety, who was well known to the English students resident at Alfort in 1863.

“MAISON ALFORT, Dec. 1 (5 a.m.).

“To sleep is simply impossible. Fort Charenton is making a dreadful row. The cold is intense, the gutters are frozen, and the rats are squeaking and scrimmaging in fine style under the floor of the billiard-room. This *café* was of some importance before war was declared; it was decorated with mirrors, which have been removed, thus leaving exposed to view the bare unpapered walls. My seven companions are stretched on mattresses, more or less bloody, on the benches, and on the floor. None of my friends have died of the cold, if snoring be a sign of life. The nasal concert holds its own against the guns of Fort Charenton. Exactly opposite to the *café* is the entrance gate of the celebrated ‘Imperial Veterinary School.’ The word ‘Imperial’ has been daubed over with yellow paint. Veterinary students have given place to about three hundred small-pox patients; so you must excuse my visiting *l’Ecole Imperiale Vétérinaire*. Everything looks gloomy. I wish that my friends would stop snoring for a few minutes, as then Fort Charenton might possibly awaken them. At last the drivers, who have slept with their horses, arrive to say that the waggons are ready. Mattresses are carried out; the landlady prepares hot wine and cuts some slices of bread. We are about to start. I must continue my letter this evening.”

## OBITUARY.

WILLIAM FIELD, M.R.C.V.S., of Secondfield, Yorkshire. His diploma bears date April 29, 1862.

Robert Duguid, M.R.C.V.S., of Udney, Aberdeenshire. His diploma bears date April 29, 1867.

Edward C. Collins, M.R.C.V.S., of the E.I.C., Madras. His diploma bears date Feb. 11, 1830.

Edmund C. Crowley, M.R.C.V.S., of the E.I.C., Madras. His diploma bears date May 15, 1845.

Daniel Cullimore, M.R.C.V.S., of the E.I.C., Madras. His diploma bears date May 17, 1828.

And Charles J. Dawson, M.R.C.V.S., of the E.I.C., Madras. His diploma bears date May 7, 1836.

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Communications and Cases.

ACORN-POISONING.

By Professors SIMONDS and BROWN.

SOME difficulty has been felt and expressed by practical men in reference to the use of the word "poisonous" as applied to acorns, which are universally recognised as valuable articles of food; it is alleged with truth that animals of various kinds eat acorns with impunity. Pigs particularly thrive upon them, even when they are allowed to eat them in unlimited quantities. Deer also consume them, and cattle eat them in ordinary seasons without being so markedly affected by them, unless from eating to excess, as to excite any attention.

It is, however, quite possible, and, indeed, not altogether improbable, that the ill effects of feeding on acorns may not always be so marked under ordinary conditions as to lead to an association of the effects with the real cause. Some farmers attribute the "kernels"—which are sometimes seen in the muscles of pigs in acorn districts—to the consumption of acorns. We have often met with enlargement and hardening of the lymphatic glands of pigs which have fed on these seeds, but we have no experimental evidence of the connection which is alleged to exist between the use of acorns for food and the production of a hard and "kernelly" state of the meat.

We have no intention to discuss the actual position which acorns assume in the food list; all the facts which have been adduced in proof of their value as provender we accept without any hesitation, but there are also other facts, equally well supported by evidence, not so generally received, relating to the effects of acorns on young cattle in certain seasons and under certain conditions, which will be considered in detail in the history of the disease of which acorns are the presumed cause.

In the autumn of 1868, and again in 1870, there occurred a fatal affection among cattle, apparently the result of the consumption of acorns, which in the two seasons referred to were very abundant after a long drought, when there was a great scarcity of herbage.

It has long been known that acorns are injurious to animals under certain conditions; hungry sheep have died soon after they have been turned into pastures where the nut has been plentiful, cattle have suffered from impactment of the husks in the omasum, and even pigs, which seem to live on acorns with impunity, are said to be affected with hardening of the muscles and the accumulation of small masses of indurated matter in the flesh, in consequence of frequent indulgence in their favorite food. The disease, however, to which we now refer under the name of acorn-poisoning is not due to accumulation of acorns in the stomach or intestines, and it is not the consequence of the astringent action of the food; on the contrary, the worst form of the malady is often developed after all the acorns have been digested or expelled from the system, and the most fatal phase of the malady is associated with dysentery instead of constipation.

During two outbreaks we have had opportunities of investigating the disease in various localities and under different circumstances, and we purpose to place on record as complete a history as the materials at command will enable us.

The first important question which demanded consideration at the outset of the inquiry had reference to the botanical and chemical position of the suspected aliment, and in answer to this query it will not be uninteresting to record the following remarks by our botanical contributor, Professor Buckman, in reference to the botany of the family to which the oaks belong:

“The genus *Quercus*, to which the oak is referred, is one possessing a large number of species, and most of these are apt to run into varieties. It belongs to the natural order *Amentaceæ*—the catkin family—so named from its cylindrical, oblong, or globular specks of unisexual flowers. In the oak the male flowers are arranged in slender pendulous catkins, whilst the female flowers consist of an involucre of small imbricated scales. The fruit is a nut or *acorn*, of an oblong or ovoid shape, protruding from a woody cup—*cupule*—formed of the enlarged scales.

The acorn-cup is, in our British forms, with which we have now more particularly to do, supported by a foot-stalk (*peduncle*) of variable length, which is accompanied by some

variations in the foot-stalks of the leaves (*petiole*), and these circumstances have given rise to great difference of opinion as to specific characters; some authors merging all into a single species, while others consider the differences named sufficient to warrant their separation into three distinct specific forms. We incline to the opinion that the points named are not sufficiently distinctive to warrant us in concluding our forms of oak as specifically distinct; at the same time we have no hesitation in asserting that there are at least three well-defined varieties, which may be shortly described as follows:

1. *QUERCUS ROBUR PEDUNCULATA* is readily distinguished in trees separated from each other by its robust habits, thick, knarled, twisted, and more or less horizontal branches. The leaves have comparatively few broad wavy indentations, and are set on with a short leaf-stalk (*petiole*). The fruits (*acorns*) are situate on long foot-stalks (*petiole*), varying from two to upwards of four inches in length.

This is the typical British oak, which is general all over our island, though in some parts other forms prevail.

2. *QUERCUS ROBUR SESSILIFLORA* is generally of a more upright and formal habit, and limbs straighter and less knarled than in the *Q. robur pedunculata*. The leaf has deeper sinuosities, and is set on with a comparatively long *petiole*. The fruit, on the contrary, is so nearly *sessile* that it may be said to have little more than the indication of a peduncle.

This form, like the others, has been planted here and there all over the country. The most general distribution of this handsome tree, and the finest examples of it which have come under our observation, have been in Wyre Forest, and in Worcestershire, in which it is the prevailing form; Mr. Leighton states that it is abundant in Shropshire, and on the slopes of the hills on the Welsh border.

3. *QUERCUS ROBUR INTERMEDIA*.—This form is remarkable for having its fruits on short thick peduncles, barely exceeding an inch in length. Its leaves and other parts are so decidedly intermediate between the two forms mentioned above as to justify the name, and also the conclusion that all the forms named are only *varieties* of the *Quercus robur* or “British oak.”

The intermediate form can hardly claim an undisputed territory, but it occurs frequently in various districts about the Cotteswolds and the midland counties, but wherever we have seen it it has not been under conditions which would enable to point to it as indigenous to the locality.

The distinctions above given, though necessary to a

botanical description of the different oaks we meet with, are of no great importance in connection with the structure and quality of the fruit or "mast," which is very variable in shape and size, but in as far as we can make out pretty much alike in their chemical constituents and properties.

It is said that formerly the oak in Britain was chiefly valued on account of its acorns, and the value of land depended greatly upon the quantity of oak trees, and consequently oak mast, it would grow. Of late years, however, oak mast had scarcely a marketable value, but the seasons of drought in 1868 and 1870 has caused them to rise in public estimation. In the former of these years we could have purchased any quantity, and indeed we greedily availed ourselves of the opportunity. This year, though we advertised for them, we found that no proprietor would spare them, and they have been so jealously guarded that the usual "cadger" was not allowed to gather them.

As regards their value, our experience in 1868 afforded conclusive evidence. We then used them for all kinds of stock, but especially with pigs, and found them not only harmless but profitable.

We, however, find from experience that these, and indeed all kinds of fresh food, require, in the language of the Dorsetshire shepherd, *guiding*. A little should be given at first, but, however much, it should be given. Upon this point it will, perhaps, not be out of place to give an account of a visit to a neighbour.

Nov. 7, 1870.—Visited a farm in the neighbourhood of Yeovil, to inquire what was done with the quantity of oak mast grown during the past dry summer, of which they have always a large crop in hot dry summers. This farm is mostly in pasture, and the hedge-rows of the small fields and the fields themselves are thickly studded with fine trees of the common oak, *Quercus robur pedunculata*; the consequence is that this year, as it was in 1868, a great quantity of oak mast has been produced. On inquiries as to how it was utilised, we found that it was carefully gathered and stored in different buildings, and the mast was given in varied proportions to all kinds of animals, to sheep, horses, cattle, and pigs, for all of which a portion of bran was given with each feed of acorns.

This bran must be considered as being used with great judgment, as its laxative effects, no doubt, counteract the astringent properties of the gallic and tannic acids contained in the acorns. The astringency of acorns, indeed, is so well known that old women are in the habit of giving a grated acorn as a remedy for diarrhœa.

• Upon inquiry as to whether any mischief had been done to stock by their eating acorns, we were told that in a period of seven years only one or two sheep had suffered from eating, and it was significantly added "these were the poorest and most unhealthy of the flock;" and that only one case of actual death from acorns was believed to have taken place.

So much, indeed, was the farmer convinced of the value of acorns, that he asserted that, "notwithstanding the shortness of keep, the good crops of these would render the cost of keeping sheep *less than usual*." It would seem that in an unusually bad season a large crop of acorns has saved money which otherwise must have been spent in corn and cake; but we must not omit to mention that the tenant observed that "*he should like the farm better if it had no trees at all*."

On this farm no preparation of the acorns was made, but from our own experiments we came to the conclusion that allowing them to partially germinate (*malt*) increased their sweetness, and probably prevented costiveness by the development of sugar."

Respecting the chemical constitution of acorns, Professor Church wrote in the *Chamber of Agriculture Journal* in 1869 to this effect:

"The nutritive value of acorns which have been freed from their cups is by no means inconsiderable; starch, sugar, and oil make up together about half their weight, so that as regards these heat-giving and fat-forming food constituents acorns do not differ widely from some of the poorer kinds of cake. Their deficiency is in the so-called flesh-forming or nitrogenous constituents. Of these important substances recent analyses do not show more than, if so much as, five per cent. to be present in the whole acorn, a proportion which is less than one fourth of that existing in common cotton cake, and not one sixth of that contained in good rape cake.

"But if acorns can furnish only small amounts of these flesh formers, the value of their other feeding constituents must not be depreciated, for the peculiar sugar which they contain exists in notable proportion, about eight per cent., while the fixed oil which is also present in them has been variously estimated at from two and a half to five per cent.

"The drawbacks to the free use of acorns are to be traced to an entirely distinct set of substances; these impart to the seed its astringency and bitterness, and are made up of tannin, a volatile oil, and a bitter principle. Some chemists have extracted as much as nine per cent. of tannin from whole acorns. To destroy the astringency and bitterness,

the acorns are either buried in the earth or digested with wood ashes and water. By both these processes the astringent and injurious tannin is destroyed, being transformed chiefly into grape sugar and the comparatively innocuous substance known to chemists as gallic acid."

"Dr. Voelcker, in his report to the Royal Agricultural Society, refers to the use of acorns as food for pigs and sheep, and gives the following results of his analysis, in the fourth volume of the society's journal, part the second :

*"Composition of Acorns.*

"PROPORTIONS OF HUSKS AND KERNEL.

" Husks . . . . .	13.90
" Kernels . . . . .	86.10
	100.00

"One pound of fresh acorns were put aside for a few weeks, and the weight was found to have decreased to thirteen and a half ounces.

"The kernel, when analysed, was found to contain in 100 parts—

" Moisture . . . . .	40.88
Fatty matters . . . . .	2.64
*Albuminous compounds (flesh-forming matters) . . . . .	4.39
Starch, gum, sugar, &c. . . . .	46.74
Woody fibre (cellulose) . . . . .	3.94
Mineral matter (ash) . . . . .	1.41
	100.00

\* Containing nitrogen, .703

"Acorns, which are much relished by sheep and pigs, are sold in ordinary seasons to farmers in Hertfordshire and elsewhere at 1s. 3d. to 1s. 6d. per bushel, a bushel weighing about half a hundredweight. The proportion of flesh-forming or nitrogenous matters is very small, whilst that of starch and analogous fat-producing compounds is large. Acorn kernels contain but a small quantity of indigestible woody fibre, and are excellent fattening food for sheep.

"Their composition affords another proof of the fact that the economic value of food is much more dependent on the amount of available non-nitrogenous than on that of the nitrogenous compounds contained therein."

Dr. Voelcker takes no notice in his remarks on the feeding value of acorns of the presence of tannic acid, and its derivative gallic acid, which exist in acorns, but which would not be included among the alimentary constituents. The presence of both tannic and gallic acid in fresh acorns has

been demonstrated by many chemists, and it would appear that the act of boiling the seeds does not materially modify the reaction which is due to these constituents. The perchloride of iron acts as readily upon boiled as upon fresh acorns.

Of the existence of the acrid principle and the volatile oil referred to in the *Chamber of Agriculture Journal*, we have not succeeded in our attempts to obtain evidence. About half a hundredweight of acorns was distilled, and the resulting liquor, although possessing rather a pungent odour, did not contain any volatile oil; but a little solid fat, having the taste and smell of cocoa-nut oil floated on the surface.

The whole of the distilled liquor, amounting to about seven gallons, was given to a steer, in quantities of a gallon twice a day, but no harm resulted. In this experiment, as in others which were carried on, we were compelled to employ perfectly ripe and dry acorns. It is not unlikely that different effects might have been obtained from the use of the immature seeds.

Acorns in the unripe condition, it would seem, from the preponderance of the acrid and bitter taste, contain more of the astringent and bitter principles than those which are quite mature, in which state they acquire some sweetness and nuttiness of flavour; this fact will in some measure explain the occurrence of the greatest number of attacks in the early part of the acorn season. It is at least very probable that the process of ripening has as much influence upon the composition of the acorn as that of digestion in an alkaline solution, or as the partial germination of the seeds when they are buried in the ground.

In the letters which have been published in various journals much stress has been laid upon the consumption of the acorn-cups with the attached stalks, but in our experience these are not consumed to any extent. Neither the persons who collect acorns for profit nor the animals which seek them for food care to take the cups and stalks, and in walking over pastures in which cattle have been feeding, or from which acorns have been picked, we have always noticed an abundance of cups, while the acorns have been few and far between.

There is sufficient evidence that acorns, when eaten in excess, are indigestible. It is also satisfactorily proved that they possess an astringent action, which renders them, when properly prepared, medicinally valuable in diarrhœa; but the disease to which we have referred as "acorn-poisoning" is not indigestion, and the symptoms are not those which follow the employment of a powerful astringent.

(To be continued.)

## SYNOPTICAL OBSERVATIONS ON INJURIES, ETC., OCCURRING AMONGST ARMY HORSES.

By "HIPPOGRIFF," Royal Horse Artillery, India.

IN this chapter of accidents we shall meet with a diversity of matter which we hope to be able to render interesting by the relation of the common occurrences of our daily practice.

We are not prone to trouble ourselves much when we get into a climate that is not conducive either to manual or mental exertions, but we will nevertheless try to overcome our lethargy by contributing jottings from an outlandish corner of the earth, that *we*, at least, may profit by casting a retrospective glance over our experiences.

The horses of the army are perhaps liable to a greater variety of accidents and injuries than those of any other service, and in this country they suffer not the least in this respect, even in the time of peace.

No part of the body is exempt from the influence of forces which will cause abrasions, contusions, and wounds of every description, or a complication of these three forms of injury. Sprains of the joints and of the fibro-ligamentous and tendinous structures of the limbs are likewise almost as frequently to be met with as the former; and, comparatively speaking, as we may have occasion to note at some future time, fractures of the bones of the extremities are numerous. Fractures of the bones of the haunch and dislocation or luxation of the patella are likewise on our records. These may be all said to have been chiefly caused by kicks and falls; but we must particularize the causes to make them noteworthy, and mark results as we proceed.

Injuries, then, are sustained by falling, rubbing, or rolling against the pegs to which the head and heel-ropes are attached; by falling with great violence, after a horse has broken loose and is rushing madly about, on Macadamized or other roads, in which case there is a good deal of abrasion; by collision with the parapets of small bridges, corners of walls, and pillars of stables, round which horses attempt to turn when loose or running away. We have seen several horses run away with their riders, whom they have carried, at a fearful pace, into their own standings, doubling round the pillars in the most marvellous manner. A young horse ran off with a limber, in which he was being broken, crossed

two narrow bridges, and rushed into his own stall, between two other horses, where he fell and lay on his side until liberated. His injuries were complicated and severe. Other injuries are caused by collision with, and frightful upsets of, the guns whilst executing rapid movements over uneven and treacherous ground. A leading horse of a team of six stumbled and fell at a gallop; all fell over him, including drivers, gunners, limber, and gun; horses' legs, shafts, and spokes were intimately confused, and the kicking was terrific. Both men and horses escaped without fractures, but contusions, bruises, and abrasions were extensive. The same horse fell under the same circumstances a second time. Afterwards he was sold as unsafe, having always been addicted to stumbling, which could not be rectified. The gun-wheels often tear away the horn from the skin at the coronets, and we shall cite one case where the wheel tore the hoof completely away from its connecting structures.

Treads and overreaches are not uncommon after field-days, when turnings have been made quickly, and halts suddenly. On the march, especially if the country is a little hilly, the unequal pressure of the harness, particularly that of the saddles, produces abrasions and sometimes serous and even purulent abscesses on the withers and back, which, unless carefully tended, may become serious. We have had occasion to treat cases that have been neglected and become fistulous, after a long march, when there had been no veterinary medical officer in charge of the horses.

Horses may have worn their own saddles two or more years without in the least suffering at exercise or parade, but let them proceed on a month's march, and we are almost certain to get a number of cases of injured withers and back. Inordinate pressure of the bit on the upper edges of the inferior maxilla has given us some troublesome cases—mostly in horses with hard mouths. The continual pressure of heavy head-stalls, together with ponderous collar-chains, denudes the skin of its hair; and it may not be out of place to mention here that, in a battery of the 119th brigade, most of the head-stalls have parts in them more than an inch in thickness, perfectly rigid and inflexible, the average weight being seven pounds, or about it, exclusive, in some cases, of heavy chains, some of which also weighed seven pounds.

Often have we pointed out the advisability of substituting lighter head-stalls, and of having them made of good English leather, instead of the semi-tanned native leather they are made of, and as often have we been told, that "now they are made, they must be worn out." *Contracts will*

*not afford too much!* yet, seven out of every ten horses, when we noted it, had sore and denuded polls, or other effects of undue pressure. There were also several cases of indented nasal bones from the same cause.

The fans of the saddles, too, unless very well fitted to the horses' backs, often fret the skin so much as to prevent the animal being ridden. Horses that have much lateral action in their hind quarters, and those in low condition, are the most liable to this casualty; there are, however, other and auxiliary causes.

It is the exception to see a battery of horses come into a station, after one or two months' march, looking as they ought to. There may have been a scarcity of grass two or three months previously to starting (but as Government has not yet seen the necessity of providing for such emergencies, by stacking grass which should be cut at proper seasons, a scarcity of this kind of forage must occasionally exist), and the horses may have been thus thrown out of condition. Supposing six months' comparative idleness has made them fat, a march soon alters this, and reduces their obesity. Of the inclemency of the weather in India during the marching season we cannot complain. Though horses do, as a rule, lose condition on a march, we do not say it can be avoided, we only note it. At these times the chafing of the harness in different parts removes most of the hair it comes in contact with, and it is not until the new coat begins to grow that a ragged appearance is got rid of.

Wounds are not unfrequently produced in the angles of the mouth or lips, or on the gums, by incautiously putting on the watering bridle when its bit is so hot as not to be borne by the hand, from lying in the sun for hours. Where stables have been erected, these cases do not occur. Wounds from kicks with the heels or calkins of the shoes are generally found upon the front and inner aspects of the tibia. That this should be so may appear remarkable. The lesions, externally, are usually small; but in the parts where there is no muscular protection, and but a delicate dermal covering, bone is the tissue upon which the contusive force almost directly impinges; severe lameness results, and the wounds require a longer time to heal, comparatively speaking. Ninety per cent. of the horses we have had under our charge for the last three years have abraded marks or superficial wounds in those parts, which appear as concavities, during the standing posture, just above the tarsal joint on the outer side. The concavities become partial convexities when the hocks are flexed as in the recumbent posture, and by reason of an insufficient supply of bedding, are injured by contact with the

bare ground every time the horse lies down. Bedding is always reported to be a scarce article; it may be, or it may not be, yet we can manage to supply our private horses, but what does it matter in troop horses? Who objects to seeing, day after day, such an unsightly appearance as ninety per cent. of abraded hocks? We point it out, and there our duty ends.

Injuries by cutting on the inside the fore-leg by the opposite hoof, not by the shoe or clench, are obviated by constantly wearing leathern guards. Attention to shoeing does not, as a rule, rectify cases of this description. Extensive wounds in the knees are of rare occurrence, but superficial ones, from striking the front walls, are more frequent. Sometimes they result from hitting the mud walls whilst jumping.

We witnessed a case of partial tenotomy occur when a horse was jumping a three-foot wall at riding drill. He landed all right on his fore feet, but from some cause or other the toe of one hind foot came down heavily on the fore leg of the same side, cutting through the skin and three parts through the tendon of the flexor pedis perforatus, four inches above the fetlock joint, in a transverse direction. Extreme lameness was the immediate result, and total incapacity for military service the ultimatum. Another horse, not Government property, got out of his box, and in galloping over some uneven waste ground, overgrown with grass, brought his off hind leg forcibly on to the exposed end of a broken wine-bottle that was sticking in the soil. Both tendons and the long superior sessamoideal ligament were entirely severed, and the bone itself bore the mark of the bottle. The wound was transversely cut four inches above the fetlock. The hæmorrhage was extensive, the blood-vessels having been divided. As will be imagined, the horse was shot.

Wounds of the feet have arisen from treading on the sharp loose stones that lie about neglected Macadamized roads—we do not mean roads that are *not used*, but those that are not repaired, as they should be, by frequent watering and rolling during the hot and dry months. One piece of road, say 150 yards, is travelled over at least four times a day by more than three hundred horses, therefore it is being continually hacked up by about 5,000 horseshoes daily. Such has been the case for many months, and the road now is perfectly dangerous. Duty drew attention to this thing last year, and it was rectified; duty pointed it out this year, but the evil remains. In this part of India we do not get rains periodically; the whole summer is dry, so that roads

upon which there is much traffic, of horses especially, must fall into a bad state.

Injuries to the frog by the punctures of loose nails, pieces of bone, and, in the hunting season, of the cut stubby ends of the cotton plant, are cases now and then met with. On many occasions we have known the shoes to have been violently wrenched and so far disturbed as to bring the point of the clip in contact with the under surface of the sole, which it has penetrated at the next step, and caused a simple wound. An inferior quality of iron has not unfrequently been used in making nails, which, when driven, have split into two or more pieces, which have run in different directions. We have often traced lameness and suppuration in the tissues of the foot to this cause, and have ourselves removed the iron fragment from the foot. It has been thought that this cause, though productive of no suppuration, may have been at the bottom of many obscure lamenesses we have met with.

The term *corn*, simple or suppurative, has become obsolete in our nomenclature, not only on account of its conveying an erroneous idea, but also on account of its very rare occurrence. The term, like others equally inexpressive and unprofessional, is still retained, as in Appendix No. 7 of 'The Regulations for the performance of Veterinary Duties, 1856.'

We sometimes do get extravasation of blood into the interstices of the whole sole from severe contusion (case under treatment now), but we do not call it *corn*, though it is only an exaggerated form of a similar condition found more frequently within the inflected angle of the inner heel of the crust. We do not remember meeting with one of these latter cases within the past two and a half years in a trooper, but we have in chargers, their owners' treatment predisposing the feet for this, as well as for many other abnormal conditions.

As we are speaking about the foot, a few other remarks may not be out of place. That solution of continuity in the longitudinal fibrous arrangement of the hoof known as "sanderack" occurs in these parts of India, usually during the latter third of December and throughout January, when the weather is cold and rainy, or when a change is taking place from the dry to the humid state of the atmosphere. We were not a little surprised at this, as we had been taught to believe that sanderack was a condition peculiar to an opposite character of circumstances. Respecting causes, there must be a combination, though the inquisitive always ask for *the cause*, as in most other affections.

That there are many predisposing causes due to some congenital or hereditary taint there can be no doubt; if it were not so we should be unable to account for many narrow and upright, weak, flat, ribbed, fluted, and brittle hoofs that are to be seen every day; all these kinds of feet do not result from negligence and a bad system of shoeing, neither are they always brought to a normal condition by due attention, and the best system of shoeing. Domestication, with its usages, requirements, and negligences, may have been the primary causes of those we have called hereditary, but we must not blame shoeing for producing such effects as we cannot always otherwise account for; true, it has been the source of the greatest amount of mischief accruing to horses' feet, and it is, even in these enlightened times, a system that requires careful supervision in the army as well as out of it. Among other predisposing causes, change of weather and climate must be classed; a change from heat and dryness to coldness and moisture was found to immediately precede many cases of sandcrack in troop horses as well as chargers, particularly in the latter, in December and January; the same thing occurred the following year, and many of the same horses were again affected. The exciting cause in these cases was a sharp gallop over hard ground. Most cases are noticed after work or parade, some come in lame and bleeding, others lame, but not bleeding. One horse had a sandcrack on every foot, another had them on the inside and outside the same foot; but, as is known, the inner quarter of the hoof is the usual seat. We believe sandcracks have resulted from a violent twist or wrench, judging from collateral evidences.

It is not uncommon to see the skin at the front of the coronet of the fore feet cleanly separated from the horn, the extent of the lesion varying according to the severity of the accident or injury. Such has occurred when a horse has struck his toe against the ground and thrown the whole weight of his body on the front of the foot whilst in a flexed position. A gun or waggon when passing quickly over the upper part of the hoof has produced a like effect. Unless the skin is injured, lameness and bleeding are seldom observed. Rest sets all right in a fortnight; sometimes it is necessary to remove the detached horn. Rest would also suffice for the cure or relief of sandcracks, but subsequent to fomentations or poultices, when required, mild stimulants to the coronet will expedite a cure, and perhaps tend to the secretion of an improved quality of horn. Firing the hoof under and driving a nail horizontally through the lesion add injury to injury.

We question whether any particular kind of shoeing is very effective as a curative agent; it may be useful after an uninterrupted circle of horn has commenced to grow to prevent a recurrence or any extension into the newly formed structure, together with the use of a leather compress, or one of some other material.

Many ordinary cases have done well without shoes. The removal of pressure from the affected part is said to be beneficial by notching the hoof just above the shoe under the direction of the crack. On this point our experience makes us sceptically inclined. We fancy that in one case we saw benefit result from the use of a shoe fitted to the outside of the hoof like a hoop, only open at the posterior part. The shoe was very difficult both to make and fit; the nails were driven from the outside and above downwards, and clenched underneath. It remained on a month, and was then removed for the examination of the foot. Though the horse had walking exercise twice daily, the shoe was not disturbed.

Luxation of the patella occurred twice in the same horse in an upward direction, and once in another horse; how to account for these cases we cannot say, but it is not unlikely that the heel ropes, in constraining the movements of the hind limbs when a horse is rising from the recumbent posture, may have had something to do in causing them. More of heel-ropes shortly. Luxation was reduced by forcing the horses to move suddenly and sharply after the affected parts had been well hand-rubbed—summary, but effectual treatment.

Fracture of the patella, with a relation of other fractures, will form the matter for a subsequent paper.

*Head-ropes and chains; heel-ropes and chains.*—Respecting the former, there is not much to report, but respecting the latter, we must apologise for being lengthy. Most Government horses in India are secured by single hempen ropes attached by hooks to the head stalls, and to pegs firmly driven in the ground in front of them; vicious horses are generally secured by two head-ropes, or by two head-chains running right and left from the head stall to the pegs.

Each horse of *our* battery is secured by a chain, which averages 3 lb. weight. A horse fastened by two chains had  $9\frac{1}{2}$  lb. hanging to his head, including a head stall and a collar; another, secured with a rope and simple head stall, carried  $3\frac{3}{4}$  lb. only. We have before alluded to a head stall and chain weighing about 14 lb. For these differences in the weight of the stable head gear there is no necessity. *We often wonder whether the employment of head and heel chains*

*effects a saving in contracts by being more durable than rope ; no doubt they do, but Government is no gainer.*

A commissariat mule's head-chain weighs 6 lb., head stall  $1\frac{1}{2}$  lb., and heel-chains 5 lb. As the troop horses have to feed off the ground, there is a liability to their legs being severely injured by head-rope or chain, the latter causing the greatest amount of tumefaction and excoriation in the heels and posterior parts of the legs. For many reasons ropes should be used and chains discarded.

A heel-rope is usually about three yards long, one end attached to a peg that distance behind the horse when he is feeding, the other end attached by a padded leather loop to the coronet. One of this description may be fastened to each hind leg and run to the same peg, but it is usual to see a single rope bifurcate at four, five, or six feet from the peg, a branch going to each heel. The battery that uses chains in front uses chains for the heels, each weighing about 6 lb. Twenty-five horses out of 130 were secured by double *chains*, a pair weighing 12 lb. Fifty-four out of 142 horses were fastened by double *ropes*, the remainder by single ones. If it be necessary to secure horses' heels, rope, and not chain, should be employed. Heel-ropes not only require less carriage on the march than heel-chains, but they are less likely to produce such serious injuries.

We consider that the employment of heel-ropes is a most reprehensible practice, particularly as the system is carried to an unreasonable extent. The ends that heel-ropes are supposed to serve are, to economise space, to allow of horses standing near each other without any intervening wall or other protection, to prevent accidents, and to maintain an uniform appearance along the lines. The first question we were asked on coming to India by an officer commanding a cavalry regiment was, "Don't you admire the regularity with which the horses are picketed as compared with the custom in England?" We did. However, a short experience has taught us to admire much more the horses standing in irregular positions, but in comfortable attitudes.

Heel-ropes or chains constrain and confine the movements of a horse; he has not the free use of his limbs, in consequence of which he is often unable to assist himself; in getting up and in rolling we have seen horses struggle violently and injure themselves, because their legs were fast. It is not an uncommon practice to shorten the head and heel ropes, by hitching them round their respective pegs, so much as to prevent the possibility of a horse moving, unless he plunges and draws one of the pegs; whilst being groomed,

sometimes they are only partially unhitched, and there the poor animal may stand for hours, almost unable to reach his feed, excepting out of a nose bag.

It is quite painful to look down a line of horses when they are feeding out of earthen vessels set in the walls in front of them. They are compelled to extend themselves to the utmost, often standing on their hind toes, or with one hind-leg elevated. Where there are no stables, our troop horses are exposed to the intense heat of the sun, without a chance of altering their positions; those standing with their heads to the sun must remain so. We have seen their skins blistered by such exposure.

Heel-ropes, as experience has proved, can be dispensed with to a great extent, especially if the regulated interval between horses be sacrificed, and a little more room allowed. Inveterate kickers, and animals otherwise vicious, may be considered exceptional cases, and be secured by heel-ropes, as is the case in a battery we had under our charge. Amongst its 110 horses, injuries of every description were fewer than amongst the same number in four other batteries. There was not a single case of fracture in two years from kicks, but in the other cases there were. Almost all the troop horses are geldings at the present time. In former days this was not so, and heel-ropes were indispensable.

Horses never stand in their places as we would fix them; they dispose themselves with regard to their own comfort. It is bad enough to be tied by the head from morning to night and from night till morning, but it is worse to have the legs tied down as well. The limited space of our horse infirmaries compels us to countenance the practice we are decrying. The infirmary at this station will shelter nineteen horses. There are only four boxes, of all shapes and sizes, which are quite inadequate for the comfort of the sick and lame out of 466 troopers, the complement of two batteries of horse and one of field artillery, exclusive of head-quarters', staff, and other horses. We have found heel-ropes of service in affording the operator a certain amount of protection. When horses are secured by one or both heels, they acquire the habit of kicking upwards with the hind quarters for the purpose of liberating themselves by drawing the peg. A succession of arrestations in this movement and jerks downwards has produced injuries of various descriptions, particularly to the legs. If a horse succeeds in drawing the hind peg, he will sometimes rein back and draw the head-rope peg, and break away with all these ropes or chains and pegs flying about his body and legs. Should he escape a fall, he is

brought to a stand by reason of the ropes hitching round his legs. During the night a horse gets his head liberated and tries to break away, but he is checked by the heel-ropes. Perhaps he will turn round the pillar, into the next standing, on the corner of which he is certain to chafe the inside of the the hock and leg if he turns to his right, and the inside of left right hock if he turns to the left—that is, supposing the outer leg to be the only one secured. There are two cases under treatment now from this cause, much tumefied and excoriated.

By exerting a more or less continued strain upon the hind quarters, heel-ropes have a prejudicial influence upon the structures which enter into the formation of the hock joint, as well as upon other parts of the hind extremities. We will digress for a moment to give an extract from the 'Indian Public Opinion' on the Rawul Pindee horse fair of 1868:—“We cannot but lament, at the same time, the enormous proportion that the unsound bear to the sound horses. The system of sharp bits and *terribly tight heel-ropes* (supplemented in a great many cases by other cords that bind together the fore feet) tells a very plain tale upon the frame and constitution of the young horses brought up for sale. We do not think we are in any way exaggerating when we say that *at least* two thirds of the three- and four-year-olds were *more or less unsound in the hocks*. This is a very serious matter, for whatever exertions may be made by Government for the amelioration of the country bred, and even if, as far as regards blood, bone, and symmetry, these exertions are eventually successful, the whole of the benefit will be at once nullified by the stock having been ridden too early and *tied up too tight*, and thus becoming unsound and useless before they arrive at an age when they should be just commencing to repay expenses.”

At this fair we assisted in the examinations of the whole of the horses, amounting to about 450, and are able to go a step further than the author of the above, and to say that three fourths of the horses were unsound from exostosis, &c., in their hocks. By way of consulting the feelings of the native breeder, every animal was examined, no matter whether he was deformed or lame on three legs. Our notes at the time say that there were not 5 per cent. with sound hocks, that heel-ropes, which are worn from the time the colt or filly is weaned, by exerting undue and unnatural strain or tension on the hind legs, are the chief causes of disease in the tarsal joints. Though this is so, it is perfectly astounding to see such a small amount of lameness. We have seen hind legs malformed from

the pernicious employment of heel-ropes. In one case the hock had no angle at its anterior aspect; from the femoro-tibial articulation to the coronet there was no deviation from a straight line; in other cases the same condition was less obvious. The practice alters the shape of the feet to some extent, more particularly the hind ones, so that in the course of time the hoofs become very perpendicular. If the use of heel-ropes does not produce ossification of the fibrous tissues about the coronets or exostoses in the same region, we must conclude that the development of these diseases is accelerated by their influence. It is not intended to be conveyed that troop horses suffer to this extent, but that they do become unserviceable from injuries received when secured by heel-ropes we shall proceed to point out.

Horse No. 1, in attempting to bite his neighbour on the left, sprang furiously and suddenly forward, and at the same time in a lateral direction. The heel-rope, which was attached to his near hind leg only, being too short to admit of such extensive motion as was required, gave him a check and caused him to be thrown bodily over on his left side. He fell with great force on the trochanterian protuberance, and an extensive fracture of the bones composing the left side of the haunch was sustained. The animal was destroyed.

Horse No. 2 slipped in a wet stall with his off hind leg, and in trying to save himself with his left leg, which was the only one fastened by a heel-rope, he was suddenly checked, and fell over heavily on the right trochanter major, and a fracture of the right os innominata was sustained. This horse was also destroyed.

Horse No. 3 ran back, whilst being saddled, to the extent of the heel-ropes, and was thrown over, falling on the right trochanterian eminence; the right hip-bones were fractured. In no case was the head of the femur fractured, but in every case the fractures radiated irregularly from the centre of the acetabulum, and were very extensive and comminuted. As a matter of course, the softer tissues were much lacerated.

Heel-ropes cause minor injuries, to which we need not allude.

For the purposes of drainage of all kinds the slant of the floors of our stables in India is much greater than that of the floors in England. In stables which have the advantage of roofs, the incline of the floors, which are chiefly earth and sand, is often so steep as to render it very uncomfortable for horses with their heels tied. Under these circumstances, when a horse wishes to stand comfortably, and to rest first one hind leg and then the other, he reins back to the end of

his head rope, and places himself as obliquely as the heel-ropes will allow of. When he is not trammelled he will stand invariably across the stall.

This unnecessary slant, together with the heel ropes, has been a prolific cause of injury to the ulnarean and calcanean prominences and the bursal sacs in their region, more frequently, however, to the former protuberance. We cannot ever complain of "shoeing" being a cause of "capped elbow."

*(To be continued.)*

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## THE PRINCIPLES OF BOTANY.

By Professor JAMES BUCKMAN, F.L.S., F.G.S., &c.

*(Continued from p. 15.)*

HAVING already considered the cereal or grain-producing corn-grasses, we would now direct attention to the herbaceous, meadow and pasture grasses.

When we consider that the peculiarities of our climate render possible the growth of meadows of the greenest and most succulent herbage of a more luxuriant character than that of any other country, and also that so much of the food products of man and the animals under his charge are derived from the meadows, we may well conclude that grasses are among the most important of plants.

We have said that this is due to "peculiarities of climate," and if anything were wanting to prove this position it may surely be found in a short consideration of the exceptional climatic conditions which prevailed during the past year and their effects upon produce of all kinds.

During the summer of 1870 both hay and aftermath were reduced to a minimum, with the inevitable result that in dairy districts the produce of cheese and butter, mostly so much in excess as to contribute to the supply of the metropolis and the neighbouring towns and truly agrarian parishes, has scarcely been sufficient for the district itself. Meadows capable of carrying hundreds of head of stock upon aftermath in the autumn were tenantless, or if obliged to be occupied, the poor animals—few and far between—could only be maintained in health by the use of hay, corn, or cake, or all of these. So that, indeed, instead of exporting food for the people, corn, and especially maize, has been obliged to be imported in large quantities. Having, then, to pay for these products

merely to keep stock alive, instead of getting his profit from the soil, has been a serious matter for farmers lately, and if such conditions of climate prevailed for several seasons it would materially affect the wealth of this country.

It has been said that in no part of the world can such green turf be grown as in England; the past year, however, made our turf more like that of America and the warmer summer climates of Europe, and if it continued it might perhaps render possible the cultivation of the vine, maize, and yams of other countries as a compensation for the loss of grasses.

Grasses in England, though they are numerically a long list, yet contain but a small proportion of really good feeding species, and it is curious to note that on the analysis of a good meadow scarcely a dozen species will make up the bulk of the pasture. Of course in a tribe of plants so numerous, and in which distinctive characters are founded upon minute particulars, much difference of opinion will exist in regard to both genera and species. We may, however, state, as near the mark, that our native species are about 125 in number, referable to forty-three genera. Of these it may be stated, that while as many as forty species commonly occur in meadows, yet that only about twelve of these are of real feeding value. The rest then being, if not of hurtful quality, at best can only be considered as diluents.

It may be laid down as a postulate that these forty species may be found very widely extended in meadows; indeed, they occur from one end of the country to the other, but they occur in different proportions, *e.g.* about four fifths of the produce of a meadow in good heart and condition will be composed of nutritious species of grasses, and such meadow will produce a large crop of hay *and* grass, or grass *or* hay.

About four fifths of a *bad* meadow will consist of poor or weed-grasses, and the yield will always be small.

If, then, we take the produce of a good meadow to be in hay *up* to two tons, we may calculate that of the bad one *down* to as little as five hundredweight per acre, and thus the variation of grass land from 10s. to 6l. per acre can be well understood.

From observing these facts we may at once arrive at an estimate of the condition of a meadow.

If good species prevail and grow well, to the negation of the bad, we know the pasture to be in good heart. If down in condition, the reverse is the case. There is, then, always waging a war of extermination in a grass field, either the rich overmastering the poor, or the reverse, a proper know-

ledge and observation of which will enable any one conversant with the subject to estimate the value of a meadow with the utmost nicety.

Our natural grasses, as distinct from the cereal or cultivated and derivative corn grasses, may be conveniently grouped as follows :

1. *Jungle*, or Bush Grasses.
2. *Marine*, or Sea-side Grasses.
3. *Aquatic*, or Water Grasses.
4. *Meadow*, or Pasture Grasses.
5. *Agrarian*, or Fallow Grasses.

Of these the first three groups are such as may be found in the positions indicated. The species for the most part consist of interesting and large examples, which, however, do not usually afford pasturage, at the same they form covert and often yield seeds to different kinds of birds.

As regards the first, as soon as the forest is cleared they die off, so the marine examples require the vicinage of marine conditions, whilst the third group so far trench upon the meadow as to prefer wet places and swamps in the same. Their presence then at once indicates a want of drainage, the effectual working of which can be predicated by the dying out of the aquatic species. It is in this way that the advance of cultivation has utterly destroyed the wilder species, many of which are not found in districts they once occupied.

As regards our fourth group, these may be subdivided according to the kind and quality of a meadow, as thus we may have—

1. *Upland pastures*, thin soils or moorlands, the worst of these being scarcely worthy the name of meadow.

2. *Poor clays*, many of which may be much improved by care and cultivation.

3. *Rich loams*, including some of the best grass land.

4. *Flooded meadows*, those on river banks subject to occasional floods.

5. *Irrigated meadows*, in which water can be conducted through the grass at pleasure.

That pastures in these positions are different in value will be gathered from the fact that the quantity and quality of the herbage upon them varies very considerably, and consequently the rent charge for them is highly variable.

These two last items, however, are dependent upon the proportionals of the different kinds of grasses *proper*—to say nothing of other herbage—which enter into the composition of the produce.

These facts are attempted to be epitomised in the following table, the results of which must, of course, be looked upon as liable to great variations, according to circumstances, as it is not unusual to find on the same soil, with the same geological subsoil, an occasional oasis in a desert of poor pasture; but as this is due to exceptional cultivation, it can hardly be appealed to as upsetting the more general fact. We might, however, conclude from such cases that the intelligent cultivator has it frequently in his power in future to "make two blades of grass grow where one grew before."

*Table of Relative Value of Pasture.*

	Number of prevailing species.	Proportional quantity.	Hay, per acre.	Rent charge, per acre.
1. Upland pasture (moorlands)	15	16	—	10/-
2. Poor clays . . . .	11	16	10	15/-
3. Rich loams . . . .	13	19	15	25/-
4. Flooded meadow . .	13	23	25	30/-
5. Irrigated meadow . .	13	25	Cwt. 30/- Cwt. 40/-	40/- 100/-

Nothing can more clearly show the variation of the species of grasses according to the condition of the soil than an examination of half a dozen of the commoner species as they affect different soils. Taking, then, the five kinds of soil as indicated in the above table, we now endeavour to allocate the six following species in their distribution and proportionals amongst them, these figures having reference to the relative mass of the kinds tabulated.

*Table of Proportionals of Species of Grass.*

Botanical name.	Trivial name.	Uplands.	Poor clays.	Loams.	Flooded meadow.	Irrigated meadow.
1. <i>Alopecurus pratensis</i>	Meadow foxtail grass	—	1	2	2	3
2. <i>Phleum pratense</i>	Timothy grass	—	2	2	1	2
3. <i>Poa pratensis</i>	Meadow grass	1	1	2	1	3
4. <i>Avena flavescens</i>	Yellow oat grass	—	—	1	1	2
5. <i>Lolium perenne</i>	Perennial rye grass	1	1	3	2	2
6. <i>Briza media</i>	Quaking grass	1	2	—	—	—

Now, if we look to the last grass of this table, the *Briza media*, we find it only in two positions out of the five, and

these the two poorest of all. The grass itself is perfectly valueless as fodder, at the same time the botanist and the scientific farmer well knows it to be an indication of poverty, and we cannot help wishing that the veterinarian practitioner possessed this kind of knowledge, as it might indicate to him, as it frequently has to us, the reason why cattle, it may be, are affected with scour upon pastures with the poorer grasses, which we immediately cure by removal to more healthy pasture.

But it should also indicate how the pasture itself may be ameliorated. Farmers often speak of *sour* grasses, but when they do so they are far from meaning that they have acid in them. Still, herbage, as being innutritious, so far causes acidity, inasmuch as it does not properly digest, and hence much of distension and kindred complaints may arise. These matters of the nutritive value of grasses will be discussed in our next.

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## REMARKS ON A CASE OF PYÆMIA.

By A. E. A. LAURENCE, Bristol General Hospital.

SEEING a case in your Journal for January which Mr. Sansom has recorded as pyæmia, you will probably excuse a few remarks from me on his opinion of the malady. From the symptoms detailed, it is to my mind a clear case of diffused cellular inflammation, arising, no doubt, in the first place, from some injury to the cellular tissue beneath the skin, which was followed by the exudation of inflammatory products to such an extent as to press up the skin, separating it from its source of nourishment, and causing in consequence sloughing of it in places to allow the escape of the inflammatory exudation, plus the *debris* of the cellular tissue in the form of shreddy pus, three parts breaking down first, which were more remote from the centre of circulation, and whose blood supply and nutrition would not be so well carried on as parts in the neighbourhood of larger vessels.

The treatment in the human subject (and I see no reason why it should not be the same in animals) would be to make incisions about one inch long in various places on the limb, to relieve the tension of the skin and to allow the escape of the material exuded as a consequence of the inflammation.

After the incisions warm fomentations, good food, rest, &c.,

and, for medicine, iron. I have been led to make these few remarks, for I see no reason why there should not be the same analogy in pyæmia which I know exists in many diseases between man and the lower animals; for having studied the veterinary profession myself for three years, I am enabled now, and have been for the last three years, to notice in my clinical study the close analogy which exists between the morbid processes of men and animals. I cannot take up your valuable space by giving an outline of the symptoms of pyæmia, which would show at once that the case in question could not have been of that nature, for the essential elements in pyæmia are a low and depressed state of health; an unhealthy suppurating wound; a clot formed in the veins in the vicinity of the wound, the clot breaking down and passing into the circulation, and being stopped in the capillary circulation, especially of the lungs and liver, and forming centres for various abscesses. The disease usually terminates fatally. If recovery does take place, it is only after a very long time. You never have pyæmic abscesses confined to the limb injured.

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## TUITION IN OUR VETERINARY SCHOOLS.

By "Beta," Student at the Royal Veterinary College.

WITH reference to a letter from "A Student" in the *Veterinarian* of last month on the above subject, I desire to express my agreement with his statements in very many points. No one can have a doubt of the great necessity which exists for a practical knowledge of the use of chemicals, drugs, compounds, &c.; and without working in the laboratory how, I ask, are we to obtain that knowledge?

As to the anatomical and dissecting-room studies, without help we can, indeed, do very little. What a pitiful sight it is to see a beginner at work on his first "moke," cutting through insertions of muscles, &c., not knowing what he is doing. We ought undoubtedly to have a paid demonstrator. Why should our present assistant-professor demonstrate gratuitously, as I am told he does?

The remarks of "A Student" on the clinical instruction are quite to the point, and should be immediately acted upon. The subscribers to the College could have no objection to the name of the disease and the treatment to be adopted being posted. Indeed, it would be to their after benefit, should any student on obtaining his diploma get any of their horses to treat.

I am quite ready to admit that the clinical professors take every trouble to call the attention of the students to interesting cases ; but I would ask, how is it possible for so large a class to follow them through the stables and get near enough to hear their remarks ? The necessity of all operations being brought under our immediate notice must be evident to every one, and, as " A Student " observes, an operating theatre is most urgently needed.

I also quite coincide with his remarks as to the preliminary examinations, viz. that every student should have the same questions put to him.

There are many things in the present system which require alteration, and the sooner it is made the better. I feel sure that if the matter were properly represented to the authorities—the Governors of the College—they would at once see the necessity for the changes which have been spoken of, holding, as they do, our welfare in their hands.

## Pathological Contributions.

### CATTLE PLAGUE.

AT the close of the year Belgian Luxembourg was believed to be free from the cattle plague, the disease having been reported as effectually stamped out within a few weeks of its introduction from France. The risk, however, of its entrance into the province of Hainault in consequence of the progress of the German army in the Nord department of France, led the Belgian Government to despatch troops to the frontier to assist the customs' officers in preventing the fraudulent attempts which were being made to bring cattle over it. For this purpose Chimay, Beaumont, Erquelines, Dour, Peruwelz, and Tournai, were occupied by military, and the Government also ordered a census of the cattle to be taken in the several communes of the arrondissement of Tuin. On January 3rd a fresh case of the disease was reported at Corbion, near to Bouillon, and great fear was entertained that the plague might show itself at Virton and in the commune of Villers-devant-Orval in consequence of its existence in the contiguous French villages of Lafosse and Maigny. The latest intelligence from Belgium shows the plague to be on the increase in the province of Luxembourg and among other villages at Halanzuy near to Longwy.

Besides this reintroduction of the cattle plague into Belgium, and the further spread of the disease in the northern parts of

France, the malady is reported to have shown itself at Limours' about twenty miles south of Versailles.

Recent reports from eastern Europe also show that fresh outbreaks of the disease have taken place in Poland and Galicia, and that Transylvania still suffers from a continuance of the plague in the comitat of Hunyad.

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### PLEURO-PNEUMONIA.

WE have nothing very different to report respecting pleuro-pneumonia this month from last. The disease exists in thirty-five counties of Great Britain, and the centres of the infection number eighty-seven. One rather serious outbreak in Dorsetshire was traced to the purchase of some Irish beasts at Bristol market. The malady still prevails in the London dairies and in the environs of the metropolis.

With the exception of one animal imported at Thames-Haven from Rotterdam, no diseased cattle have been detected at any of the ports.

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### MOUTH AND FOOT DISEASE.

THE fluctuations in this disease continue in a somewhat remarkable manner, fresh outbreaks taking place in districts which were thought to have been effectually cleared of the malady, and a great increase of attacks occurring in some localities which have long suffered from the affection. Diseased pigs have been sent here from the Continent, and chiefly from Belgium. In each instance the animals have been killed at the landing place.

We observe from the local papers that more energy is being displayed on the part of the authorities in the proper carrying out of the regulations for the suppression of the disease.

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### SHEEP-POX.

THE accounts which have reached us from the Continent relative to sheep-pox are to the effect that the malady is still existing in the north of Europe, and that in the consular districts of Stettin and Köslin, in Pomerania, it is on the increase.

The greatest vigilance against the introduction of the disease is being exercised by the customs inspectors at the several ports, besides which it is satisfactory to know that all sheep coming from ports of the North German Confederation have to be killed at the place of landing. We may thus hope that our flocks will still be preserved from this fatal and loathsome malady.

## THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

“RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of December, 1870, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	NUMBER OF ANIMALS AFFECTED.					DISPOSAL.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered by Order of Customs.
Antwerp .	London	Foot-and-Mouth	...	38	...	28	66	66
”	”	Sheep-scab	...	2	...	...	2	2
Bremen .	”	Foot-and-Mouth	...	...	...	43	43	43
”	”	Sheep-scab	...	198	...	...	198	198
Geeste-munde .	”	Foot-and-Mouth	...	...	...	5	5	5
”	”	Sheep-scab	...	73	...	...	73	73
Hamburg .	”	”	...	6	...	...	6	6
”	Middlesborough	”	...	1	...	...	1	1
”	Newcastle-upon-Tyne	Foot-and-Mouth	2	...	...	...	2	2
Rotterdam	London	Pleuro-pneumonia	1	...	...	...	1	1
”	”	Foot-and-Mouth	...	...	...	46	46	46
Total . . .		Pleuro-pneumonia	1	...	...	...	1	1
” . . .		Foot-and-Mouth	2	38	...	122	162	162
” . . .		Sheep-scab	...	280	...	...	280	280
Total . . .			3	318	...	122	443	443

“ALEXANDER WILLIAMS,

“Privy Council Office,  
“Veterinary Department, 12th January, 1871.”

Secretary.

## SHEEP-SCAB.

SINCE our last report of this disease we find that an unusual large number of scabby sheep have been sent here from the Continent. They have chiefly come from Geestemunde and Bremen, but some have been exported from Antwerp and Ostend. In every instance the affected sheep have been slaughtered at the wharf. Scab is rife at this time among our home flocks and also in Ireland.

### Facts and Observations.

**THE BROWN BEQUEST.**—Negotiations now practically completed have finally secured, for the benefit of science and of humanity, the appropriation of this now important fund for the foundation of an Institute of Comparative Pathology, in which the diseases of animals will be studied in their relation to those of man, under the charge of accomplished experts. In the course of the eighteen years that the Brown legacy of £15,000 has accumulated, it has rolled up an actual capital of £35,000. The conditions of the bequest and the provisions of the Mortmain Act interposed so many difficulties that, had not great energy and liberality been shown by the medical members of the Senate of the University of London in combating the legal difficulties at every step, this fund would have reverted, under the eccentric conditions of the founder's will, to the odd purpose of teaching Welsh in the University of Dublin, where few people, we may suppose, would have cared to learn it. Rather than the valuable aid to science now secured should be lost, Dr. Quain, a member of the Senate, recently offered personally to present £2000 for the purchase of a site. Mr. Cunliffe, the well-known banker, has, however, since generously and spontaneously assumed this charge, and has vested in the hands of Dr. Sharpey and Dr. Quain, as trustees, the sum necessary for the purchase of a site, &c. This has been selected, and within no distant period we shall have in London an institution with an income of about £1500 a year, where the diseases of animals will be treated and studied, and which we may fairly expect to confer not only immediate and material benefits on the great agricultural interests of the country by the elucidation of the causes and relations of epizootic diseases, but probably greater if more remote advantages in the research after the intimate

causes and origin of disease in animals, in whom they can be most advantageously studied by methods calculated to shed light on the mysteries of disease in man.—*British Medical Journal*.

THE METROPOLITAN CATTLE CORDON.—*The Times* reports that memorials praying for the immediate removal of this cordon have been forwarded to the Privy Council from Canterbury, Folkestone, Horsham, Chatham, Ipswich, Brighton, Kingston, Hounslow, Dover, Maidenhead, Gravesend, Gosport, St. Alban's, Windsor, Dorking, Hastings, Chelmsford, Ramsgate, Tunbridge, Eastbourne, Reading, Guildford, Aberdeen, Norwich, and Northampton.

Conjointly with the forwarding of these memorials, a deputation from the Metropolitan Cattle Market waited upon the Earl De Grey, on Monday, January 16th, to urge the removal of the existing regulations. The deputation was introduced by Mr. Torrens, M.P.

Alluding to this subject, *The Echo* justly observes that, "If the restrictions on the home meat trade are sufficiently irksome to induce salesmen and butchers to interview the Government with a view to removing them, we may be quite sure that the public are still more interested, for it is the habit of such men to make the public pay for their inconveniences. But if dear meat be, as it doubtless is, a consequence of these restrictions, have we good security that people in general will get the benefit of their removal? And we would also suggest that, as the rinderpest is as near to us as France, the present may not be the most opportune moment for relaxing precautions."

KOUSSIN IN TÆNIA SOLIUM. — Professor Ditterich, of Munich, states, in the *Allg. Med. Cent. Zeit.*, Dec. 28th, 1870, that he has been very successful with koussin, the alkaloid of koussou, discovered by Pavet. It is a pity that this alkaloid is so very expensive, as no more than 3 per cent. can be obtained. The author has found it act in forty-grain doses, divided into two powders, to be taken in a wafer; and he thinks that none of the precautions customary with koussou are necessary. Koussin seems to have an aperient effect, and carries off the worm with the stools in three or four hours. Hence no castor oil is required. Professor Ditterich does not say a word about the head, but principally dwells upon the small dose necessary, and the absence of vomiting and nausea. The price of the dose is 6s., which certainly is not extravagant, when it is considered that, originally, the dose of koussou was advertised in Paris at 16s.—*Lancet*.

## THE VETERINARIAN, FEBRUARY 1, 1871.

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Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

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## THE PRACTICAL EXAMINATION.

DURING the discussion which occurred at the last special meeting of Council on the subject of the practical test to be applied at the forthcoming examination of candidates for the diploma of the Royal College of Veterinary Surgeons, Mr. W. Field succeeded in condensing the whole argument in the space of a sentence. It will be seen in the report of the special meeting which we publish, that the proposed rearrangement of the system of examinations has not escaped animadversion on the part at least of one influential member of council whose opinion is entitled to respect. Not to mince the matter, the proposed test has been plainly designated "a farce;" that is to say in prospective, the thing not having yet been tried. Mr. Field's response to this suggestion was in terms precise, and in spirit most temperate; he said, in reference to the examination "that whether it would result in a farce or no, it was for the Council to decide if it would go on with it. It had never yet been tried, and therefore none could say for certain what the result would be. The public wished for a practical test, and the profession at large were constantly asking for it; therefore it was most desirable, at all events, to make the attempt. If the examination did not give satisfaction it could afterwards be either altered or discontinued."

Nothing more needs to be said upon the matter in question. The system has to be tried very shortly, and if found to be impracticable or useless it can be abandoned. At the same time, without wishing to predicate the result of the experiment, we confess ourselves unable to perceive in what direction the difficulties lie. It is alleged that young men leave the Colleges as certificated members of the Veterinary profession fit and capable to practise the Veterinary art, and

who are, notwithstanding, incapable of performing the most common duties which practice entails in a proper manner. At present the examiners have no means of ascertaining whether a candidate understands the ordinary work of his profession or not, and it is only fair that an opportunity should be afforded them to test, as far as possible, the extent of his practical acquirements, as well as the amount of his scientific knowledge. Horses, cattle, and sheep are plentiful enough in London, and if the authorities at the Royal Veterinary College do not see fit to grant the use of the College for the purpose of the examination, there is the Metropolitan Market with its extensive lairs and stables, and there are also the largest horse slaughterers' establishments in the country, all within a few yards of each other; healthy and diseased subjects abound, and there is no probability that the supply will ever be exhausted. So far from apprehending failure we anticipate development. Not being at all radical in our tendencies, we are yet advocates for wise reform, and we see nothing in the contemplated measure which might not have been adopted long ago with benefit to the profession. The final examination must be made a real test of the candidates' efficiency; and it is chiefly by using the full power which it possesses in regard to the arrangement of the examinations that the Council can benefit the profession, and bring about an improved system of education.

Just now they have introduced a change which will be followed by a rearrangement of the whole system of the final examination. What we want in regard to it is not merely reform, but reconstruction.

Meanwhile, intending candidates for the diploma will do well to remember that the discussions which are still going on respecting the manner and place of the practical examination do not relate to the fact of the examination having been determined upon; their part is to prepare for the event,—no hardship, we imagine, as the examiners will not ask them to do more than they will be required to do the very moment they commence the practice of their profession.

## Extracts from British and Foreign Journals.

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### FOOT AND MOUTH DISEASE IN AMERICA.

WE regret to have to announce (says the *Cultivator and Country Gentleman*, published at Albany, N.S.) the appearance of this annoying and somewhat dangerous disease in this country. Secretary Harrison, at our request, kindly furnishes the following statement as to its nature and treatment, and the extent to which it is thus far known to prevail :

New York State Agricultural Society, Albany,  
*December 17th, 1870.*

“EDS.—The foot and mouth disease (epizootic apthæ) having unfortunately made its appearance in this country, it is proper that the public should be informed of its character and symptoms.

“This malady seems to have been unknown in Great Britain previous to the year 1839, and the volumes of the ‘Transactions of the Royal Agricultural Society of England’ for 1841, contains a very clear, concise report upon it, by the late Professor Sewell, summarising the information communicated by nearly 700 members of the society. The disease then attacked ‘all kinds of stock indiscriminately, even poultry, dogs, cats, and deer. Influenza, by some called distemper, catarrhs, and sore throats prevailed much among horses before the epidemic, during its prevalence, and after it had ceased, and pulmonary diseases, proving fatal in several cases.’ ‘One correspondent states that himself and all his family and domestics were attacked on the lips and in the mouth in consequence of using the milk of the diseased cows,’ and the following paragraphs of the report have been so entirely confirmed by recent experience, and are such plain and succinct statements of fact that no apology is needed for extracting them entire :

“‘The disease generally commenced in the mouths of bullocks, cows, and calves, by the appearance of blisters and ulcers on the tongue, and sore throats in some; the feet at the same time, or very soon after, became ulcerated, as also the palate, lips, and nose. It was accompanied by rigors or chills, succeeded by feverish heat. The noses and feet of pigs were attacked, but the feet only of sheep, except in a few instances in which the mouths were affected as in cattle. In dairy cows the teats became affected with pustules and

ulcers at the same time as the mouths; the udder subsequently became inflamed and tumefied, and abscesses were formed, terminating frequently in a total loss of milk, and, in less severe cases, in a diminution of quantity. The pregnant or in calf cows, and the barren cows were less violently affected; but cows having recently calved suffered most, more especially in the udders, from the formation of tumours and milk abscesses, constituting the disease commonly called garget; abscesses and ulcers also were formed in various parts of the limbs and body, especially the points bearing the animal's weight when lying down. At this stage of the disease it was often attended with so much fever and prostration of strength and constitutional debility, that the animal was incapable of rising or changing its position, which caused extensive ulcers, abscesses, and frequently death from irritation and exhaustion. A few cases of second attack are reported to have occurred, and even third attacks are mentioned; but these are exceptions. Upon the subsidence of the disease many cattle were attacked with cutaneous eruptions which usually yielded to the remedies employed in ordinary cases of mange.

“ ‘In the few post-mortem examinations that were made, a diseased state of some, and in others of all the vital organs appeared, and a marked inflammatory action had been general throughout the system. The epidemic disappeared in some farms and dairies in about a month, and in others extended to six months. The cattle that have suffered from this disease in the country are estimated to have been reduced in value five per cent., which is much below the London estimate, and dairy cows having newly calved are calculated to have lost thirty per cent. of their original value.’

“ Professor Sewell states also that weather and temperature seemed to have no influence on the disease, except that in warm weather there was more inflammation and fever.

“The journals of the Royal Agricultural Society of England for the years following contain no further allusion to this epizootic, and it would seem to have died out or to have been suppressed within a few years, and not to have appeared again in Great Britain until its importation in 1869.\* It then soon became very widely spread, and is up to the present time causing serious losses and annoyance in that country.

“It is not yet certainly known when the contagion was conveyed to America, but the disease has recently been ascer-

\* This inference is not in accordance with fact; the disease has never entirely disappeared since its introduction in 1839, and it prevailed extensively in 1840, 1845, 1852, 1861, 1862, as well as in 1869.—ED. FIELD.—*Field*, Jan. 4th, 1871.

tained to have appeared in Oneida county, in this State, before the first of October. There it seems to have as yet made no serious trouble, and not to have been much diffused. The reason of this may very probably be that almost all farmers are selling stock on account of the short hay crop, and not therefore bringing new stock to their farms.

“About the end of last month paragraphs appeared in the newspapers concerning the outbreak of an alarming cattle disease in the neighbourhood of Pawling, in Dutchess county; and upon the matter being taken in hand by Dr. Moreau Morris, one of the State Cattle Commissioners, the disease vaguely and ignorantly described in the newspaper paragraphs was ascertained to be the foot-and-mouth disease of Europe. The able and efficient assistant commissioner in charge of the district (Dr. de Salt Guernsey, of Amenia), at once instituted measures to prevent its spreading, but not before a good deal of mischief had been done.

“On the 5th inst. Dr. Guernsey reported about 115 cases in cattle and a few in other animals, and Professor Law, of Cornell University, who was with Dr. Guernsey on the 12th, states that there is quite a large number of additional cases, and that it has appeared in the human subject also in several cases, much as reported by Professor Sewell's correspondent in 1841. In one or two instances in which men have been affected, the characteristic blisters have appeared between the fingers, but usually only in the mouth. The towns in Dutchess county known to be infected are Pawling, Dover, Lagrange, and Amenia.

“It appears to be almost certain that the contagion was conveyed to Dutchess county by a drover, who finding, on his arrival at Albany with a lot of Canadian cattle, that they were sick and unsaleable, and being afraid to go to any large market, shipped the animals to Poughkeepsie, and drove them thence across (by way of Pawling and Dover) to New Milford and Kent, in Connecticut, where the disease, as Dr. Guernsey is informed, is spreading quite extensively. Professor Law found it also in Massachusetts, in the neighbourhood (if I understand him rightly in a hurried interview on 15th) of Framingham, and there also the introduction of the disease is attributed to Canadian cattle.

“Mr. Law recommends the prohibition of the importation of cattle from Canada until the disease shall have been got rid of there; and if this is immediately ordered, and the diseased herds are rigorously secluded and the buildings properly disinfected, we shall probably be out of danger in a few weeks. If, however, we continue importing fresh con-

tagion, there is no knowing when the end will be. As regards the means of communicating the disease, the opinion seems to be now generally accepted that the malady is strictly contagious only, not infectious—that is to say, that only actual contact with a diseased animal, or with the matter discharged from the sores, will convey the disease. For example, animals in a field adjoining that occupied by sick animals would certainly take it, but would be safe in a field on the opposite side of a road. Still great care is necessary, because the contagion may be carried upon the clothes or shoes of persons caring for sick animals, or by dogs or fowls or other animals running at large; and in England it has been found to be most frequently conveyed by sick cattle passing over and leaving the contagion upon the highway, to be communicated to animals that pass over it afterwards. So the dung and dirt shaking out of the cattle carts in motion is a source of danger; and nothing but thorough disinfection of stables, yards, and sheds in which sick cattle have lain, suffices to render them safe for other animals.

“Professor Law has furnished the following summary of the symptoms of the disease:

“‘1. For one or two days, dulness, loss of appetite (and of milk in cows); hot dry mouth, with a tendency to grind the teeth and to slaver; heat and tenderness of the udder and teats and of the feet, and frequent shaking of the feet as if to get rid of some irritating matter.

“‘2. On second day, abundant frothing at the mouth, loud smacking of the lips and tongue, lameness and the formation of blisters of various sizes (up to an inch across) on the mouth, udder, teats, and between the hoofs.

“‘3. In one or two days more these blisters burst, leaving raw sores and shreds of loose skin inside the upper lip, on the roof of the mouth and the tongue, on the teats and between the hoofs. These discharge an irritating fluid for some time, then scab over and heal up—in favorable cases in from ten to fifteen days.’

“As regards treatment, mild aperient and cooling medicines, but not purgatives, are indicated; bleeding is not to be resorted to in any case. The chief thing necessary is good nursing, and to support the animal with soft mashes and strong gruels, which it is usually necessary to pour down the throat, because during four or five days or more, the mouth is so sore that the animal will not eat. For an application to the sores, use a solution of two ounces of sulphate of zinc in a quart of water, or a mild carbolic acid preparation. The animals should be kept on dry ground, because

standing in mud and wet aggravates the disease, but in suitable weather they are best left out of doors.

“Whoever discovers the existence of the disease upon his farm or in his neighbourhood should immediately give notice to the State Cattle Commissioner nearest home. The Cattle Commissioners are Lewis F. Allen, P. O. address Buffalo; M. R. Patrick, Manlius, Onondaga Co.; and Dr. Moreau Morris, 301, Mott Street, New York.

“T. L. HARISON, *Secretary.*”

#### ANIMAL VACCINATION.

It is pretty conclusively shown by Mr. Simon, in one of his recently issued reports, that it is neither desirable nor necessary to introduce animal vaccination into this country, for the purpose of maintaining intact, or still further improving, our national vaccination. Mr. Simon relies mainly upon the facts obtained by Dr. Seaton in a special inquiry which he was desired to make in France, Belgium, and Holland during the autumn of 1869, and the results of which are printed in the appendix to Mr. Simon's report. Referring our readers for details to Dr. Seaton's report itself, we may here state the general conclusions to which they point.

Mr. Simon affirms that the system of animal vaccination has certain “great disadvantages,” and these are its various peculiar liabilities to failure:

First, that apparently even able and painstaking operators may find it impossible to transmit successive vaccination from calf to calf without very frequent recurrence of failures and interruptions.

Secondly, it is found that, in the transference of infection from the calf to the human subject, even under the most favorable circumstances—*i. e.*, by experienced operators, and with lymph direct from calf to arm—as, for instance, at Rotterdam, the proportion of non-success was nearly twenty times as great as in the ordinary arm-to-arm vaccination; a matter, as Dr. Seaton observes, of special importance in reference to outbreaks of smallpox, where, for the prevention of the spread of the disease, it is of all things necessary that the lymph used should be such as to ensure immediate success.

Thirdly, that the calf-lymph, as compared with ordinary lymph, is peculiarly apt to spoil with keeping, and, in the form of tube-preserved lymph, can so little be relied on, that the

Rotterdam establishment, in distributing supplies of lymph, now use only that from the human subject.

Such being the disadvantages, Mr. Simon proceeds to inquire whether there are any reasons to think that our own system has demerits which entitle us to regard it with special distrust, and to prefer even animal vaccination with its elements of weakness. Of course the ground upon which it is sought to discourage arm-to-arm vaccination is the asserted risk of spreading syphilis thereby; and if it were true that syphilis were so spread, some change of system would be called for. But Mr. Simon, after a careful examination of the whole matter, and holding that the above hypothetical concession does not go beyond the case of vaccination properly performed—for the vague possibilities of malapraxis are almost irrelevant to the main issue—can see no ground for the alleged invaccination of syphilis.

Premising that it is surprising that vaccination has not been almost generally pitched upon by persons as an apology for their syphilitic offspring, that wounds of slight nature in infected subjects may take on the character of a specific sore, and that when syphilis appears to be invaccinated it may arise from gross carelessness, that millions of vaccinations are yearly performed without any accusation of inoculated syphilis, and that the accumulated experience of the Medical Department of the Privy Council, as well as the general consent of the medical profession, are against the proved occurrence of invaccinated syphilis, Mr. Simon examines the exceptional cases, which are infinitely few in number, with a view of showing that they are to be explained by vaccination being altogether improperly performed, and declares that with such certainties as we possess as regards the freedom of vaccination, properly performed, from evil results, it would be the merest pedantry to insist on infinitesimal speculative uncertainties, as though our English system of vaccination deserved mistrust because we are puzzled to explain some alleged syphilisation on the Continent. That the various measures taken of late years to perfect our existing national vaccination have operated successfully it is needless to show. Mr. Simon entirely vindicates its claim to our increased confidence.—*Lancet*.

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## ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING, HELD NOVEMBER 2ND, 1870.

The PRESIDENT in the Chair.

PRESENT:—The President, Professor Spooner, Professor Brown, Deputy Professor Pritchard, Mr. Harpley, Mr. Moon, Mr. Gowing, Mr. Lowe, Mr. Cowie, Mr. Fleming, Mr. Field, Mr. Coates.

*The Secretary* read the notice convening the meeting.

The minutes of the last meeting having been read,

A short conversation took place relative to that part of the Charter which treats of teachers being prohibited from acting as examiners.

The minutes were then confirmed.

*The election of a successor to the late lamented Dr. Miller on the English Board of Examiners.*

*Professor Spooner:* My object in rising is to propose that Professor Bloxam be elected in the place of the late Dr. Miller. I know that the names of other gentlemen have been suggested to fill the office, and no doubt most of them would competently fulfil the duties, but it struck me that in the election of a person to fill the office of examiner in chemistry it would be well to consult the feelings of those gentlemen with whom he will have to act. In the event of Professor Bloxam being elected, he will have to act with Dr. Taylor and Professor Brown. I do not know what Professor Brown's feelings may be, but I have reason to know that Dr. Taylor would be most willing, and, indeed, glad to act in association with Professor Bloxam. I received a communication only yesterday from my colleague, Professor Tuson, who had consulted Professor Bloxam with regard to it, and he said, in the event of his being elected, he should have no hesitation in accepting the office. I believe that our President has had conversation with other persons with reference to filling up this appointment, and I am led to understand that Dr. Taylor has supplied him with the names of three or four gentlemen with whom he would willingly act. One gentleman who has been suggested is Dr. Voelcker. He is a very able man, and no doubt eminent in his way; still I do think in the election of a successor to Dr. Miller, if we can fill up the vacancy by the appointment of an Englishman who is as fully competent to perform the duties, the preference should be given to such a person. Professor

Bloxam may not be known to many members of the Council, and therefore I may state that he is connected with King's College, and I am led to understand that, in all probability, he will succeed the late Dr. Miller in the appointment which that gentleman held in the College. This should be a sufficient guarantee for his ability, and for his bringing to the Court of Examiners, in the event of his election, a degree of force and power calculated to further the interests of the College. I therefore venture to propose to this Council the election of Professor Bloxam to succeed the late Dr. Miller as a member of the chemical department of the Board of Examiners.

*The President* corroborated what Professor Spooner had said with regard to Dr. Taylor's opinion of Professor Bloxam. Dr. Voelcker had been objected to by some on the ground of his being a foreigner; but as he was a great authority among agriculturists, it had been thought by other gentlemen that he would have been very acceptable to the profession at large. It was not in the province of the President to propose a candidate, and therefore he should not propose any one.

A ballot having been taken, Professor Bloxam was declared elected unanimously.

#### *The Practical Examination.*

*The President* said a reply had at length been received from the Governors of the Royal Veterinary College to the letter sent to them by the Council, which had been laid before them at their last meeting.

*Professor Spooner* said it would have been placed before the Governors at their previous meeting; but as it was addressed to himself personally, it had escaped his memory.

*The Secretary* read the reply from Professor Spooner, dated 29th October, enclosing the following resolution of the Governors:—"That with every desire to forward the views of the Royal College of Veterinary Surgeons, the Principal be requested to obtain further particulars of the mode in which the proposed examination is to be conducted."

*Mr. Gowing*: I presume that letter alludes to the manner in which the students are to be examined. If so, I propose that it be referred back to the Committee, who can lay their decision before the Council, and then an answer can be sent to the Royal Veterinary College.

*Professor Spooner*: I have hitherto said but little upon this subject. In the first place neither my colleagues nor myself have ever been consulted about it; and when I look at the names of the members of the Committee, who have *volens*

*volens*, as it were, come to the conclusions which the Council, to my mind, without that amount of deliberation which the question demands, have determined to accept, I am utterly astonished. There is among all the names of the members of the Committee only one which carries with it the authority of a teacher, although, as I contend, it is entirely an educational question, and one which no person who has not been a teacher is competent to determine unaided by the advice and co-operative assistance of the teachers. You have, it is true, the name of Professor Gamgee. With that exception none of the Committee have ever been engaged in teaching, and yet you have come almost to a settlement of the affair. I have again and again expressed my desire that the pupils, prior to the obtainment of their diplomas, should have a thorough practical education; and if a proper test could be applied, and their education were such as to warrant it, I would be the first man to hold up both my hands for it. But the step which you now propose to take will be taken in the dark. It would be the greatest folly in the world to institute this proposed practical examination unless you are prepared to carry it out in an efficient and effectual manner, and I say that you are not possessed of the materials, and that you have not sufficiently considered this subject to warrant you in coming to the conclusions to which you have arrived. I have my own ideas with regard to the best means to be pursued in order to ensure that amount of practical knowledge which the public have a right to expect from a graduated member of our profession; but if you think that you are going to put the screw upon us by instituting what I should call a fanciful, imperfect examination, which it must necessarily be with the materials you have at your disposal to carry it out, you are very much mistaken. And let me add that the collegiate schools are not the places wherein a sufficient amount of manipulative practical information can be given. It must be given elsewhere. If you pursue the course you have suggested I have no hesitation in stating that you will fail to effect the object you have in view.

*The President*: As I am a member of that Committee, and also of the Examining Board, I rise with all the power I possess to vindicate the industry and intelligence which the members of the Committee have brought to bear upon the subject. If the heads of some of the best men in the profession are capable of settling this matter, I say it is now ripe. I quite coincide with their conclusions. I have frequently heard keen, disparaging remarks against the examiners, and they have been accused of not being up to the education

of the pupil; but I am sure they are quite capable of ascertaining whether or not a man knows how to examine a horse for soundness, and can give a clear, clinical description of a disease. If there are any members of the profession capable of doing that, we find them on the Examining Board; therefore I think that Professor Spooner's animadversions against the Committee and against the examiners are extremely uncalled for, and I am astonished to hear them come from a teacher. If I had been in Professor Spooner's position I should have said, "Examine my pupils as much as you like; if they are not fit to be launched into public life, do not pass them for a diploma." It has already been recommended by the Committee and decided by the Council that the nature of the examination must be left to the examiners, and therefore I do not know what information the Governors can require.

*Professor Spooner* said the least the Committee ought to have done was to have invited the teachers to their meetings and ask for their opinions.

*The President*: The Scotch authorities have not required further information, and they are quite as much a subject for our consideration as the English school. However, I think we are quite justified in assuming that the teachers were aware of what was going on in this Council. If it has been their misfortune or their pleasure not to attend, it is not the fault of the Council. The subject has been fully discussed both by the Committee and by the Council, and if the professors had wished to know anything more about it they would have attended the meetings of the Council. Some of them have done so, and I have no doubt it is well known what the examination is intended to be.

*Mr. Harpley* expressed his regret that the Principal of the Royal Veterinary College should offer such opposition to the plan proposed by the Council for carrying out the practical examination. He was certainly under the impression that Professor Simonds and Professor Pritchard had, by the part they had taken in the discussions, sanctioned the proposed scheme. He still hoped that Professor Spooner would be induced to support the scheme, for at no time had the Council for one moment intended to put a slight on any of the professors. It was thought that the correspondence which had taken place would explain the nature of the proposed plan.

*Professor Pritchard* said he had always stated that in his opinion there were difficulties insurmountable in the carrying out of a practical examination. He believed if such examination could be thoroughly carried out, it would be very desirable,

but unless it could be thoroughly carried out it would be simply a farce.

*Mr. Fleming* : I rise with some hesitation, as a member of the unfortunate Committee, inasmuch as I feel that perhaps Professor Spooner's strictures on the constitution of that Committee might be deserved in my case nevertheless ; but on that Committee we had some of the most able members of the profession. I do not think it is necessary to be a teacher to judge of the requirements of a veterinary surgeon. The matter has been discussed frequently, and those teachers who are members of the Council might have been present, and made any remarks they wished on this subject ; but it would be a great pity if the labours of the Council were to be thrown away and reforms neglected merely because the teachers happened to be absent. I have not the faintest doubt in my own mind that this examination will be carried out, notwithstanding any obstruction that may be raised at the last moment ; for I do not see that the difficulties to be surmounted are so very great.

*Mr. Field* thought, whether the examination would result in a farce or not, was for the Council to decide. It had never yet been tried, and therefore none could say for certain what the result would be. The public wished for a practical test, and the profession at large were constantly asking for it ; therefore it was most desirable, at all events, to make the attempt. If the examination did not give satisfaction it could afterwards be either altered or discontinued.

*The President* : We have arrived now at this state of affairs : the Council has unanimously decided that an examination shall take place ; it has gone through all the phases of the business short of that which has very prudently been left to the discretion and independence of the examiners. I am quite sure that the examination will be conducted by the examiners in the way in which they individually and collectively consider the most suitable. I was in hope that by this time we should have had an answer from the Governors of the Royal Veterinary College that it would or would not be convenient for them to afford us the assistance which we should receive from having the interior of the College placed at our disposal for the examinations. I also hoped that at least for some part of the examination subjects might have been found amongst the patients of the College ; but, until we know whether the Governors are with us or against us, I do not see that we can take any step with reference to this letter. If they wish to know upon what subjects the stu-

dents are to be examined we cannot tell them, because that must be left to the discretion of the examiners.

*Professor Spooner* imagined that what the Governors required was a detailed account of the mode in which it was proposed to carry out the examinations.

*Mr. Lowe* thought the gentlemen who would form the Examining Board were the proper parties to be consulted with regard to the mode of carrying on the examination. If they were applied to they could submit their decision to the Council, and it could then be forwarded to the governors of the Royal Veterinary College.

*Professor Spooner*: How many sheep, cattle, and pigs, will you be likely to want? It is all a farce.

*The President*: Do not call it a farce.

*Professor Spooner*: I protest that I must call it a farce, though I do not wish to be disrespectful.

*The President* said that the Council was not driven to the necessity of using the College at Camden Town, and, in fact, the objection had been raised against having subjects from that establishment, that the students would be likely to know them beforehand. The plan at Woolwich was, to require the students to examine horses which they had never seen before. The examiners must not be dictated to with regard to the questions they were to ask, otherwise the examination *might* prove a farce.

*Professor Spooner*: You do not suppose we could give up the working part of the institution?

*Professor Brown* seconded *Mr. Gowing's* suggestion for referring the letter to the Committee, that they might bring up a report which could be forwarded to the governors.

*Mr. Field* thought a good deal of time would be lost if such a plan were adopted, because the Committee would no doubt require several evenings for a debate before they came to a decision; that decision would not be laid before the Council before its meeting in January; the Secretary would then be instructed to write to the Royal Veterinary College, and the Governors might not meet for weeks after, so that the matter could not be settled under three months.

*Professor Spooner* said, if it was considered advisable the Governors of the College could be convened for a special meeting at a week's notice.

*Mr. Cowie* thought the chairman of the Committee might be delegated to the governors to give such verbal information as they required.

*The President*: That would be giving the opinion merely of an individual and not of the Council. Would it meet

the view of the Council if a letter were written to the Governors, stating that the Council are at a loss to know what information is required?

After some further discussion Mr. Gowing withdrew his proposal, and it was decided that the Secretary should write to the Governors, stating that the Council desire to carry on the examinations within the walls of the College in such a manner as not to interfere with the business of the institution.

The proceedings then terminated.

## LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of this Association was held at the Trevelyan Hotel, Manchester, December 21st, 1870, under the presidency of George Morgan, Esq., of Liverpool. There were also present Messrs. Thomas Greaves, P. Taylor, Haycock, T. Taylor, Whalley, W. A. Taylor, Hopkins, and Anderson (Manchester), Hayes, Reynolds, and Harwood (Liverpool), W. C. Lawson (Woolton), Dobie (Birkenhead), Whittle and W. J. Challinor (Worsley), J. Taylor (Oldham), Woods (Wigan), Taylor (Ashton), A. Challinor (Bolton), Bostock (Altrincham), J. Lomas (Stockport), J. E. Mather (Blackley), Dorbet (Pendleton).

Letters were received from several gentlemen regretting their inability to attend.

Messrs. Hopkins (Manchester) and Dacre (Bolton) were elected members. Mr. J. Lomas (Stockport) was nominated for membership by Mr. J. Bostock.

After the minutes of the previous meeting had been read and confirmed, Mr. W. A. Taylor proceeded to read an essay on "Inflammatory Oedema."

MR. PRESIDENT AND GENTLEMEN,—At the last meeting of this Society I was enrolled one of its members; to-night I find myself assuming the position of essayist, perhaps not unwillingly, but still with an inward feeling that it might be deemed by some presumptive and premature on my part to attempt to address so many of my seniors upon a subject—in the form of a thesis—about which so many opinions exist and so few agree. Not wishing to be thought an egotist, but still having an inclination to elucidate the reasons for my appearance here this evening in the capacity of an essayist, I cannot refrain from expressing them.

When asked to bring in a paper for discussion, I hesitated, but only for a moment, as duty called upon me to assist in so far as lay in my power, the objects for which I had entered the Society. I hope every member of this Association considers those objects to be not

only of immediate importance to his individual welfare, but that all meet here with the earnest desire of endeavouring to assist, each in proportion as he feels able to, in the diffusion of veterinary knowledge as calculated to benefit every one of us. It is with these feelings that I cast in my mite to the general contribution, and, Gentlemen, I can tell you it is with no small amount of pleasure that I lay before you my humble ideas on the disease known as inflammatory œdema. Indeed I feel honoured to see around me so many illustrious members of the profession, men whose presence ought to invigorate us, the juveniles, with an ardent desire and determined perseverance to mark out for ourselves paths by which we may travel to perform our allotted work with such diligence and industry as will never fail, in the long run, to merit its reward and be appreciated by all.

Without any further, but, I hope, not unnecessary, occupation of your time, I will call your attention to the subject of this essay, viz., inflammatory œdema, as affecting the horse; and in doing so embrace the opportunity for stating that in the consideration of this subject it has been my intention not to attempt an exhaustion of it—even had I been capable of doing so—but simply to link together some ideas and facts, so as to form a chain which by discussion we may sever link by link, duly considering each in its turn, and by, if I may use the term, a remoulding process, finally readjust them so that at the termination of the evening's discussion the whole may be representative and emblematical of our united and individual exertions to promote a more unanimous opinion as regards the nature, treatment, causes, &c., of this often-occurring disease.

An investigation of the animal kingdom exhibits to us in the greatest perfection the inimitable power of the Almighty, who in His infinite wisdom "made man in His own image," and afterwards gave him dominion over all living things He had previously created—the fish of the sea, the fowl of the air, and every living thing that moveth upon the earth. To reflect thoughtfully upon this is only to develop in one's mind a desire for further knowledge and closer acquaintance with the reasons why and for what purposes such a multitude of creatures were made; but the greater the extension of our research in the endeavour to unravel Divine reasons the more apparent will be the intricate laws which govern the diffusion of animal life.

Animals were undoubtedly created for the purpose of occupying a portion of man's allotted time on the earth, and both directly and indirectly for the support of mankind, as offering means whereby to obtain food; some also were made to prey upon others, for every living thing must have some source from whence to gather nutrition for its development, growth, and maintenance, if vitality is to continue within its organism. And even where reasons are not forthcoming as to the utility of some animate beings we are disposed to exclaim—

“How wondrous is the scene! where all is formed,  
With number, weight, and measure! all designed  
For some great end!”

For the support of animal life in a state of health, it is essential that certain conditions be maintained, to ensure which certain phenomena are constantly and successively taking place; they may be enumerated as development, growth, assimilation or maintenance, and natural decay. The two former are manifestly dependent on the presence of a nutritive or assimilative process, and no less upon that of natural decay or impairment of the different elemental structures of the body. For instance the fibrils of a muscle are developed from nucleated cells; these fibrils increase in size or grow in proportion to the amount of their nutrition, but the increase or decrease in size is governed by the natural wear and tear of the muscular tissue itself. This nutrition is conveyed by that vital fluid, the blood, and hence the indispensableness to health that it should maintain a standard of composition wherein there is neither too great a preponderance or deficiency in any of its constituents.

The term “weed,” as well as that of “grease,” and “humour,” is of ancient origin, as designating the existence of this disease; the terms more recently applied being “inflammatory œdema” and “lymphangitis.” To the first of the two latter mentioned names I give the preference, as I contend that primarily it is an inflamed state of the areolar tissue, the absorbent vessels becoming involved subsequently.

This œdematous inflammation is peculiarly restricted to equine patients, for I never heard or read of a case occurring in any other species of domesticated quadrupeds. Although a constitutional malady, it generally attacks one of the extremities, and in the majority of instances it selects the hind legs, confining itself to one. It is a very painful disease, the animal exhibiting very great pain if pressure be applied to the inner side of the affected limb; and should necessary relief be neglected disastrous effects are very likely to accrue.

Adverting to pathology, inflammatory œdema is an œdematous condition of the limb, the result of inflammation of the areolar tissue, and due to a plethoric habit of body. It is a point of some value, as regards the fact of plethora inducing this disease, that horses used for draught work are notably sufferers, whereas their more speedy footed relations are almost exempt. It is obvious that animals being indulged in a diet proportionate in quantity and quality to the amount of their exercise or work, must be less susceptible to an invasion of disease. On the contrary, how often do we find our draught horses badly attended, irregularly fed, and otherwise ill-treated. An animal having worked hard during the first three or four days of the week, being then regularly fed with a sufficiency of good provender, has, perhaps, the remainder of the week to remain out of work, and instead of being cautiously fed and exercised daily, he is closeted in the stable the whole of the time, and as though he were undergoing his usual work, and very pro-

bably in anticipation of impending heavy duties to be performed during the ensuing week, his attendant considers it necessary to augment his present allotted rations, and very likely not only increase them in quantity, but also in quality. What is the result? Why, the storm which has been gradually but imperceptibly gathering, now bursts with all its fury. The horse, when required on the Monday morning, is indisposed; his leg is swollen; he has a "humour or weed," or whatever the carter may choose to term it; however, he is incapacitated, for he is so lame as to be only able to hobble along. It is clearly evident that the system being physically almost in a state of inaction, is receiving by far too large a supply of nutrition; indeed, the blood is surcharged with nutrient material, that not only supplies all the exigencies of the system, but is more than is required. This causes a disruption of the equilibrium of the distributive nutrient process, ultimately resulting in inflammation of one of the extremities. Therefore, in one of Nature's grand laws of relieving herself, she causes a determination of blood to a portion of the body, and there commences her operations. From these remarks I think it may be fairly defined to be an inflammatory affection, and one wherein exists a relative alteration in the component parts of the blood.

*Symptoms.*—These are almost too well known to all for me to attempt to enumerate; but as they are the index to the chapter of occurrences which separately and combinedly aid in effecting a true diagnosis, it is necessary they should be duly considered.

A disinclination to feed is generally the first noticeable symptom indicated, and this arouses the suspicions of the attendant, who, perhaps, notices that upon endeavouring to turn the animal in the stall, he exhibits some little obstinacy, and in moving is seen to "favour one leg." To these succeed swelling at first on the inside, but afterwards becoming more diffused, of the limb affected, together with those constitutional symptoms denominated symptomatic or sympathetic fever. Great pain is experienced by the animal when pressure is imparted to the inner side of the thigh, in the neighbourhood of the large vessels and nerves. The swelling of the limb continues, the skin becoming tense; symptomatic fever runs higher; the pulse is exceedingly rapid, and in character small and hard; the breathing is accelerated; the skin feels hot and dry; the visible mucous membranes are congested; the mouth hot and parched; the secretions are partially suppressed, the fæces being hard and slimy; the urine scanty and high coloured; the countenance denotes great pain and anxiety. The swelling and lameness still increase, the limb is suspended, the slightest concussion causing immense pain. As the disease progresses enlargements appear in the neighbourhood of the principal joints. These swellings point and burst, leaving ill-conditioned, angry-looking sores. Finally the poor animal sinks from exhaustion and dies.

Such are the symptoms where the disease pursues its course unmolested; and even in some instances art, with all its healing propensities, is unable to check its progress; but I am glad to say those cases are few, where judicious care and treatment are instituted.

Having thus summarily enumerated the symptoms, it remains for me to enter into a more minute detail as regards some of the prominent ones. Consistent with the amount of pain do we find existing a corresponding amount of constitutional disturbance, and hence we find a feverish condition of the system. The pulse, at the onset, is not materially increased in rapidity or altered in character; but subsequently it assumes a small and hard feel, provided it is an acute case. In a mild attack the number of pulsations will be only two or three in advance of the normal standard, yet it will possess an oppressed feel.

A consideration of the different stages through which the limb passes, from the commencement of the attack to the time when resolution is perfected, or some morbid condition of the leg remains as a sequel, is sufficiently evident to render comment upon it a necessity, in order to understand more explicitly the various conditions assumed. To expedite the enumeration of these local symptoms I shall discuss them in three stages, viz. a congestive, an acute or inflammatory, and a passive or œdematous.

The term congestive I have applied to that condition preceding inflammatory action, and as such a condition, especially in this malady, is not easily discernible, and in the majority of instances our aid is never sought until inflammatory symptoms are clearly evident, it only remains for me to specify the seat of the congestion. This I believe to be in the areolar tissue of the limb, both that subjacent to the skin and that surrounding and connecting the muscles, vessels, and nerves; in this site of vascular filaments does the congestion take place, and to which inflammation succeeds in due course.

The first local inflammatory symptom noticeable is pain, which is not only evidenced by the lameness exhibited when the animal essays to progress, but is greatly increased when pressure is applied to the inner side of the limb. The swelling is first perceptible, and to the greatest extent, on the inside of the thigh or arm (according to the limb affected), taking a downward direction. In a few hours the limb grows larger, and eventually the increased size of the leg below the hock (supposing it to be a hind leg) is almost equal to that of the thigh. The limb has now a round appearance, and, if examined, will, upon the application of gentle pressure, impart to the fingers a feeling of tensity, and upon increasing the pressure an almost elastic condition is noticed; there are not, during the existence of this stage, any signs of pitting. In some severe cases a peculiar sweat will be apparent oozing from the skin. Now do the constitutional symptoms run highest, now is there an altered and accelerated condition of the pulse, increased respiration, febrile condition of the surface of the body, hot and dry mouth, partially suppressed secretions, congested visible mucous membrane, &c. Little or no pain is occasioned by pressing the outside of the limb, but severe pain is caused when the pressure is applied to the inner side along the course of the principal vessels and nerves. There is, *i. e.*, when the swelling is not so great as to exclude it, a corded

feel on the inner side of the thigh, traversing the course taken by the larger branches of the vessels. This has been attributed to an inflamed state of the lymphatic vessels, but I am rather of opinion that it is alike due to a participation in the general inflammation, partly from close proximity and partly from sympathy, of the veins and absorbent vessels. The lymphatic glands, more especially those of the groin, are undoubtedly inflamed and enlarged, but from their obscure situation in the horse their participation is not very visible. The duration of this, the acute stage, is generally from four to five days.

The first marked symptom of a subsidence of inflammatory action is a decrease in the amount of pain; the patient walks better, imposing more weight on the affected limb. As the pain subsides so is there a decrease in the severity of the constitutional symptoms. The animal's appetite returns, he is more cheerful, displays a better countenance, and in some instances there remains no other observable symptom that the horse is ill than a thick leg, which inconveniences the movement of the limb. It is this stage that I have designated the passive, or œdematous. When the inflamed vessels of the areolar tissue have relieved themselves by effusion of serous parts of the blood, and there being no further cause in action to excite a continuance of the effusion, then the inflammatory symptoms abate, and in doing so leave effused and effete material occupying the interstices of the areolar tissue, to the presence of which the limb owes its swollen condition. Very little pain is now experienced under pressure, but there is a marked difference in the feel imparted to the fingers. Instead of the skin being tense and hard it now pits, *i. e.* indentations are left where the fingers have been applied. This is easily accounted for; nature in her wise ordination wills that nothing animate shall remain in a state of stagnation, and, consequently, as the inflammatory symptoms recede, the action of the absorbents, which had hitherto been impeded, is now more liberated, and therefore sufficient absorption ensues to allow of a certain relaxation of the areolar tissue; hence, upon pressure, there being no immediate repulsive force, an indentation is occasioned. Subsequently, absorption of the infiltrating substance occurs, and the leg reassumes its original form.

*Post-mortem appearances.*—Never having had the opportunity of making an examination of the limb *post-mortem*, I am unable to lay before you any statistics relative to such appearances. I must, therefore, leave them for some of you to comment upon.

*Sequelæ.*—The morbid conditions resulting from an attack of inflammatory œdema are few. A permanent thick callous leg is the sequel generally feared most by the practitioner, and is due to a deposition of lymph, which by becoming organised renders the leg thick and callous to the feel. This consequence is, in a certain sense, not very deplorable, as it does not materially interfere with the animal's usefulness, but, on the other hand, greatly decreases its value. There is another result of this disease which I am glad to say is not of very frequent occurrence; I allude to that termed

elephant's leg or elephantiasis. It is generally noticed in horses that have had repeated attacks of inflammatory œdema, and very probably suffered from attacks of grease. The skin is thickened, and the leg itself enormously enlarged and callous. We sometimes see grease as following or associated with an attack of inflammatory œdema. Deep-seated abscesses have been known to occur in this malady; so also have cases of partial sloughing of the hoof. The formation of abscesses in the region of the principal joints has been previously mentioned.

*Diagnosis.*—There is no disease with which I am conversant that is very liable to be confounded with inflammatory œdema; but those which might be mistaken for the disease under discussion are, perhaps, grease, passive œdema, swellings of the limb in cases of injured feet from shoeing, and inflammation of the skin of the heel and leg of an erysipelatous character, in conjunction with a cracked heel. The swelling of the limb in grease is due to inflammation of the skin and areolar tissue immediately in connection with it, and very seldom, if ever, ascends above the hock or knee. In passive œdema there is no constitutional disturbance, and no pain upon pressure, the swelling being confined to the most dependent portion of the limb or limbs. The œdema present in cases where there is an erysipelatous tendency is dependent upon inflammation of the areolar tissue, and this again is secondary in occurrence to the primary one of inflammation of the skin. In all these ailments there is an absence of swelling of the thigh or arm, and that diagnostic symptom pain upon pressing the inner side and upper part of the limb.

*Prognosis*—Not being a fatal disease, a favorable prognosis may be given as to the ultimate recovery of the patient; but still care is necessary in pronouncing an opinion as to whether or not the leg will regain its former healthy condition. The younger the animal the more favorable the prognosis.

*Causes.*—In this malady, as in many others, there is no one thing to which can be ascribed the absolute cause; therefore it is necessary to take into consideration all collateral circumstances. This disease I regard as being purely an inflammatory one, dependent upon an altered condition of the circulating fluid; what that alteration is, and how it produces its effect, remains for us to examine.

For the purpose of maintaining a normal standard of health, a certain equilibrium of the reparative or nutritive process, and that of decay or absorption, is necessary, consistent with the existing state of the system; but should an excess of either condition preponderate in the extreme, it is plainly evident some constitutional alteration must result. Now, in the majority of animals which are subjects of this disease there is, previously to the attack, an asthenic condition of the system; some, perhaps, are poorly fed, others, although well fed, are worked out of all proportion to the amount of nutritive material taken; thus both are brought to a similar condition by dissimilar means, there being in one a deficient supply of nutrition, in the other the excessive wear and tear of the tissues generally causes the impairment of the system. Having

two systems in similar conditions, but the results of widely different causes, the question arises, how shall we treat each to bring them both into better condition? Why, the one animal will require a gradual increase in the quantity and quality of his diet, while the other needs a decrease in the amount of work. But instead of carrying out such rational measures, what do we find to be the case? The ignorant, or, perhaps, new owner, carter, or attendant, upon receiving the animal into the stable, or during an inactive state of business—the horse having no duties to perform—immediately seizes upon the opportunity, thinking it a capital one for improving the animal's condition, of commencing a cramming process which is unnecessary to mention here; suffice it to say, the poor horse's diet is very liberal, both as regards quality and quantity, and this, with grooming him, is all that is dreamt of, exercise never once entering the attendant's mind. Perhaps the owner keeps a pig, and as that fattens by eating and resting, he very likely regards his equine companion as closely associated with the "sus" in the sty, and consequently inundates with food the manger of the occupier of the stable, forgetting, or what is perhaps more likely, being ignorant of the totally different conditions of the two animals. To feed a horse in such low condition upon highly stimulating food is like "putting new wine into old bottles." How is it possible for a system which has been accustomed to receive a certain amount of nutrition for its support, to appropriate an amount of nutritive material which far exceeds the demands of the system in its then present condition? It is impossible; the system can only appropriate such an amount of nutrition as its exigencies may require. This increased quantity of the blood is designated plethora, and as the system cannot apply the whole of its nutrient material to beneficial purposes, nature takes upon herself the onus of ridding it of the superfluity, and in the performance of this act selects some portion of the body, in this disease the limb, and there commences her relief of the system by inflammation and subsequent effusions through the walls of the vessels of the serous parts of the blood. Now, I am of opinion that this transuded material is the active agent in producing the inflamed condition of the absorbent vessels; how, is the query? Is it the quantity or the peculiar character of the exudation? It may be both, but I think the latter. What it is in the effused material that acts as an irritant to the lining membrane of the lymphatics is beyond my reach. The enlargement of the lymphatic glands is the result of participation in the inflamed state of the lining membrane of the absorbent vessels, partly from sympathy and partly from continuity of structure.

Where the exciting cause is present, ill-drained and badly-ventilated stables accelerate an attack, on exposure to sudden changes in the temperature of the atmosphere when in an overheated condition.

*Treatment.*—After having satisfactorily diagnosed the ailment under which our patient labours, it is for us then to institute such remedial measures as are best calculated to alleviate the sufferings

of the patient, and finally restore him to health. As will be seen, I have left this portion of my subject to be considered last, not because it is least in importance, for it is only second to the diagnosis; we must first diagnose a disease and then treat it. I wish it to be understood that I do not advance any medicine or particular mode of treatment as a panacea, but simply wish my remarks to refer to the disease generally.

This being a malady of an inflammatory nature and due to plethora, some of our ancient practitioners advocated depletion upon a scale which I think was, or at any rate is now unnecessary. Having decided the case to be one of "humour in the leg," peremptory orders were given to bleed and physic; the quantity of the blood withdrawn and the amount of the latter administered would, I opine, be quite enough to drive away the plethora, if it did not do anything worse. Really horses in those days must have had constitutions the simile of iron, for such depletive treatment (which was sometimes repeated) would almost possess properties solvent enough to render that metal malleable if not liquid. I do not refute *in toto* the advantages to be derived from depletion, but I do decry it where its use is indulged in to an unnecessary extent; let it be consistent with the circumstances surrounding the patient and then it is of the utmost value.

In some cases we are warranted in the abstraction of blood, and in the election of this operation we should be careful in determining the circumstances in which our patient is placed. If it be an old horse, and there be no particular constitutional disturbance, it would be unwise to bleed, and even where such disturbance is considerable I should not always advocate bloodletting, as I think it unnecessary, more particularly as in very old animals there is a necessity for preserving the vital fluid for the support of the system, to enable it to combat the disease. But this is not the case in younger animals, where the tissues and organs are in a better state of tonicity; therefore their systems are in a more fit condition to withstand such depletory measures. It is in cases where there is a great amount of symptomatic fever accompanied by urgent local symptoms, and the pulse corded, that I would bleed, and then it should be indulged in during the early stages of the disease.

Whether local or general bloodletting exerts the greatest benefit is a disputed point amongst veterinary surgeons; each mode has its supporters, and some even recommend both. I am most certainly in favour of general venesection, as, looking upon it as a constitutional malady, I urge that it is most consistent to attack the great bulk of the fluid rather than abstract a small quantity, and that slowly, from the locality to which the disease confines itself. I should, therefore, select the jugular vein, open it, and allow of such a quantity of blood to flow as would alter the character of the pulse and the quality of the circulating fluid; but the question might be mooted, why bleed at all; could not similar conditions be brought about by the use of medicines? Certainly they could, but not in all cases, and then not in so short a space of time. In a case of great

urgency it is always most judicial to use those means which effect the most speedy relief. My reasons for opposing the practice of local bloodletting are, that when the foot is selected there is, from the inflammatory action already in the limb, and a further irritation of the sensitive sole, a great tendency to suppuration beneath the horny sole, which is more likely to under-run the sole than otherwise, and thereby retard the favorable progress of the disease.

Where the vena saphena is chosen—and this might almost be termed constitutional venesection—from which to abstract blood, there are similar objections to be raised, as inflammation of the vein for some little distance around the opening is not an unusual result, and certainly not one to be desired. There is a further and very important reason to adduce, as militating against the use of local venesection solely, inasmuch as the impression on the system cannot be rendered so great in so short a space of time.

During the inflammatory stage the medicines calculated to ensure the most benefit are aperients, diuretics, diaphoretics, stimulants, and salines. I have purposely omitted cathartics, as the cases are very few where it is necessary to administer a purging dose of aloes, for I have known instances where large doses of aloes have been given, and produced diarrhœa to such an extent as to dangerously increase the constitutional excitement. I would much rather prefer the administration of a gentle laxative to violent doses of physic, as I am not a believer in the “purging out” of this disease. More is to be done by acting upon those grand emunctory organs, the kidneys, and exciting the action of the absorbent system. For this purpose nothing can be more efficacious than the exhibition of stimulants and diuretics. Turpentine, which has both the above properties combined, may be given in doses of half an ounce or an ounce, twice or thrice a day, as occasion may require, in combination with the following compound

℞ Potass. Nit., ʒij;  
Potass. Chlor., ʒij;  
Liq. Ammon. Acet., ʒij;  
Spt. Æther. Nit., ʒss.

to be given in gruel or mucilage. Or, in lieu of the above, the following may be administered in some mucilaginous material twice a day:

℞ Ammon. Carb., ʒij;  
Potass. Nit., ʒij;  
Tinct. Camph., fl ʒss;  
Spt. Æther. Nit., fl ʒss.

The application of a rest-shoe to the foot gives great relief to the animal when moving, and is also a source of support to the limb generally. Hot fomentations to the leg should be almost continuous, and after the first two or three days should be applied twice or thrice a day. I do not approve of bandages of any description, as they are not always applied with even pressure, and therefore apt to interfere with the circulation; and, besides, they only increase the heat of the limb, and very often irritate the skin.

Anodyne liniments may be used to the limb when the inflammatory symptoms are most acute, and for such purpose a nice liniment may be made by mixing together Lin. Sapo., milk, and Tinct. Camph. ; afterwards, as a stimulating liniment, two ounces of Lin. Sapo., with from half a drachm to a drachm of the common carbolic acid, in eight or ten ounces of Aqua, may be rubbed in the leg twice or thrice daily.

When the disease has passed into the third or passive stage, and when all febrile symptoms have departed and the appetite returned, but there is still remaining an infiltrated condition of the limb, then mineral tonics and medicines calculated to act on the absorbents should be given. The diniodide of copper may be given in half-drachm doses twice a day, with half a drachm of camphor, or Potass. Iodid. in doses of from half a drachm to a drachm, or Ferri Sulph. alternately with Potass. Iodid. The ammonio-sulphate of copper is another valuable preparation, and the Tinct. Ferri Sesquichlor. is sometimes very efficacious. Strychnine I have seen used, but not sufficiently often to justify me in offering an opinion as to its superiority over the other tonics just mentioned.

By their several actions the aperients, stimulants, and diuretics will stimulate the absorbents to a more active absorption of the infiltrating débris ; and the kidneys, together with the skin and intestinal canal, will relieve the system of the absorbed impurities. The ammonia and potass salts would, if present theories are correct, exert a diluent effect on the blood, and thereby transform its rich condition into one of comparative less quality. The tonics administered after a subsidence of the inflammatory symptoms give tone to the vessels, and render their walls impervious to the passage, in an outward direction, of any more fluid than is requisite and consistent with the laws of nutrition, and produce a better quality of blood.

There is yet an important branch of the treatment to which I have not referred, and that is the hygienic measures. As far as practicable it is incumbent upon the veterinary surgeon to place his patient in a condition where he will have the advantages of a temperate and healthy atmosphere. I say as far as practicable, for we cannot always present our patient with a clean, airy loose-box, and therefore we must render their place of abode as clean and free from deleterious gases as we can, and this may be done by disinfection and ventilation. The diet of an animal suffering from inflammatory œdema must not be of a too stimulative nature ; it ought to consist of what our medical brethren term "slops." Bran mashes, stewed hay, and hay tea, are appropriate food in the inflammatory stage ; but to this may be added subsequently boiled barley and carrots. Some such diet as this should be persisted in until the animal is in a fit state to receive his ordinary food. Exercise is a necessary and valuable aid to the resolution of the disease, and should be indulged in daily after the abatement of the acute inflammatory symptoms, as this natural tonic, through the medium of the muscular movements of the limb, promotes, by virtue of their direct action on the

absorbent vessels, a more rapid absorption of the débris causing the enlargement of the limb.

It is with reluctance that I now resume my seat, knowing full well that my efforts have not done justice to the subject; but perhaps I may be allowed to consider this paper as the groundwork from which I hope will spring the opinions and experience of those present, for I think an essayist is allowed the right to expect a discussion of his paper, whereby he may at least add to his already partially supplied garner some few gleanings, which, if they did not correspond with his own ideas, would be subject matter for afterthought and reflection, and, further, be evidence of the goodwill of the members of these associations, in their relentless endeavours to assist a labouring professional brother.

*Mr. Greaves* opened the discussion by advocating puncturing of the limb in the acute stage to a depth of half an inch or an inch, as a valuable remedial measure. He considered it to relieve pain and, by the flow of serous fluid, to diminish the amount of work the absorbents would be called upon to perform subsequently.

*Mr. Whalley*, after relating a very interesting case of phlebitis, averred his belief that inflammatory œdema was a disease bearing a close analogy to phlebitis.

*Mr. Reynolds* had noticed many cases resulting from the too free administration, as a dietary, of new oats.

*Mr. Haycock* defined two forms of inflammatory œdema, one where the disease chiefly confined itself to the areolar tissue, and one wherein the lymphatics of the limb were principally attacked.

*Mr. T. Taylor* believed the old-fashioned principles of treatment a little modernised were sufficient to combat all ordinary cases.

*Mr. P. Taylor* enumerated the symptoms of a peculiar case lately under treatment; it was an obstinate one of bastard strangles in a five-year-old harness horse. Some two or three abscesses formed in the submaxillary glands, and also one in the cervical region about two thirds down the neck, in close proximity with the brachia and left jugular vein. Convalescence ensued after a long course of treatment, and then total obliteration of the jugular vein of the left side was discovered to have taken place. No local symptoms of venitis were observable during the attack.

With reference to the disease under discussion, he considered the appellation "inflammatory œdema" to be a *misnomer*, it being strictly a disease of the lymphatics—in other words, lymphangitis. He defended this opinion by stating that he believed the system to be loaded with fibrinous blood, and that this fibrinous material when effused caused inflammation of the lymphatic vessels.

In the course of his remarks *Mr. Whittle* made reference to impairment of the function of the liver as being associated with the causes in action tending to produce attacks of "weed."

*Messrs. Dobie, Lomas, and Harwood* concurred as to the advisability of administering a dose of calomel and aloes at the commencement of an attack.

*Messrs. W. and A. Challinor, Bostock, Mather*, and several other gentlemen also took part in the discussion.

The thanks of the meeting were voted to the essayist for his very interesting paper.

This being the last meeting for 1870, the gentlemen in office resigned, and were cordially awarded votes of thanks for their staunch adherence to the many duties required of them in their several official capacities.

#### OFFICERS-ELECT FOR THE YEAR 1871.

*President.*

W. Whittle, Esq.

*Vice-Presidents.*

Messrs. Morgan, Greaves, Haycock.

*Treasurer.*

Alex. Lawson, Esq. (re-elected).

*Hon. Secretary.*

W. Augustus Taylor.

*Mr. Whalley* kindly consented to read a paper at the next quarterly meeting, on the "Action of Medicines."

W. AUGUSTUS TAYLOR, *Hon. Sec.*

#### CENTRAL VETERINARY MEDICAL SOCIETY.

At the last ordinary General Meeting of this Society held at 10, Red Lion Square, on Thursday the 5th January, Mr. George Fleming, F.R.G.S., M.R.C.V.S., &c., President, occupied the chair.

At the conclusion of the preliminary business, a ballot was taken, in accordance with the previous announcement. Eleven resident and six non-resident Fellows were elected. Mr. C. Offer and Mr. J. R. Cox, being in attendance, were formally admitted, and presented to the Fellows by the President.

#### FRACTURE OF THE NAVICULAR BONE.

The meeting gave considerable attention to an account by the President of a case of fracture of the navicular bone of the hind foot of a troop-horse recently under his care. The specimen having been carefully preserved, was presented for examination. It showed a transverse division of the bone, which had occurred from the entrance of a wedge-shaped splinter of wood through the frog, piercing the joint and tendons at the posterior border of the *os naviculaire*. Report stated that the animal was guilty of striking with the hind

feet when confined to the stable. On the occasion referred to, the animal having broken the stall partition, a splinter of wood had pierced the foot, when, probably from the pain occasioned, the act of kicking was repeated even more violently than before, which caused the splinter to penetrate further, and to be driven with great pressure upon the border of the bone, thus in all probability forcing it upon the *os pedis*, and placing it between two opposing bodies. The account of the case was further enhanced in value by minute details of the signs developed, together with the measures adopted, and the termination of the case.

#### SEEDY TOE.

*Mr. F. J. Mavor* next called attention to the extreme prevalence of the so-called "seedy toe" among the horses of his clients, and stated the malady had existed to a most serious extent for nearly two years.

Other Fellows also contributed similar information, and considerable discussion succeeded, in which the opinions of each were freely given on the pathology of the affection and its supposed causes.

#### LIVER DISEASES OF THE HORSE.

*Mr. J. Rowe, jun.*, then brought forward his paper "On some of the Diseases of the Liver of the Horse."

The author commenced by referring to the statements of Percival, assigning to the liver a very limited participation in, or liability to, disease, but admitting a difficulty in diagnosis and discovery of disease frequently on *post-mortem* examination, pathognomonic signs during life having been so mild as to escape notice altogether.

The conclusions of Leblanc were also referred to, in which we are reminded that hepatic diseases are more frequent than previously published statements have verified, the chief being congestion, apoplexy, and rupture, doubtless associated with visceral affections—lungs or abdominal organs. The author dwelt at some length on the minute structure of the liver, with the object of showing its liability to arrest of function from collateral disorders, with resulting engorgement, apoplexy, softening—*ramollissement*, and, finally, rupture, which latter conditions were said to be confined principally to aged animals, and those having suffered frequently from congestion. Hepatitis was described as an affection commonly destitute of urgent and extremely acute signs, the severity being estimated in accordance with the existence of negative signs. In the treatment, preference was given to powerful oleaginous purgatives in combination, succeeded by aconite as a direct sedative and antiphlogistic—particularly under complications. Phlebotomy found no favour, the author seeking opinions on its adoption or disuse. Calomel, he stated, is sometimes used in 30-grain doses in chronic stages, but objection was made against too frequent use. Nitro-muriatic acid has many advocates. The remaining conditions of disease in connection with the liver, as rupture and internal hæmor-

rhage, *ramollissement*, fatty degeneration, chronic hepatitis, with their progress, termination and *post-mortem* appearances, were successively dwelt upon; the author concluded by first quoting the views of Professor Brown (who has enlarged upon the association of liver affections with those of a catarrhal nature), and afterwards by directing attention to the occurrence of cephalic complications, said to be the result of the absorption of cholesterine into the circulation.

*Mr. J. Woodger*, sen., testified to the frequency with which grey horses, in his experience, are affected with liver diseases, one of the most common symptoms being syncope.

*Mr. F. J. Mavor* believed that rupture, as a rule, depends upon previous softening; but in his experience no preference had been exhibited by grey horses, all animals subjected to the predisposing causes being alike liable. He also referred to the discoloration of membranes in influenza, but denied the cause being absorption of bile, but rather an altered condition of the serum of the blood.

*Mr. Cattaral* (Visitor), with *Messrs. Hunting, Burrell, and Batt* (Visitor), followed in support of the absorption of bile in disorder of the liver.

*The Secretary* (Mr. G. Armatage), alluded to the fact that the colouring matter of bile being manufactured in the liver only, and not in the blood, clearly decided, in his opinion, that the biliary secretion is absorbed in one of two ways—either directly from the liver or intestines, without assimilation. Besides, the usual tests are capable of detecting the presence of bile in most fluids, when perfect discoloration of the membranes occurs in hepatic affections. The acknowledged functions and properties of bile were alluded to, and the existence of important signs, which always accompany severe liver diseases, also pointed out—viz., the extreme coldness of the limbs, &c., and comatose state which supervenes; the arrest of function depriving the system of its required heat-producing elements, while the non-removal of material, of which bile is formed, results in absolute blood-poisoning and obliteration of nervous power.

*Mr. J. B. Martin*, Rochester, in referring to the prevalence of hepatic affections, stated his belief that by far the major part exist for a great length of time, even for years. He had found that animals dying from other causes, frequently disclosed disorganisation of the liver; it was probable that no indication of the disease had been evident during life.

*The President* said the author had laid the basis for further investigation by the subject of his paper. In order to arrive at accurate conclusions, a multitude of facts were alone useful, and the scientific man, acquainted with practical details, can alone grapple with the disease alluded to. Among horses regularly fed and worked, liver diseases are rare; climate and irregular practices have much to do with their production. Abroad, as in India, Australia, and particularly Egypt, they are very prevalent. Besides the causes of rupture of the liver mentioned by Mr. Rowe, injuries, falls, &c.,

may be accepted. Regarding the colour of the membranes in affections of the liver he (the President) thought it might be assigned to retention of the bile. An analogous instance of the presence of abnormal constituents in the blood being furnished in disease or extirpation of the liver, when urea is found in large quantities.

*Mr. Rowe*, in replying, said, he considered the administration of calomel in small doses twice or thrice daily to be advisable, in order to guard against enlargement and induration, but its use must not be long continued. He did not agree with previous speakers that liver diseases are difficult to discover. The signs being known, and properly interpreted, led to facile diagnosis. His opportunities for observation had been somewhat frequent, and he gave the statement from personal experience. He contended the yellow colour of membranes to be due to the reabsorption of bile, as that secretion is not formed in the blood, nor is it found as a normal constituent. Urea, on the other hand, is found in the blood, and regularly separated by the kidneys, and its accumulation occurs from disease or extirpation of the organs that are engaged in its elimination. The liver secretes the bile, and gives it the well-known colour, and when it is found in the blood the circumstance is due to its passage thence in an unchanged or unassimilated form—the bile is not used in digestion, and, therefore, suffers no physiological changes.

*Mr. F. J. Mavor* then laid on the table five volumes of books which he had received from Mr. Wills, the Sherrards, Welwyn, Herts, as a donation to the library of the Society.

A vote of thanks to the donor for his handsome gift was proposed and carried by acclamation. Similar compliments were also paid to the Essayist and President respectively. The meeting adjourned to February 9th, when Mr. A. Broad will read a paper on "Fistulous Wounds."

## MATRICULATION EXAMINATION.

THE following gentlemen, in addition to those whose names have been previously published, having passed the Matriculation Examination as conducted by the College of Preceptors, have been admitted students at the Royal Veterinary College :

- |                        |   |                                  |
|------------------------|---|----------------------------------|
| Mr. William Chappell   | . | West Wycombe, Bucks.             |
| „ George William Kerry | . | Newmarket.                       |
| „ Hulton J. Harrison   | . | Ballyroan, Queen's Co., Ireland. |
| „ Sidney Barker        | . | St. Faith's, Norwich.            |
| „ R. Duncan Graham     | . | Woolwich.                        |
| „ George F. Young      | . | Bishopstone, Salisbury.          |

The following have been admitted on the production of satisfactory certificates :

- |                         |   |   |   |             |
|-------------------------|---|---|---|-------------|
| Mr. John Thomas Gregory | . | . | . | Portsmouth. |
| „ B. S. Dawkins         | . | . | . | Aldershot.  |

## ARMY APPOINTMENTS.

WAR OFFICE, *Jan. 13th.*

VETERINARY DEPARTMENT.—The undermentioned gentlemen to be Acting Veterinary-Surgeons, viz. Robert Francis Frost, vice S. L. Pallin, promoted; William Pallin, vice A. E. Queripel, promoted.

## Veterinary Jurisprudence.

## FOLKESTONE COUNTY COURT.

*Before W. C. SCOTT, Esq., Judge.*HORSE WARRANTY.—CHAMPION *v.* PREBBLE.

THIS was an action brought to recover £50 damages for breach of contract in supplying the plaintiff with an unsound horse.—Mr. Minter for the plaintiff: Mr. Fox, of Dover, for the defendant.

*Mr. Minter*, in opening the case, said the plaintiff was a dust contractor, living at Swingfield, and the action was brought to recover damages for breach of warranty in respect of a black mare. The plaintiff was in want of a cart-horse, and went to the defendant; told him he wanted a good sound horse, and inquired whether the one he wished to sell was sound. Defendant replied, "sound as a bell," and also stated the animal was six years old, and that he would give a warranty, as he bred her himself. The mare was bought for 30 guineas, and taken home. Shortly after she exhibited symptoms of cold, and he should prove that at the time of sale, and long previous to that, the mare was suffering from diseased lungs and hernia. Mr. Champion gave him instructions to write to the defendant, and acquaint him with the facts of the case, which he did. An action was commenced some months back, but by mistake the summons was served on the father instead of the son. A veterinary surgeon would give the court his opinion on the state of the mare, and would show, from a *post-mortem* examination, that the animal had suffered from the diseases named for more than a year, and was at the time of the warranty in a diseased condition. The mare was taken to Ashford Market, and sold for £7, and soon after died.

*Mr. Champion*, the plaintiff, examined by Mr. Minter, said he was a dust contractor, living at Swingfield. He went to the defendant's place, and looked at the mare. Mr. Prebble asked him 30 guineas for her. He inquired her age, and the defendant said she was six years old, and he bred her himself. He then inquired if he would warrant her. Mr. Prebble replied that she was a good worker and sound. He took the animal home, and found shortly after she had a cold. He gave her a mash to cure her, but on working her afterwards, he found she still suffered from this cold, and he therefore took her back to the stables, and called in a veterinary surgeon. She was of no use to him all the time he had her, and died in a short time. She was sold at Ashford market for £7 a little before her death.

Cross-examined by *Mr. Fox*: He saw the mare before he bought her.

Mr. Stewart was with him at the time of purchasing her. He heard the defendant had a horse to sell, and went to him. Did not immediately see him on discovering the real condition of the mare; was in hopes she might get better. Made no application to him before bringing the action. Mr. Prebble warranted the mare to be sound. He said nothing about his having bought her a year and a-half previous of Mr. Hutchinson at Canterbury, and that he warranted her. Did not know much about horses.

Re-examined: Defendant warranted the mare as sound, and said he bred her himself.

*William Hoile*, blacksmith, Sandgate said that he was present with the plaintiff on the day in question. He heard the conversation between plaintiff and defendant. The defendant warranted the animal to be "as sound as a bell," and plaintiff asked him to "throw off" £10, which he refused to do. Was sure he heard defendant give the warranty. The mare was sold at Ashford market, and realized £7. She was knocked down to him, and he bought her in for plaintiff.

Cross-examined by *Mr. Fox*: Defendant did not say he bought her of Mr. Hutchinson.

*Mr. W. H. Bullmer*, veterinary surgeon, M.R.C.V.S., of Dover, said he was called by the plaintiff to examine the mare, and found her suffering from hernia. She had suffered from this from her birth, and it caused a swelling easily perceptible, under the belly, and it might cause her sudden death at any time. The animal was also suffering from chronic disease of her lungs. She had had that complaint for a long time previously to her purchase by the plaintiff. His observations were corroborated by a *post-mortem* examination of the animal. She was between ten and twelve years of age.

Cross-examined by *Mr. Fox*: The disease might not have been equally apparent to an unqualified man, but to any ordinary individual it was perceptible.

*Mr. Stewart* gave evidence corroborative of the plaintiff's.

*Mr. Fox* said the case involved considerable conflicting evidence. There had been no warranty given as to the animal's age or soundness, and not a single question asked in reference to her being diseased. The defendant told the plaintiff that he had bought the mare a year and a half before of Mr. Hutchinson, at Canterbury, who recommended her to him, and he had worked her ever since. Mr. Barton, veterinary surgeon, would speak of the condition of the mare at the time he examined her, a short time before she was sold. No communication of the discovery of her being diseased was made to the defendant until the summons was taken out. His client was a most respectable man, and very unlikely to take such advantage of the plaintiff as had been represented.

*Mr. Thomas Prebble*, the defendant, was then sworn, and said the plaintiff came to him twice, and asked him to sell him the animal, but he refused, and he came again the last week in March and asked him to sell her. He agreed to do so, and told him he had bought the mare a year and a half ago. He said nothing about her being as "sound as a bell," or that he would warrant her; he simply said, "she was given to me as sound." He never said he bred her himself. She never, to his knowledge, suffered from lung disease or from hernia.

Cross-examined: He did not notice the lump that had been referred to. She was kept in the bullock lodge for some time, because there was no room in the stables. She was at work during that time. He never received a letter from Mr. Minter, nor did his father.

*Michael Prebble*, defendant's father, lived within a mile of his son, and had seen the mare nearly every week. Had not noticed that she suffered from lung disease; nor had he seen the lump under the belly.

*Jeaffrey Barton*, veterinary surgeon, Dover, stated that he had seen the mare several times when he was attending other horses belonging to the defendant, and had attended her once for influenza. He had found her perfectly sound, and with no trace of hernia or lung disease upon her. He observed no swelling or lump under the belly. Lung disease might come on suddenly and cause death in three or four months, and active inflammation of the lungs might produce death in a day.

By *Mr. Minter*: He attended the animal for a cold, and did not look for traces of hernia.

Two waggoners in defendant's employ deposed that they had attended the mare in work, and found nothing the matter with her.

*Mr. Minter* very briefly replied.

*His Honour*, in giving judgment, said that the evidence went to prove that a warranty had been given, and the animal was unsound, though he did not believe the defendant at the time of sale knew there was anything the matter with the mare. He should give judgment for £23, being the cost of the animal, less the amount realised by its sale. Costs were not allowed, as there had been no re-tender. The Judge gave the following as the law on the subject:—A warranty of soundness is broken if the disease or defect existed at the time of the sale, although its existence could not then be detected; or if there was any disease, or seed of disease, which diminished, or in its progress was calculated to diminish its usefulness for the work to which it would be ordinarily applied.—*Folkestone Borough Gazette*.

## OXFORD COUNTY COURT.

(Before T. H. LISTER, Esq., Deputy Judge.)

BREACH OF WARRANTY ON THE SALE OF A HORSE.

GEORGE TOLLIT *v.* JOHN HADLAND.

MR. SAWYER was counsel for the plaintiff, the well-known horse-dealer of Oxford; and Mr. Fowler, of Leicester, instructed by Mr. G. Mallam, for the defendant, a horse-dealer of Beverley.

*Mr. Sawyer* stated the case. A bay mare was bought at Horncastle fair on a written warranty. The mare turning out not to be five years old and sound, was, after notice to the plaintiff, and an offer to take £20, sold for £63. Defendant sued for the difference in the price, £17; £4 11s. keep; £1 18s. 6d. railway fare; and £3 12s. expenses of auction.

The plaintiff, *Mr. George Tollit*, said on the 9th of August last he went to Horncastle fair. The defendant had a mare, looking like a hunter, and he asked £100 for her. Witness certainly would not have bought one under five years. He looked at her mouth, and said he thought she was only four. The defendant said he would warrant her five years. He looked at the mare, and gave £80 for her. Witness wrote a warranty, which the defendant signed:—"Mr. George Tollit has this day bought of me a bay mare, five years old, for the sum of £80, warranted sound, free from vice, no crib-biter, roarer, or windsucker." Witness did not notice a splint on the knee. The mare was brought to Oxford. On the 16th of August Mr. Newman, of Piccadilly, come down and bought six horses of him, including the mare. He gave him a verbal warranty that she was sound and five years old. A week or more afterwards Mr. Newman wrote that the mare was not as described, and she was returned. Witness had her examined by Mr. Wadlow

and Mr. Sabin, and obtained a certificate from them. Witness wrote to the defendant on the 26th of September, informing him that Mr. Newman had returned the mare as only four years old, and unsound, from an enlargement on the off knee. He had no wish to return her, if it could be settled in any way. He was willing to take £20 and keep her to sell at five years. Defendant replied that he was surprised to receive such a letter, being sure that the mare was sound when she left his hands, and five years old. If the unsoundness was ocularly proved to his satisfaction, he would send back a cheque. The mare was afterwards sold by auction, and bought by the defendant for £63.

Cross-examined.—He had nothing to say against the defendant, and had expressed in one of his letters a willingness to deal with him again. He looked at the mare, and probably put his hand over her fore legs. He was sure he did not say, "There's a small splint, but I don't object to it." The next day he saw the mare run out to see if she was sound. Mr. Newman gave £95 for the mare. The mare was not used while he had her, having been kept in the stable with a cough. Mr. Newman did not find out the defect in the knee; it was pointed out to him when he was showing her on sale. One could not help seeing it if he looked strictly. He had returned horses before, and recovered.

*Mr. Newman* confirmed the part of the plaintiff's case in which he was concerned. In cross-examination, he said he did not examine the mare's mouth, nor notice her off knee.

*Mr. Charles Hamlin Wadlow*, veterinary surgeon, of Oxford, said he had had thirty-six years' experience. He examined the mare on the 4th of October. She was four years old last May. The off knee was larger than the near one, there being a bony deposit on the outside and inside, close to the knee-joint. It arose from inflammation produced by concussion, and was very likely to produce lameness with work. Defect of that kind particularly constituted unsoundness. There was a splint on the other fore leg. The enlargement must have existed on the 9th of August and for some time before.

Cross-examined—An old horse with a confirmed splint in a place not likely to interfere with the tendons might work sound. He would not say eight out of ten horses had splints; a great number had and went sound.

*Mr. William Thomas Sabin*, veterinary surgeon, of Oxford, also examined the mare on the 6th of October, and was of the same opinion as the former witness. The forefeet were of a suspicious appearance.

Cross-examined.—A bony deposit of the character he examined could not be thrown out in a fortnight.

*Mr. John Green*, managing clerk to Mr. John Fisher, auctioneer, proved the sale by auction; Mr. Hadland purchased it for £63.

The defendant's advocate contended that the enlargement of the knee-joint must have been apparent to the defendant, almost as much as in the well-known cases of the horse without an ear, and the horse without a tail. The splint was common enough in horses, and in this as in other cases was no detriment.

The defendant said the plaintiff was introduced by Mr. Malton, of Hull, and in his presence examined the mare; passing his hand down the legs, he observed that there was a slight splint, but he did not object to that. He had never had a warranted horse returned before. After repurchasing the mare he could see the splint on the knee, but nothing to render the mare unsound. He had her examined by a veterinary surgeon.

*Mr. Peter Malton* said he saw Mr. Tollit examine the horse on the 9th of August. He said something about a splint, but witness did not catch the exact words.

Cross-examined.—He never introduced a purchaser to Mr. Hadland before.

*Mr. Sawyer.*—Did you do it out of love for Mr. Hadland?

*Witness.*—No, out of love for myself. (Laughter.)

*Mr. George Holmes*, of thirty-four years' large experience in India (as veterinary surgeon to the Body Guard), and in England, on the 26th of October examined the mare. The splint on the near fore leg was so well on the bone that he considered it of no detriment whatever. There was nothing in the off fore leg. He never saw a sounder animal, nor one with a better five-year-old mouth. Splints would be found in nineteen out of twenty horses, but were not likely to cause lameness unless it interfered with the action of the suspensory ligament. He was most positive there was no enlargement on the off knee; for he examined it a second time on Tuesday last, when he had heard what fault was alleged. In his opinion the horse was now rising six years.

*Mr. William Douthwaite*, veterinary surgeon, examined the mare on the 22nd of October, and found her perfectly sound except the small splint on the near fore leg, which was of no consequence. There was not the least bony deposit on the other leg. He had not the slightest doubt the mare was five years old.

The learned advocates having been heard on both sides, *Mr. Sawyer* urged that the weight of evidence was with his client, because none of Mr. Newman's customers in London would buy the mare, on the ground of the enlargement of the knee. Was it possible that Mr. Holmes and Mr. Douthwaite had seen another mare? (Laughter.)

*His Honour*, in giving judgment for the plaintiff for £27 1s. 6d., said in the face of the difference between the doctors on each side, he must go to surrounding circumstances. The most striking was that Mr. Newman could not sell the horse in London, and returned it to the plaintiff, who took it back, as he would not have done had he any doubts on the question.

## MISCELLANEA.

### INCIDENTS OF THE WAR.

#### PRICE OF HORSES FOR THE ARMY.

ACCORDING to the public press it appears that the continued demand for horses for the use of the armies in France has so advanced their value in this country that the price for ordinary cavalry horses now ranges from £30 to £60 each, the average price being, perhaps, about £35. It is estimated that upwards of 15,000 horses have been shipped from Southampton for the use of the French army, their destination being at first Dieppe, but now the majority go to St. Malo. One firm alone in the Borough, who have a commission from the French Government, have stabled 6000 horses prior to their being sent to Southampton. If our Government wanted troop horses at this time they would have to give fabulous prices.

## LOSS OF PRUSSIAN CAVALRY HORSES.

A CORRESPONDENT of the *Pall Mall Gazette* recently stated that "for a day's journey outside Versailles the road may be said to run between a succession of dead horses, skinned and left to rot in the fields. There is no matter for apprehension so long as the cold weather lasts, but the fact is suggestive of dysentery should a few warm days let loose the deleterious gases to avenge the animals worked to death. This campaign has seen the expenditure of enormous numbers of horses. It is said that the whole Prussian cavalry has been remounted more than once. Their present horses appear rather small and weak for their work."

## SCENE IN THE STREETS OF PARIS.

*La Liberté* contained a few days ago the following piquant yet melancholy bit of intelligence. The paragraph is headed, "WHAT BECOMES OF A HORSE THAT FALLS," and thus goes on:—"Yesterday, at three o'clock, there passed through the Rue de Flandre, in La Villette, a horse, consumptive and sick, which its owner was bringing to the veterinary surgeon. But behold, the poor beast, unable to proceed further, falls upon the pavement, and cannot rise again. A crowd of scamps gathers, and forms a ring around the fallen horse. At this moment comes up a butcher, who offers to buy the dying horse for the *Boucherie Municipale*. A price is offered, a price taken. The horse immediately receives the *coup de grâce*, and our butcher goes off for a cart. Naturally, the crowd of spectators had by this time grown larger than ever. The butcher had scarcely turned his back when the crowd, with a cheer, rushed upon the horse. Each wishes to have a piece. Men, women, and children form a *melée* strange in its aspect. All the instruments for cutting meat were employed, and in less than twenty minutes there remained of the horse nothing but the head and its four legs. Only then does the butcher arrive with his cart. We shall not attempt to describe his surprise and indignation.—*Echo*, January 6th.

## DAILY REQUIREMENTS OF HORSE-FLESH IN PARIS.

It is affirmed that the number of horses which are daily killed in Paris for food amounts to no less than 650.

THE "Besieged Resident" of the *Daily News*, writing from Paris early in December, jocularly observed:—All the animals in the Zoological Gardens have been killed except the monkeys: these are kept alive from a vague and Darwinian notion that they are our relatives. In the cellar of the English Embassy there are still three sheep. Never did the rich man lust more after the poor man's ewe lamb than I lust after these sheep. I go and look at them frequently, much as a London Arab goes to have a smell at a cookshop. Some one has discovered that an excellent jelly can be made out of old bones, and we are called upon by the mayors to give up all our bones, in order that they may be submitted to the process.

## DEATH OF MR. ERNES.

WE deeply regret to record the death of Mr. William Ernes, M.R.C.V.S., John Street, Bermondsey, which melancholy event took place on Wednesday, January 4th, 1871, after a most severe and painful illness. Mr. Ernes was in his seventy-third year, and at the time of his death he held office as a Member of the Council of the Royal College of Veterinary Surgeons. He was one, indeed, of the oldest members of the Council, having been elected originally in 1844, directly on the attainment of the Charter of Incorporation. He had previously taken an active part in the continuous efforts which were made from 1840 to 1844 to obtain a legal recognition of the profession, and was among those who were early selected as "a standing Committee to watch over the interests of Veterinary Science." In 1850, Mr. Ernes was elected one of the Vice-Presidents of the College, and in 1863 he succeeded to the Presidential Chair.

In veterinary politics Mr. Ernes was an open, honest, and unflinching reformer. The candid and friendly manner, however, in which he gave utterance to his opinions always won for him the respect of those from whom he differed; indeed, few men who have entered the arena of professional politics have been more appreciated for sterling worth and liberal sentiments than our deceased friend.

Referring to his personal character and general usefulness in the parish in which he resided, the writer of his obituary in the *Bermondsey Advertiser* says: "He was emphatically one of ourselves, living in our midst and ready to help in any work for the improvement of his fellow creatures. He was a member of the old Improvement Board, and has been a member of the vestry from the first until within the last few months, when health not allowing him to fulfil the duties, he was compelled to resign, but while our member he faithfully looked after the welfare of the district, and at all times set his face against unnecessary expense. He took a lively interest in the work of the *Christ Church Temporal Relief Society*, believing that the best thing you could do for a hungry child, as a constitution half fed, was to give it a substantial meal, then train the mind."

Mr. Ernes was a native of Belgium, and as such he could boast of as large a circle of professional friends on the Continent as in the land of his adoption. Their estimate also of him was such that few, if any, of the professors of the continental schools or distinguished practitioners ever visited England without making a call upon "friend Ernes" their first act. His acquaintance with foreign languages was on these occasions of great use. He spoke German, French, and Italian fluently, and was also practically familiar with the *patois* of many continental districts. Several years of his early life were spent in travel, and the lively interest which he then took in all matters relating to horses and other animals led him to visit in succession most of the continental schools.

In 1830 he essayed to join the profession, and for this purpose entered the school at Alfort, then under the directions of the celebrated Girard. Shortly afterwards he came to England, and became a student at the Royal Veterinary College. In due time he was admitted into the ranks of the profession, his diploma bearing date June 4th, 1839.

Mr. Ernes' knowledge of veterinary science and of European languages led to his being deputed with Professor Simonds in 1857, by the National Agricultural Societies of England, Ireland, and Scotland, to visit the Continent, and inquire into the nature and extent of the cattle plague, which was said to have made its way from Eastern Europe into Prussia, Mecklenburg, and contiguous German states. The Commissioners found the statement of the existence of the disease in Western Europe not to be correct; and to complete their inquiry they had to travel far into Galicia before seeing animals suffering from the malady. On their return a full report of the investigation was prepared, and subsequently published in the *Royal Agricultural Society's Journal*. This report may be said to have proved of much value when, in 1865, the cattle plague was brought from Russia into England. During this year also a second International Veterinary Congress was held at Vienna, and Mr. Ernes was named one of the delegates to take part in its proceedings. Again, in 1867 he was deputed by the Government, conjointly with Professor Simonds, to attend an allied congress held in Zurich, at which the laws relating to the spread of the cattle plague formed one of the chief subjects for discussion.

Much more might be added to this brief *résumé* of Mr. Ernes' professional life, did our space admit. We must not, however, omit to speak of the loss veterinary science has sustained by his death, and our deep regret that the *Veterinarian* will no longer contain articles of much professional interest and value from his pen.

Month by month, and almost without interruption, for twelve years in succession have the readers of our Journal been accustomed to peruse with advantage his "ANALYSIS OF CONTINENTAL JOURNALS." It is not a little singular that we should have published his very last translation at the close of the year. Little did we imagine, when reading his MS. for press, that we were looking upon the last of his professional labours. It is coincidences of this kind which bring home with a force and truth of their own, the certainty of death, and the uncertainty of all else besides. Rightly, indeed, has one of our poets sung in sacred song :

"The year rolls round, and steals away  
The breath that first it gave ;  
Whate'er we do, where'er we be,  
We're travelling to the grave."

#### ERRATA.

In Vol. xlv, No. 517, Jan., 1871, page 29, for "North Africa" read "North America and South Africa."

By an oversight the titles of Mr. Donaldson, who superintended the matriculation examination of the students about to enter at the Veterinary College of Edinburgh, were omitted from his official letter to Professor Williams respecting the result of the examination (see page 39). These titles are LL.D. and Rector of the High School of Edinburgh.

In the obituary of Mr. Daniel Cullimore, as published in our last number, for "his diploma bears date May 17, 1828," read "May 24, 1853."

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Communications and Cases.

ACORN-POISONING.

By Professors SIMONDS and BROWN.

(Continued from p. 63.)

HISTORY OF THE "ACORN DISEASE."

When the disease which was subsequently traced to the consumption of acorns by young stock was first detected in Kent, in the autumn of 1868, considerable alarm was excited in the minds of stock-owners, not only on account of the remarkable fatality of the malady, but even more from the resemblance which was perceived to exist between the symptoms and some of the *post-mortem* appearances to those of cattle plague.

The first cases of the disease which came under observation occurred among twenty-eight yearling steers and heifers, which were at pasture at Langley Park, Beckenham. These animals, with nine cows, had been sent to Langley on September 30th, 1868, and on their arrival were placed in a part of the park known as the Lower Park. They were in good health at the time, but rather low in condition. On October 7th one of them was observed to be seriously ill, and several others to be somewhat out of health. By the following day the diseased state of the herd was fully established, and, case succeeding case, by October 15th sixteen yearlings and one cow had become affected. Of this number six had died, and several of the others were in a precarious condition. The suddenness of the attack, together with the rapid spread and great fatality of the disease, led to the belief that the animals were the subjects of cattle plague. The circumstances, however, connected with the history of the outbreak disproved such opinion, and clearly indicated that the disease had arisen

from some local cause. It was also evident that the malady was not infectious. Indeed, it appeared highly probable that the attack had depended on the animals having partaken very freely of acorns, which day by day were falling in large quantities from the oak trees that abounded in the enclosure. The herbage in this part of the park was uniformly short in quantity. It did not appear to be objectionable in quality, and no deleterious plants were detected among it. It was stated that for ten years at least the crop of acorns had not been equal in amount to the present crop. Very large crops of chestnuts had been produced, and during the whole of the time the cattle which had been grazed in the Lower Park had done well.

The custom had been to purchase cattle in the autumnal period of the year, particularly Welsh cattle, at Barnet Fair, in September, and turn them into the park. This year, however, the practice had necessarily been altered by a change of occupancy, and hence the reason of the park being grazed by young cattle. Had the ill effects depended on the quality of the herbage alone, it would be difficult to account for the fact that fresh cattle coming on the place in the autumn invariably had done well. The opinion that the eating of large quantities of acorns had caused the fatality was strengthened by the circumstance that some animals belonging to Col. Lennard, of West Wickham, had also been attacked while in the same pasture, but that twenty calves, which occupied a contiguous part of the park, where they could obtain very few acorns, had continued in perfect health. The non-infectious nature of the disease was also shown by the fact that one of the first animals attacked had been put with these calves, and had continued with them down to the time of the inquiry being commenced, and that cattle belonging to other persons which had been located near to the diseased beasts from the commencement were unaffected.

The symptoms presented by the sick cattle were very characteristic. In all cases at the outset the animals were observed to be remarkably dull and dispirited and inclined to separate themselves from each other, and to stand in a crouched attitude, with the head hanging down. The eyes were sunken. In many of the animals there was discharge of mucus, sometimes mingled with blood, from the nostrils, and frequently mucous discharge from the eyes was also noticed. The internal temperature was natural, ranging between 100° and 102°. The surface of the body was cold and the coat staring.

An irritable state of the intestines was present in most cases, as indicated by the frequent passing of small quantities of fæces, often streaked with blood. Some of the animals suffered from constipation, the fæces being scanty, black, and hard. The urine was nearly colourless, but the quantity secreted was considerably in excess of the normal amount. This peculiarity of the urinary secretion—its remarkable paleness of hue—has been observed in every instance, and may be looked upon as one of the most characteristic symptoms of the “acorn disease.”

From the beginning of the attack the animals refused food of all kinds, and the loss of condition was extremely rapid. Even before these animals became seriously ill it was remarked that they were becoming more and more emaciated day by day, and when the desire for food ceased altogether it naturally followed that the debility quickly increased.

One marked symptom of the disease which might serve in a doubtful case to distinguish it from cattle plague was the universal pallor of the mucous membranes, the conjunctiva, the Schneiderian membrane, the buccal membrane; and the membrane of the vagina were alike distinguished by the pallid hue, variegated here and there with petechiæ, which seemed to render the prevailing paleness more obvious. The membrane of the roof of the mouth was in several instances extensively abraded, and presented the appearance which in the early period of the prevalence of cattle plague was thought to be specially indicative of that disease. One specimen presented this lesion in so marked a form that it could only be compared with some of the worst cases of cattle plague which had been met with. The greater portion of the palate was denuded of its epithelium, and the raw surface of the vascular tissue was apparent. The respiration was quick and short, and carried on with very little movement of the flanks. A peculiar moan accompanied the expiration in some animals which were most severely affected; this sound, occurring, as it did, in the midst of the expiratory effort, reminded the observer of the last stage of rinderpest, and when it was associated with other signs of that disease—for example, the dejected appearance, dependent head and sunken eye, and twitching and trembling of the muscles—it was not remarkable that at the outset a suspicion of the return of cattle plague had arisen. Symptoms of cerebral derangement were observed in several cases, and, in fact, all the affected cattle in the latter stages of the disease became in some degree lethargic. The occurrence of this drowsy condition, in connection with the absence of the normal colour of the urine and its

low specific gravity, led to the conviction that non-elimination of effete matters from the blood by the kidneys was one element, and possibly a very important one, in the disease. No opportunity, however, occurred of verifying the impression by chemical analysis.

*Post-mortem appearances.*—Several of the animals which had died just before the commencement of the investigation in Kent were examined, and the following morbid appearances were observed :

Abrasions more or less extensive of the buccal membrane at the angles of the mouth and on the palate were detected in most instances. Some of the abraded portions had the appearance of incipient ulcers. The fauces, velum palati, and larynx were generally congested, and the mucous membrane was covered with a large quantity of white exudation-matter. Congestion was also apparent in the mucous lining of the trachea.

The lungs and heart were healthy.

In the digestive organs the evidences of the effects of the disease were very marked, and in some instances there was so much destruction of tissue that it was difficult to avoid the conclusion that some powerful irritant poison had been administered. Usually the rumen was healthy, but in a few instances there were spots of submucous hæmorrhage on the muscular bands, and occasionally spots of congestion were seen on the lining of the viscus. The reticulum was generally healthy.

At the entrance of the omasum, in several cases, the tissues were broken up, and presented a torn and ragged appearance, and many of the edges of the leaves of this stomach were in a similar condition.

Sometimes there were hard masses of masticated acorns impacted between the leaves, but very commonly no trace of them existed in any part of the alimentary canal ; indeed, some of the animals were not attacked with serious illness until several days after they had been removed from the acorn pastures.

The abomasum was in many cases congested in patches, and the edges of the folds of the mucous membrane were often œdematous.

No structural changes were detected in the intestines ; the contents of the tube were generally fluid, and in the large intestine the dark lines due to venous congestion, and distinguished as a lesion of cattle plague, under the name of "zebra-marking," were present.

Both kidneys and bladder were generally healthy, but in

some of the animals examined a large coagulum of effused blood was found in the lumbar region behind the kidneys. Blood was also found in some cases in the omasum, and spoiled blood, in considerable quantity, was found mixed with the contents of the intestines.

Speaking generally, the morbid appearances were indicative of blood-poisoning, and varied to some extent, according to the duration of the disease which destroyed the animals' life, but maintaining all over the country sufficient uniformity to prove that the same cause was in operation to produce the effects which were observed.

Outbreaks of the same disease occurred simultaneously in various parts of the kingdom, and cases were investigated in Kent, Middlesex, Herts, Lincolnshire, Derbyshire, Herefordshire, Surrey, Suffolk, and Norfolk.

In every case the outbreak followed upon the fall of acorns. Very few adult cattle were attacked, but of young stock scarcely any of those which partook of acorns entirely escaped.

The disease only appeared in districts where acorns abounded, and in all parts of the kingdom it was characterised by symptoms and lesions which were nearly identical in character.

Remedial measures failed everywhere. Theoretically, the duty of the veterinary surgeon was simple; he was called upon to use means to eliminate the poison from the system, and to support the failing powers of life meanwhile.

Practically, the attempt to carry out the theory did not succeed. Salines, alkalies, and vegetable tonics appeared, in some cases, to be beneficial; but no success attended the same treatment in other instances, and the result of the whole of the curative means which were employed in the treatment of the disease was complete failure.

When the supply of acorns ceased the disease gradually declined, and only reappeared in the autumn of last year, under conditions which were exactly like those of 1868—deficiency of herbage after a long drought, and an abundant crop of acorns. In the latter part of September the acorns began to cover the pastures rather thickly, and observing that cattle were feeding on them voraciously we anticipated a repetition of the experience of 1868.

Some stock-owners, who had suffered in the previous outbreak, took the precaution to have the acorns picked up before they allowed young cattle to feed over the pastures on which the acorns fell, and the result of this wise precaution was most satisfactory. Cattle which had been feeding in

parks all the summer could not be thus sufficiently protected. In many instances the daily collection of the acorns on these pastures did not prevent the disease, although it considerably mitigated its severity. Large quantities of acorns fell during the night, and the animals had opportunities of eating them before the pickers came to their work.

Towards the middle of October high winds prevailed for a few days, and an immense quantity of acorns fell, but it was not until the expiration of a week or ten days from this time that the disease manifested itself so generally as to attract attention, and by the end of the month the malady had been recognised over a large portion of the kingdom.

The daily press contained numerous letters from correspondents who had suffered from the ravages of the disease, or who sought advice respecting its prevention. The general impression was that acorns, when judiciously given, are valuable food; but if eaten in too large quantity they prove hurtful by distending the stomach and causing indigestion. Pertinent to this view of the effects of acorns are the remarks which we quote from a communication sent to us by Mr. Dale, M.R.C.V.S., of Great Stanmore. Referring to the duration of the disease, he writes:

“Young stock have in some instances been found dead in the parks without any previous signs of illness, and on examination we have found large quantities of whole acorns in the rumen, and the animals apparently died from ‘hoven.’ These have been exceptional cases.”

Similar cases of sudden death from excessive feeding on an unaccustomed food have been brought under our notice. Cattle and sheep have died in consequence of filling their stomachs to repletion with acorns, and the same thing has happened to them and to other animals from overgorging with other kinds of food, but, as Mr. Dale says, these cases are exceptional.

From Mr. Dale’s report of cases of acorn-poisoning occurring in his practice, we extract the following details, which will suffice to show that the disease, in its ordinary course, is not the result of sudden mechanical distension of the stomach from excessive feeding.

“Case 1.—Hilfield Park. Fifteen steers and heifers were pastured, ages from one year to two and a half years. The animals were feeding on acorns for a week before any symptoms of illness appeared; ten of them were attacked and nine died. The first case occurred on October 27th. Some of the acorns were picked up from this pasture, and as soon as the young stock were taken ill the older animals were removed.

“Case 2.—Bushey. Ten steers and three milch cows were on the pastures. Disease commenced soon after the animals began to eat the acorns. Five were attacked and two died. None of the milch cows were affected. The acorns were picked off the pasture.

“Case 3.—Watford. Twenty-five oxen and twelve milch cows were feeding on the pastures for three or four weeks before the outbreak of disease on October 27th. The acorns were regularly picked up, and only seven young cattle were attacked; of these four died.

“Case 4.—Stanmore. Three young stock and ten Alderney cows were pastured in the summer; the disease commenced on October 21st, and, contrary to general experience, attacked two cows; the young stock escaped. The acorns were picked up from this pasture.”

Reports were received day by day of the prevalence of the disease in all parts of the country where acorns were plentiful. As in 1868, the malady proved very fatal; from seventy to ninety per cent. of the animals attacked died, and the proportion of those attacked in a herd of young animals was usually three fourths of the entire number. All the animals which fed on the acorns were affected to some extent, but those only which were actually ill were reported to be suffering from the acorn disease.

Cows and oxen were attacked in several instances, and some fatal cases occurred in these animals. Some herds were attacked with a mild form of the disease, and these instances, on being investigated, were found to have occurred on farms where the stock had previously suffered, and where, consequently, great precautions were taken. Young cattle were removed as much as possible from the places where the quantity of acorns was excessive, and pickers were kept constantly at work on the pastures. Sometimes the cattle were kept in at night, and not turned out until a quantity of acorns had been collected. The admixture of bran and chaff with acorns was found to prevent the development of injurious effects, and in the few localities where there was a fair quantity of grass the young animals were found to thrive well notwithstanding the presence of a great many acorns on the ground.

Mr. Chattell, veterinary surgeon, of Bromley, in his letter to us, writes:

“The principal harm appears to result from turning the young stock out empty and hungry. I know of no case of disease occurring where the animals have been turned out in

the fields after having well satisfied themselves with food in the sheds."

All the details which have been recorded by the various members of the profession who have communicated with us, agree with our own observations and experiments, and point to the conclusion that the mischief is done in the early part of the acorn season, at which time the seeds are certainly wanting in the sweetness and nuttiness of flavour which they subsequently possess, even if they do not contain some acrid or volatile principle which is afterwards changed or dissipated.

Symptoms and morbid appearances, in the cases which were investigated during the last outbreak, were in all respects identical with those which have been recorded as characteristic of acorn-poisoning in 1868. At first the animals were observed to be "doing badly;" the movements were tardy, and there was the peculiar dreariness of aspect apparent. Constipation was generally present, the coat was rough and harsh to the touch, and the skin tightly adherent to the sides. This condition of things continued for some time at least, without any modification which was apparent to the herdsman, until one or two animals became suddenly worse, or, perhaps, were found dead in the field.

If the nature of the disease was at once discovered or suspected, the rest of the herd was removed from the pasture; this precaution, however, was in very many instances adopted too late to save the majority of the animals. After an interval of a few days others would become sick, notwithstanding their complete abstinence from acorns, and, indeed, from all kinds of food save that which was given with the drenching horn; so by degrees the greater part of the herd would in many instances succumb, some of the animals being attacked with fatal illness ten or twelve days after their removal from the acorn pasture.

One very remarkable instance of the progress of the disease after the removal of the cattle from the pastures on which acorns were scattered came under our observation in the beginning of November last. A herd of nearly thirty Scotch steers was turned into a park in the spring of 1870, and continued in the pastures all the summer. The herbage during the long dry season was very scanty, but the animals remained in good health until after the fall of acorns, during the high winds which prevailed about the middle of September. From this time all the herd became unthrifty in appearance, and the animals generally presented those symptoms of lassitude and debility which have been described. About the second week of October five of the young stock died in quick

succession, some of them in a few hours after being attacked. The remaining animals of the herd were removed from the pasture at once and placed in a sheltered but well-ventilated yard, where they received every attention, but in spite of every care fresh attacks occurred at intervals, and by the beginning of November all the animals were suffering severely.

On the occasion of our visit, in company with the veterinary surgeon in attendance, the sight which presented itself carried us at once back to the worst days of cattle plague. Something like a score of cattle were in the yard, some standing with their heads hanging down, some lying with their heads turned to one side; many of them gave utterance to the peculiar groan or grunt in the middle of each expiration. Even the characteristic symptom of muscular twitchings or tremblings was not wanting. All the animals had the sunken eyes and haggard looks which were so familiar in the time of the plague, and all were miserably weak and emaciated. It was remarked at the time of the inspection that, had cattle plague been then prevalent in the district, short and sharp would have been the shrift that these wretched creatures would have received. Happily, however, cattle plague was not prevalent, and notwithstanding its malignant nature, the existing malady had been proved over and over again to be non-contagious, therefore the victims were left to a fate which was as certain, though not so swift, as the stamping system of treatment.

A closer observation of the sick cattle led to the detection of other symptoms which simulated those of cattle plague. There was in most of the animals a discharge of a glairy fluid from the eyes and nostrils, and in several cases the fluid had collected in the inner corner of the eye, forming a gelatinous mass. The discharge from the nostrils was often streaked with blood. Frequent evacuation of small quantities of fluid feculent matter mingled with mucus and blood took place, and it was observed that the everted portion of the rectum was deeply congested.

Admitting the striking general resemblance which the symptoms and lesions of the acorn disease bear to those of cattle plague, we must nevertheless admit that to the scientific pathologist the distinction of the two diseases is perfectly easy and sure. Not to speak of the minute phases of difference, there is sufficient evidence in the state of the internal temperature as indicated by the thermometer and the condition of the mucous membranes to set all doubts at rest. In none of the animals which we have examined has the

temperature exceeded  $102^{\circ}$ , and in some of the sick cattle to which we have just referred the thermometer registered  $98^{\circ}$ ; these were, however, within a few hours of death. The mucous membrane was always pale in colour, except in those parts where spots of congestion or abrasions existed.

*Post-mortem* examinations which were made during the last outbreak did not add anything of importance to the information which we obtained in 1868. The lesions which were observed included discoloration or abrasion of portions of the buccal membrane, congestion of portions of the membrane lining the digestive canal, and frequently the pouring out of large quantities of spoiled blood into the intestines, or the areolar tissue in the lumbar region. A few instances of extensive emphysema of the lungs came under our notice, but generally these organs were healthy, or at worst only congested. No important changes had taken place in the structure of the heart, liver, or kidneys of any of the animals which we examined.

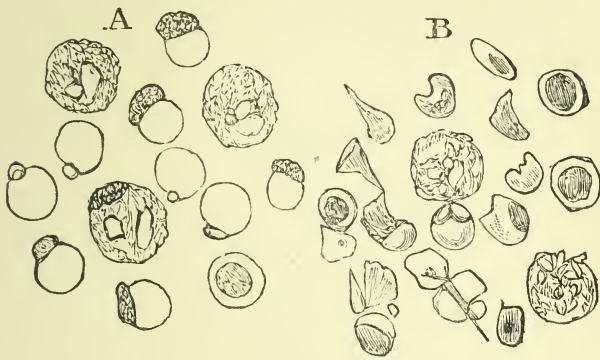
Death resulted in the majority of instances from the poisoned condition of the blood; in very few cases were the lesions sufficiently serious to destroy life in an animal whose reparative functions were in an active state.

Microscopic examinations of the blood, milk, urine, and secretions from the mucous membrane were made in several instances, and the important fact discovered that even in the most prolonged cases of the disease the blood was free from bacteria or other active organisms. White granular corpuscles (leucothytes) were present in considerable numbers, and the red discs were frequently stellate.

It might have been expected that the digestion of large quantities of acorns would exert some influence upon the form of the blood corpuscles similar to that which tannin in solution exercises upon the red discs, as pointed out by Dr. Roberts some years ago. On adding a drop of a weak solution, three grains to the ounce of water, of tannic acid to healthy blood, under the microscope the discs first of all swell up and become globular, then a minute bud appears from one side of the globule, and gradually increases in size, until in many instances it exceeds the bulk of the corpuscle from which it arose. The projecting body becomes dark in colour from its opacity, while the disc gradually gets more transparent.

The addition of a drop of water in which acorns had been steeped did not cause a change of the kind which is induced by tannic acid, but it produced very remarkable alterations in the form of the red discs.

In the illustration the effects of a solution of tannin and solution of acorns are shown.



*Different effects produced by adding a drop of solution of tannin ; and solution of acorns to healthy blood.*

- A. Development of buds from the surface of the red discs after the addition of tannic acid.
- B. Change in the form of the blood-discs after the addition of a drop of water in which acorns had been steeped.

Very slight effects were produced upon the form of the white corpuscles by either agent, and the water in which boiled acorns had been steeped caused no other change than that which follows the addition of water to blood—the red discs became globular, very transparent, and ultimately nearly disappeared.

Blood which was taken from animals fed on acorns did not present any indications of the condition which is caused by tannic acid ; in one instance, the red discs were found to be distorted in form, presenting something of the appearances indicated at B in the illustration.

Milk was only examined in one instance, in consequence of the difficulty of obtaining specimens. Comparatively few cows were attacked, and the secretion of milk in them ceased almost immediately. The specimen referred to was taken from a four-year-old cow, which had been ill for some days ; only a few drops could be obtained, and under the microscope the fluid was found to contain a quantity of the large granular cells which are met with in the milk of cows affected with cattle plague, pleuro-pneumonia, and foot-and-mouth disease. The mucous discharge from eyes and nostrils contained a

large number of granular corpuscles of the character of pus-globules.

Several specimens of urine were examined, but no abnormal products were found, except in one instance, in which there was an abundant deposit of prismatic crystals of the triple phosphate.

#### CONDITIONS UNDER WHICH ACORNS BECOME POISONOUS TO CATTLE.

The two periods which have been remarkable for the development of the toxical action of acorns were distinguished by the prevalence of nearly identical meteorological conditions. A long drought occurred in 1868 previously to the outbreak of the disease, and the same thing happened in 1870 before any cases of acorn-poisoning were reported. Both years were alike in respect of the general deficiency of herbage and the abundance of the acorn crop, and in each instance the disease was observed only in localities where acorns abounded. The two outbreaks were, in point of time, coincident with the falling of the acorns in large quantities in the beginning of the autumn.

Chemistry has not yet determined whether or not acorns, when quite fresh, possess any principles which may undergo some modification in time, but it is well known that the first fall of the fruit produces the most serious consequences. A reasonable explanation of this circumstance is the novelty of the food, which tempts the animals to indulge too freely; but it must be remembered that, however true this may be, the effects are not developed for several days after the consumption of the acorns, and then they are not due to simple indigestion from accumulation of food in the stomachs; none of the symptoms are indicative of the distress which an animal suffers from distension of the stomach or intestines with ingesta.

Again, in ordinary seasons young cattle eat freely of acorns without injury; in fact, it used to be, and perhaps yet is, the custom in some parts of the country to charge an extra sum for the pasturage of cattle in parks in the acorn season, on account of the advantages which the animals were presumed to gain from the consumption of the acorns along with the grass; but in very dry seasons, when the crop of herbage is so scanty that the animals live almost exclusively on acorns, they gradually fall away in condition and ultimately many of them die with all the signs of blood-poisoning. Experiments which were carried out by us recently gave results

which correspond with what was observed during the two periods of the prevalence of the acorn disease.

#### EXPERIMENTAL FEEDING WITH ACORNS.

Two animals were selected, a steer about sixteen months old and a sheep about nine months old. Both animals partook of the acorns readily; the sheep continued to eat them for several weeks without showing any signs of illness; the ox, on the other hand, presented very marked evidence of being affected with the disease, which had proved extensively fatal in the acorn districts. The following remarks, which we quote from our note-book, will suffice to indicate the result of this experiment, which was undertaken under particularly unfavorable circumstances, inasmuch as the acorns were quite ripe and dry, and animals all over the country had ceased to suffer from the disease.

On November 14th the steer ate about a peck of the seeds with a little hay chaff.

November 15th.—The steer was supplied at 10 a.m. with about three quarters of a peck of acorns.

16th.—No evidence of any ill effects. The animal consumed about the same quantity yesterday as on the first day of the experiment.

17th.—Yesterday the steer continued to eat the acorns freely, but to-day he is less inclined to partake of them. Beyond the disinclination to eat there is no symptom of ill health; the internal temperature is  $100\cdot6^{\circ}$ .

18th.—No important change is apparent; the steer still objects to eat the acorns; indeed, manifests no desire for food.

19th.—Very little alteration has occurred in the animal's appearance since yesterday.

20th.—To-day there are decided signs of illness; the steer is very dull in its aspect, and is disposed to lie down; constipation is present; the pulse is weak; the animal takes very little food or water.

21st.—The symptoms are the same as those recorded yesterday; the general appearance is that of extreme dejection; the temperature is  $101^{\circ}$ .

Up to November 25th no change of importance was noticed; the temperature ranged between  $100^{\circ}$  and  $101^{\circ}$ , and the dullness and disinclination for food and water continued.

26th.—There is some mucous discharge from eyes and nostrils to-day, and for the first time the peculiar symptom of colourless urine was noticed; the appetite is almost lost; temperature  $100^{\circ}$ .

As the quantity of acorns consumed by the steer for the last few days had been inconsiderable, directions were given to administer the seeds crushed and mixed with water.

A microscopic examination of the blood was made by means of the  $\frac{1}{12}$ th immersion lens, which, with Dr. Beale's clinical microscope, was readily worked in the shed in which the animal stood. Examined immediately after being withdrawn from the animal, the blood presented a somewhat peculiar appearance; the red discs were, in many instances, stellate, but others were oblong, oval and square; some presented an irregularity of outline which is quite indescribable. (See woodcut B.) After a few minutes the major part of the corpuscles assumed the circular form; some of them, however, retained the stellate appearance. The white corpuscles were more numerous than usual, but no change of form was observed in respect of them. It has already been a subject of remark, in reference to the microscopic examination of the blood of animals suffering from acorn-poisoning, that neither bacteria, vibrios, nor monads, or other moving bodies were detected.

Some of the colourless urine was collected, and the specific gravity of the fluid taken by the urinometer was found to be 1012. The reaction was alkaline.

November 26th.—No marked change in the condition is apparent. The administration of crushed acorns with water is to be continued thrice daily.

28th.—The steer is worse; the pulse, 55 in the minute, and weak. The animal is much depressed, and has a sleepy aspect. He lies with his head turned to one side and resting on one hind leg. All kind of food is refused. Urine colourless, alkaline. Temperature 102°.

29th.—The general appearance is more animated, but the principal symptoms which were noted yesterday are still present, and there are in addition slight diarrhoea, with indications of abdominal pain, shown by the animal shifting about, moving its hind legs, and shrinking from pressure to the abdomen. The internal temperature is 100°; the exterior of the body is cold.

December 1st.—For the last two or three days the acorns have not been given regularly, and it is probably owing to this circumstance that there is some abatement in the severity of the disease. The acorns are to be given thrice daily.

2nd.—The return of the more severe symptoms of illness was noted, and from day to day slight changes were observed; the animal, however, improved gradually, and the appetite returned.

From December 12th to the present time the steer has continued to eat acorns every day without suffering any return of the serious symptoms; the animal's condition, however, is extremely miserable, very different from that of the other animals of the same age which were fed in the ordinary manner, without acorns, but otherwise were treated in the same way as the steer.

A reference to the account of the symptoms which were observed in animals affected with the acorn disease in 1868 and also in 1870 will show that the most characteristic signs were developed in the steer during the time the experiment was being carried out, and this result was obtained notwithstanding the fact, which has been remarked, of the acorns being perfectly ripe and dry.

The sheep which was the subject of experiment in feeding with acorns continued to eat them readily from November 21st without suffering any ill effects. None of the symptoms which were observed in the steer were detected in this animal; in fact, the food, instead of acting as a deleterious agent, had a beneficial effect.

Taken together, the results of the two experiments, are quite in accordance with what has been observed of the effects of acorns upon the two classes of animals, although they do not contribute anything towards the solution of the question, why sheep eat with impunity food which is injurious to cattle, whose digestive organs are similar in structure and arrangement.

#### REMEDIAL AND PREVENTIVE MEASURES.

Treatment directed to the cure of the acorn disease cannot be said to have resulted satisfactorily in any instance in which the disease has been well defined at the time the medicines were employed. Concurrent professional testimony from various parts of the country establishes the fact that in the early stage of the affection, or in mild attacks, that is to say in those instances where animals have not eaten sufficient to produce very important derangement of the organism, the administration of laxatives and alkalies has been beneficial. In our experiment of feeding with acorns the recovery occurred independently of medicines, and there is every reason to believe that spontaneous recovery would have resulted in all those cases of a mild type, which in reality owed their benign character to an insufficient dose of the poison having been taken.

When the signs of blood poisoning became well marked all the medicines which were used were equally impotent to

neutralize the influence of the poison; nothing which can be properly termed an antidote has yet been discovered, nor is it reasonable to suppose that any antidote exists which will be effective in cases of blood poisoning, as they are termed, because the condition includes a great deal more than is usually implied in the use of the word "poisoned."

An animal feeds for a certain time on provender which contains a quantity of organic matter in a state which is unfavorable for assimilation; under these circumstances it may be presumed the digestive functions become disturbed, products which ought to be excreted are retained in the system, and besides this deleterious matters are very probably absorbed. The blood is charged with effete matter, and is no longer capable of supporting life, much less of repairing wasted tissues. Slowly but certainly the vitality of the circulating fluid declines, and the death of the entire organism inevitably follows the decadence of the life of the blood.

It is hardly possible to imagine the existence of a single remedy which will restore the lost force, re-establish the impaired functions, cause the elimination of the dead materials which are blocking up all the channels through which they should be excreted, and rectify the derangement of nearly every organ in the body, as certainly as an alkali will neutralize a given quantity of an acid.

Many animals which were removed from the pastures when they began to show symptoms of the disease gradually recovered without medical treatment, while those which were badly affected did not materially improve under the action of medicines. Bicarbonate of potash was found in some cases to allay irritation, and many practitioners speak confidently of its value as a therapeutic in acorn-poisoning, but we are aware of numerous instances in which it was not productive of any benefit.

Vegetable and mineral tonics were exhibited to animals in the last stage of the disease, when much prostration is present, and food in the form of gruel was given at the same time, but without effect. The appetite was not improved by the use of tonics, and the food given often remained in the rumen, where it was often found after death as a pulpy mass of oatmeal from which only the water had been absorbed.

*Prevention* is not only better than cure in respect of acorn-poisoning, but it is also much more easily ensured. A little care and forethought will be required to properly carry out the necessary precautions, but no doubt need be entertained respecting their efficacy. It is an important fact that no

cases of the disease occurred on Hadley Common, near Barnet, although the place is well covered with oak trees, and plenty of cattle are turned out to graze there during the acorn season. The solution of this problem was furnished to us by the curator, to whom we applied for information respecting the customs of the locality. It appears that no restriction is put upon the collection of acorns by the people, and we were informed that "a hundred pickers or more would be often at work at one time on the common."

So long as permission is given, even though it may be tacitly, to persons to collect gratuitously acorns, which are worth something over a shilling a bushel, there is very little risk of animals pastured on the common getting poisonous quantities of them.

The ex-curator, whose recollection of the locality goes very far back, did not remember any illness which was traced to the consumption of acorns by cattle, although he well recollected the cows collecting nightly under his windows, near which oak and chestnut trees were thickly planted, waiting for the fall of the coveted fruit, and keeping him awake with their lowing. Probably the animals were instinctively aware that the night was the only time when they could hope to taste the provender on which busy hands would be at work with the early morning.

Picking up acorns as quickly as possible, especially in the early part of the season, is one very efficient measure of prevention; but as high winds may prevail during the night, and some of the animals get too many of the fallen acorns in their unripe state, it is also advisable to keep young stock off the pastures at night, or to supply them with a good evening meal of other food.

In dry seasons, when the herbage is very scarce, and acorns are abundant, it is obvious that extra care must be taken to guard against the danger; but in an ordinary season, when the grass is plentiful, there is but little risk while the stock take the acorns mixed with the more succulent food.

Practical difficulties will arise in certain localities in carrying out these suggestions; for instance, in one park which we visited it was found impossible to keep the quantity of acorns within reasonable limits, although pickers were employed daily at 9*d.* per bushel to collect them. In such a case the proper course would be to give the animals bran, pulped roots, oilcake, or other food which would render them less inclined to eat too freely of acorns, and would, besides, modify the effects of those which they consumed.

When acorns were mixed with bran during the last autumn

even young animals partook of them with impunity, and there is no doubt that nearly all the losses which occurred would have been avoided if care had been taken to prevent animals living almost exclusively on acorns for many days in succession; but, in fact, there was so little of ordinary food to spare in the autumn of 1868 and 1870 that stock-feeders were too ready to accept the apparent advantage which the abundant crop of acorns presented to them, and the animals, in a state of chronic hunger, were quite prepared for any sort of provender that fell in their way.

It may still be urged with truth that no poisonous principle has been discovered in acorns, but the same thing is true in respect of herbage growing under certain conditions, or on particular soils. The grass from the scouring lands of Somerset, or from the meadows on which "splenic apoplexy" or "black leg" prevails, does not present to the chemist any characters to which its noxious qualities can be certainly referred. In many parts of the kingdom young cattle cannot graze on pastures which are harmless or beneficial to older stock, and practical men speak of "land which is too strong" or "herbage which is too rank" for young stock. Science has not yet furnished the clue to these mysteries, but observation has shown that provender which in some seasons is wholesome in others is deleterious, and we should at least be wise to accept the facts, and pursue the course which experience indicates, without waiting for a complete answer to the question, wherefore?

Many problems in physiology present themselves for solution, and among them that most important in its bearings upon the well-being of our flocks and herds is the exploration and clear definition of the conditions under which the food which should support the organism becomes the poison which destroys its vitality.

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## OBSERVATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE HORSE'S FOOT.

By GEORGE FLEMING, M.R.C.V.S., Royal Engineers.

(Continued from vol. xliii, p. 730.)

### EXTERNAL PARTS OF THE FOOT.

*The Hoof.*—We have compared the exquisitely organised envelope containing the bones, vessels, nerves, and other

essential structures of the horse's foot, to a sock; the hoof stands in the same relation to these that a boot or shoe does to the human foot encased in its covering of silk, cotton, or woollen. It is a thick, hard, and insensible (or non-vital) case of fibrous horn, accurately adapted to and moulded on the superficies of the parts it contains and protects, and to whose external configuration it owes its form. It has its analogies, in other animals, in the thickened epidermis, pads, nails, claws, &c., with which their feet are provided.

In order to study it properly, it is necessary to remove it from the foot by maceration in water; and further maceration, by separating it into its different constituent parts, permits a detailed study to be made of these.

Viewed as a whole, either before or after removal from the foot, or even after prolonged maceration has disunited its component divisions, what we would call a well-shaped hoof is cylindro-conical in form; or, as it has been otherwise defined, it has the figure of a truncated cone intersected at the base and summit of its axis by two oblique planes, the inferior of which converges rapidly towards the superior, and leaves this frustrum of the cone much higher in front than behind. In this respect the hoof corresponds to the *os pedis*, and its base or lower circumference is consequently larger than its summit, in accordance with its slightly conical figure.

But though, in general terms, the hoof may be described as having this geometrical outline, strictly speaking it does not offer such a degree of regularity in form, its lower border being nearly always more circular and salient on the outside than the inside.

And though, to the ordinary observer, the hoof appears to consist of one entire or indivisible case, intended by nature to protect the internal parts from contact with the ground and the influence of extreme cold or heat, yet, as has just been said, long maceration resolves it into three principal portions, which have received different names. These are the "wall" or "crust," the "sole," and the "frog," with its circular continuation, the "periople."

Each of these parts we will examine somewhat carefully, as a knowledge of their structure, relations, and uses is of the utmost importance with a view to perfecting the farrier's art. Our description will more immediately refer to the hoof of the fore extremity.

*The wall of the hoof.*—The "wall" or "crust" of the hoof (*paroi* or *muraille* of the French, *hornwand* of the Germans) is that portion we see in front and laterally when

the horse's foot rests on the ground, and which gives a cylindrical figure to the horny box. It is a circular band of horn, extending over the fore and lateral parts of the os pedis, originating at the coronet, where the hair-roots terminate, and descending in an oblique direction parallel to the face of that bone, to a certain distance beyond its lower margin. On lifting the foot and viewing its ground surface, we observe that the lower border of the wall projects more or less beyond the other parts, evidently making the first impression on the ground, and taking a large share in supporting weight and sustaining wear. Posteriorly, when it reaches the extremities of the wings of the os pedis, instead of its ends being continued one into the other, so as to complete the circle, they suddenly become inflected, first downwards, then forwards and inwards, along the inner aspect of these wings, until they nearly gain the centre of the bottom of the foot, where they terminate. These inflections are not seen when the foot rests on the ground.

Altogether, the wall may be said to form about two thirds of the entire hoof, or about eleven thirteenths of its plantar contour.

With the object of describing this important division of the hoof more accurately, we may look upon it as having an external and internal surface, an upper and a lower border, two angles of inflexion, and two centripetal prolongations, inflexures or "bars," as they are more usually designated.

On a healthy foot—one which has not been exposed to the injurious influence of the farrier's rasp or the groom's hard water-brush—the external face is observed to be smooth and shining, as if varnished. Examining it closely, it is found to be made up of very fine, closely arranged parallel fibres, passing in a straight line from the upper to the lower border. Not unfrequently a series of faint undulating grooves and ridges, one above another, runs transversely across their direction from one heel to the other. These circles or rings are more or less largely and peculiarly developed in certain diseases, and give the outer face of the wall a characteristic appearance. They are also due sometimes to change of food, locality, or increased activity in the secretion of horn, without disease being present. This face of the wall likewise shows various deformities and defects, the result of disease, accident, or mismanagement.

The internal or posterior surface is that which is adapted to the laminated face of the os pedis,\* and its whole aspect is

\* Stubbs, in his, for the age, magnificent 'Anatomy of the Horse' (London, 1766), aptly describes the laminae covering the pedal bone as "a substance resembling the villous surface of a mushroom."

covered with corresponding leaves arranged in exactly the same manner, though in an inverse order; passing from above to below, each lamina is received into the space between two vascular laminæ, and *vice versâ*.

These laminæ have been correctly designated "keraphyllæ," or *horn-leaves*, to distinguish them from the "podophyllæ," or *foot-leaves*. In the fresh state they are very flexible, and have an unctuous feel, from the pulpy epidermic cells with which they are covered; but when dry they are hard and brittle. They are ordinarily white in colour, or in exceptional cases slightly specked with grey or black patches; but in the fresh state their hue is generally masked by the red staining they receive from the colouring matter of the blood in the vascular laminæ. In every respect they correspond to these vascular laminæ or podophyllæ; commencing apparently at the cavity in the upper border of the wall, and which receives the coronary cushion, they proceed downwards in parallel longitudinal leaves, proportioned in number, length, and width to those to which they are opposed, and with which they are dovetailed.

Consequently, they are narrowest, and their interspaces are shallowest at their upper part; while below, they pass down to the junction of the wall with the sole, whose thickness they traverse; they are also ranged inside the inflexures or bars, to fit into the leaves on the inner aspect of the wings of the os pedis. Like the vascular laminæ, they vary in width, here and there one being found narrower than the others. The bottoms of the interspaces also not unfrequently appear to offer small openings, which pierce the wall or margin of the sole obliquely downwards, and receive the papillæ that we have already remarked as sometimes given off from the free border of the podophylla at various elevations. These minute apertures are more particularly noticed at the lower extremity of the interlaminal spaces, where they are occupied by the papillæ which terminate the vascular leaves.

It has been commonly asserted that the sides of these horny laminæ are perfectly smooth; and even were this statement correct, their coaptation with those on the os pedis would appear sufficiently wonderful. If we can fancy two volumes, each with about six hundred leaves of vellum, slightly moistened, and locked together leaf by leaf, we may form some idea of the arrangement of the two sets of laminæ.

But their sides are not smooth; they are covered with a crowd of secondary leaves or 'laminellæ' which interlock or interdigitate with those on the vascular laminæ, and which I

have mentioned as observed by me in 1858. It is impossible to compute the collective number of these lateral leaflets. It must be something enormous, as on some laminae I have counted more than fifty on each side. Taking only twenty-eight as the average, however, and estimating the number of laminae at 550, this will give us a total of 30,800! When speaking of the minute structure of the wall, we will again refer to this arrangement of the leaves.

The upper border of the wall is the circular, attenuated, concavo-convex part, partially entering into the composition of the coronet. The concavity is situated on the inner surface, and is semi-cylindrical or ovoid; it extends along the whole of the upper border as far as the centripetal prolongation at the heels, where it disappears along with the laminae on their internal face.

This large space, designated the "cutigeral cavity," is partly hollowed out at the expense of the wall, and affords lodgment to the coronary cushion and zone, whose convexity, width, and general contour it closely follows, being widest and deepest in front, and gradually decreases as it proceeds backwards, until it reaches the angles of inflection, where it suddenly becomes enlarged to receive the greatly increased superficies of the cushion, and then diminishes until it finally disappears with the last lamina of the bars. The anterior border of the cavity is higher than the inner or posterior border, and is also very thin and sharp, to coincide with its commencement at the coronary fissure already mentioned. This thin margin is covered by the "periople" or coronary frogband, to be noticed presently. The posterior or lower border of the cavity is marked by an even and faintly depressed space passing above the origin of the horny laminae, which corresponds to the coronary zone that forms an apparent line of separation between the coronary cushion and the vascular laminae. This imprint of the zone is consequently narrowest in front and widest towards the heels; and, like the zone itself, is usually white in dark-coloured hoofs, or streaked or speckled with black. Between these two borders the entire surface of this wide groove is pierced by innumerable minute perforations that incline obliquely downwards from above to below in the direction of the wall. The number, width, and depth of these tiny pores,—for their small size and great number give the whole of this recess a porous appearance,—correspond to the papillae which we have mentioned as studding the superficies of the coronary cushion (fig. xii, *e*), and which enter and fill them. As a consequence, these horny sheaths are widest and deepest towards the lower or innermost aspect

of the cavity, gradually becoming finer as we examine them at the higher border or external surface.

When describing the vascular tufts on the white zone of the coronary cushion, it was noted that they were arranged in somewhat parallel and vertical rows, with a narrow slit or depression between them, and that they were of a larger size than those of the cushion proper; and we have also just stated that the horny laminæ apparently commence in the cutigeral cavity, and not on the inner surface of the wall. A careful scrutiny of this cavity with the naked eye will demonstrate the presence of minute ridges crossing the direction and width of the imprint of this zone, and passing inwards to become continuous with the horny laminæ; in fact, these ridges are the commencement of the leaves. They are, of course, shortest in front of the cavity, and longest towards the heels, where the imprint is widest; they pass between the rows of perforations into which the villousities of the zone enter, and correspond to the narrow intervillous depressions between these tufts,—an important point to remember when discussing the manner in which the keraphyllæ are formed.

The inferior border of the wall does not offer anything very noteworthy in its structure. On its plane or lower surface, which meets the ground, the horn-fibres terminate, while its inner or concave face shows the continuations of the horny leaves, even to the level of the sole or beyond its surface, depending on the length to which the wall has attained. It is through their interposition that so firm a union is established between the sole and crust, that nothing but long-continued maceration or a very high temperature can separate them. This union is evidenced in the living animal, whose sole has been just pared according to custom, by a narrow white or yellow zone or band, in which we can trace these laminæ. More especially is this the case with hoofs that have been allowed to become overgrown, and then exposed to desiccation; a slight separation then appears to be effected between the sole and wall, and the terminations of the horn-leaves are visible for some distance. In certain cases of disease this zone is also the first to show a change of colour, by reason of the infiltration of blood or other fluid through the softer horn of which it is composed.

The lower or ground aspect of the wall—that portion which shows the ends of the horn-fibres—usually has a different tint to the other portions, and is relatively much more dense, tough, and resisting in its substance. This is the part that has generally to sustain wear and strain in the unshod horse, and on which the shoe rests with the animal that has been

submitted to that (in this climate) necessary operation. It is also through it that the nails are driven which retain its metallic protection.

*The angles of inflexion of the wall.*—Where the extremities of the wall are abruptly reflected inwards towards the interior of the cavity constituted by it, an acute angle is formed, which has been designated the “inflexural node,” the “point of the heel,” or simply “the heel,” by our farriers, by the French veterinarians *arc-boutant*, or buttress, and by the Germans “*eckwände*.”

These angles of the wall are in reality the base of the posterior part of the foot, which is commonly called the heels; they serve as a support to that portion of the horny envelope designated the “glomes of the frog.” Their upper part shows the characteristic lamellar arrangement of the wall, and the lower contains, within its angular space, the crescent-shaped branches or extremities of the horny sole, with which it contracts a most intimate union that maceration alone can dissolve.

The angles are strong points of the crust, and stand usually in bold relief on the under surface of the foot.

*The bars.*—The “bars” (the *eckstreben* of the Germans) are merely the inflexions of the wall, commencing at the summit of the angles, passing along the inner face of the wings of the pedal bone on one side, and the inner margin of the extremity of the sole on the other; they are inclined obliquely from the centre towards the periphery or outer margin of the foot. Converging towards each other by their extremities, they extend for about two thirds the length of the inner border of the sole, but never meet each other,\* so that the irregular circle formed by the wall is not continuous, the re-entering angle formed by its extremities being left incomplete. The inner oblique face of each bar is furnished with a series of laminæ, gradually decreasing in size until they disappear altogether before the termination of the bar is reached. These laminæ correspond to others on the inner face of the *os pedis*. The lower part of this surface of the bar is in contact with the sole, and is so closely adherent to it that the two appear as one. The external face of the bar is that seen when the sole of the foot is scrutinised. By its upper border it forms a junction with the corresponding margin of the branches of the frog, and from this results an

\* Leyh, in his ‘Anatomy of the Domestic Animals,’ states that the bars are prolonged forwards between the sole and frog, and finally unite. This is evidently an error; they extend but little, if at all, beyond the termination of the laminæ, on the inner border of the wings of the *os pedis*.

obtuse angular cavity on each side, named the "lateral lacunæ," or "commissural cavities." The lower border of the bar, on the unpared foot, projects more or less above the sole, from which it differs in consistency, and most frequently in colour.

These are, then, the most striking features to be noticed in the disposition of the wall of the hoof. For the convenience of the veterinary surgeon in his science, and also to facilitate the teaching and practice of the farrier's art, this part has been divided into several regions, between which there is in reality no natural limit. This artificial division, however, possesses such important advantages as to be indispensable in everyday experience.

For example, the anterior or central part of the wall is designated the "toe," an appellation scarcely correct, but which custom has sanctioned. This toe, with the English, extends to the sides of the hoof, where the quarters begin. With the French, however, there is an intermediate portion, named the *mamelle* ("mammilla," or "breast"), in consequence of its symmetrical situation on each side of the toe; this division should be accepted by us, as it would greatly facilitate description. Behind this "mammilla," or "breast," is the "quarter," so named because of its considerable extent, each quarter occupying no less than one fourth of the entire circumference of the foot. After the quarter comes the "heel," or angle of inflection, and within this the "bar." So that for practical purposes the wall is artificially divided into "toe," "mammillæ" (or, as they are more frequently designated in this country, the "outside" and "inside toe"), "quarters," "heels," and "bars."

All these parts of the wall do not follow the same direction. We have seen that, as a general rule, the geometrical outline of the hoof is slightly conical, its lower circumference being a trifle larger than its upper; but even this outline is not regular, in consequence of the outer circumference being more salient in the unshod, and also in the shod horse, than the inner. The toe and mammillæ of a well-formed hoof should be inclined from above to below at an angle of from  $50^{\circ}$  to  $60^{\circ}$ , according to the inclination of the phalanges of the foot, and in conformity, to some extent, with the obliquity of the head and shoulder of the horse. The quarters of the hoof are not so oblique, and the heels are still less so; indeed, it is by no means rare, and is perhaps the rule, to see hoofs in which the obliquity towards the heels is altogether reversed, the inclination being from above downwards and inwards. This peculiarity is very striking, as it gives this

region of the hoof a different appearance to that which it presents at the toe or quarters. About midway between the coronet and the lower margin of the hoof, in the situation corresponding to the upper border of the wings of the os pedis, the wall in these cases changes its oblique direction outwards—the line it commenced with—and inclines directly downwards or even inwards towards the centre of the foot; and it is particularly worthy of remark that this change of direction takes place at a level corresponding to the diminished surface of the external face of the pedal bone, on the same plane as its wings or retrorsal processes. However this may be, it is certain that the inner quarter and heel is more vertical than the outer.

The angle of the inflection, or point of the heel, is downwards and forwards, in a direction parallel to that of the toe, while the bars incline downwards and outwards.

The form of the hoof in the same animal, at different periods of life, varies to a notable extent—as before birth, soon after that event, at two or three years old, as well as after being subjected to improper shoeing for some time. It also varies according to the amount of wear or paring it undergoes. But more of this hereafter.

Neither is the thickness of the wall the same in every part of its circumference. On the contrary, its width and thickness appear to be directly related to the depth and extent of the coronary cushion, no matter at what point we may examine it. For this reason it is that we find the wall thickest and highest at the toe and mammillæ, gradually thinning towards the quarters, between which and the point of the heel it offers the thinnest part. At the inflexure, however, it becomes again massive, but immediately diminishes in forming the bars.

The wall, in every region, is of the same thickness from top to bottom, except, of course, at the cutigeral cavity; below this, until it reaches the sole, it is the same. But its thickness varies even in corresponding parts of both sides, the inner side being, on the whole, thinner than the outer. The relations of different parts with regard to thickness have been pretty correctly estimated in the following ratio:—(1) the toe and mammillæ; (2) the anterior portion of the outer quarter; (3) the anterior portion of the inner quarter; (4) the angles of inflexion; (5) the posterior part of the outer quarter; (6) the posterior part of the inner quarter; (7) the outer bar; (8) the inner bar.

The density of the wall likewise varies, not only in different parts of its contour, but also at different points of its

length and thickness. Its consistence, as a rule, increases in proportion as its fibres are distant from the living tissues contained in its cavity. Therefore it is that the thin upper border, being in close proximity to the coronary cushion, is soft and flexible; while the lower border, being far removed from the vital textures, is very hard and resisting; and that while the external surface is close and rigid in substance, the internal, including the horny laminae, is spongy and easily cut.

From this it will be readily understood that the thicker and the further removed from the vascular structures the wall is, the more firm and tenacious we may expect it to be. And this is in reality the case, as we may prove by sections made at the lower margin of the toe, points of the heels, and even on the whole lower border of the wall and bars in an overgrown foot.

The colour of the wall is intimately allied to the tint of the skin above it, being white, grey, or black, when the cuticle has either of these colours; even if the black skin be flecked with white, or the white with black, the outer fibres of the wall are the same to an exactly corresponding extent. This colour does not permeate the whole thickness of the wall, for the laminae are, as a rule, apparently always white, and the layers of fibres adjoining them are also white, or more or less grey, or streaked with white, when the outer layers are altogether black; these variations depend, it would appear, upon the colour of the coronary cushion and the zone.

We sometimes see horses with entirely white legs, having the hoofs, nevertheless, streaked with grey or black patches. I have noticed this more particularly in roan-coloured horses.

We will consider the minute structure of the wall when we have examined the anatomy of the sole and frog, and considered the hoof as a whole.

*The sole.*—The “sole” (*hornsohle* of the Germans), in concert with the bars and the frog, completes the plantar surface of the hoof, or, in other words, forms its floor. It is contained within the lower circumference of the wall, which fixes its contour. It is irregularly crescentic, its posterior portion being deeply indented by a somewhat triangular space, in which is lodged the frog; it appears as a thick plate of horn, unevenly convex on its upper, and concave on its lower surface.

Its upper face is exactly adapted to the sole of the *os pedis*, being convex towards its middle and depressed at its circumference. Its highest point is at the bottom or apex of the

triangular indentation ; from this part it slopes in every direction towards the circumference until near its margin, when it abruptly curves upwards to form a kind of channel, in which the border of the os pedis rests. This channel is narrowest in front, but gradually widens as it extends to the branches of the sole, where, in the angles of inflexion of the wall, these branches appear as if they had been regularly excavated into a somewhat deep concavity.

A wide shallow imprint or depression is observed to lie transversely at the summit of the sole's convexity, immediately in front of the termination of the bars, and across the cavity of the frog. This depression corresponds to the navicular bone above—with whose proportions and direction it agrees—and the thickest portion of the pyramidal body of the frog below. From the nature of this imprint, and from its situation above the firmest part of the frog and crown of the sole, there can scarcely be a doubt as to this being the point of the plantar surface on which the greatest pressure is exercised.

In every hoof, to a greater or less degree, and in exactly the centre of the toe of the sole and inner face of the wall, there is seen, rising up for some distance between the middle laminae, a projecting conical ledge of horn that fits into a corresponding depression already noticed as existing at the lower part of the anterior face of the pedal bone. This, in addition to its, perhaps, marking the transition from the bisulcate type, may, I think, be considered as a *stay* to maintain the bone in its proper position in the hoof, and thus prevent its moving round too much to either side during progression. From this notion of its use I have named it the “*toe-stay*,” in contradistinction to the “*frog-stay*” behind. Professor Valada, of Turin, is of opinion that it serves to effect a more intimate union between the wall and sole ; and to some extent this may be so, but I am inclined to believe that its chief use is that just indicated.

The whole upper surface of the sole is pierced by innumerable fine, closely disposed apertures, resembling those in the cutigeral cavity at the upper part of the wall. These minute openings look as if they had been made by the point of a needle to a certain depth in an oblique direction downwards and forwards, corresponding in this respect to those in the cavity above mentioned. They are widest and deepest around the margin of the sole, and particularly in front towards the toe ; they receive the papillae of the sensitive or vascular sole.

The lower face of the sole is irregularly concave, to corre-

spond with the upper face; its most depressed portion—after all the loose flaky horn has been removed for a more careful examination—is at the point of the frog. From here it inclines towards the wall, and when yet some distance from it becomes plane, until it finally joins it. In the unpared foot exposed to wear, this plane surface comes more or less in contact with the ground along with the wall. In the ordinary pared foot the whole surface is usually made concave, thin, and smooth; but in the unshod state, or when this mutilation has not been allowed, it is thick, and covered with rough flakes of horn in process of exfoliation, which cause it to look more flat.

The outer or circular border of the sole represents its width, and is more or less thick, as the foot is left intact and exposed to wear or pared. It is united to the wall by the dovetailing of the horny laminae into the margin of the sole, and so strong and perfect is this union that many months' steeping in water is necessary to disunite them. The junction between the circumference of the sole and the lower extremity of the wall is marked by a zone, as already noted, which differs in colour and consistency from the other parts. The inner or irregularly triangular border is much thinner than the outer, and, like it, is also dovetailed into the horny laminae on the inflections of the wall or "bars." It is likewise united to the sides and point of the frog, in front of the termination of the bars.

The sole is divided into regions which correspond to and receive the same designations as the wall.

The thickness of the sole is not the same throughout. In the hoof pared according to the barbarous principles which are euphemistically termed "improved" by those who practise them, it may be found reduced to the thinnest pellicle of horn, through which light easily passes. But in a normal condition it is ordinarily as thick at its outer circumference as the wall; though, of course, if the hoof has been exposed to unusual attrition, it will lose much of its substance. From its outer border it continues for a little distance undiminished, and then gradually becomes thin as far as the centre, where it is most attenuated. Its thickness is, as a rule, limited, because of the natural exfoliation that take place whenever a certain amount of growth is attained.

The hardness or consistency of the sole is, as with the wall, in direct relation to its distance from the living tissues; in its proximity to these it is soft and somewhat elastic, and as it recedes from them it becomes solid, resisting, and inelastic.

Towards its circumference, therefore, it offers its highest

degree of strength and durability, and these qualities are least perceptible at its most depressed point or centre.

Nowhere is it so hard, however, as the wall, a circumstance well known to the farrier, who invariably attacks it with his knife, to fashion it into an abnormal shape or attenuated dimensions, in accordance with some barbarous and unreasonable whim.

The colour of the sole depends upon that of that wall; if the latter is wholly or partially black or white, it is the same to a corresponding degree. It differs from the wall, nevertheless, in having its outer surface of a lighter shade than its inner.

The sole is composed of fibres like the wall, and these are disposed in straight lines from above obliquely downwards and forwards, parallel with those of the wall.

*The frog.*—The horny frog (*fourchette* of the French, *hornstrahl* of the Germans) and its appendage or continuation—the “periople”—will be considered separately, though in reality they are but in one structure.

The frog is a kind of duplicature in horn of the lower aspect of that part of the foot we have named the “plantar cushion,” being exactly moulded on it, and thus accurately reproduces it in form. In shape it is a triangular, or rather a pyramidal body, somewhat wedge-like as it fills up the indentation in the middle of the sole and the central space between the bars, which it in this way unites. In this situation it might not inaptly be compared to the keystone of an arch, if we looked at it as the front of the wall rests on the ground or on a table, though this comparison might give a false idea of its function.

It is at once apparent, however, that it completes the floor or bottom of the hoof.

It may be described as possessing two faces, two sides, a base, and a point or summit.

The upper face is a true imprint of the lower surface of the plantar cushion, repeating its projections and depressions by corresponding cavities and prominences. For instance, it shows a triangular cavity, shallow and narrow in front, but increasing in width and depth as it passes backwards. This space, at its middle, is divided by a vertical prominence into two channels, each of which appears to run into the cavity situated within the inflexure of the wall.

The vertical eminence widens at its base, so as to occupy the greater part of the posterior extremity of the frog, and, as it rises, it becomes thinner and flatter, until at the heels it presents a sharp convex border, standing much higher than

the upper margin of the bars, when it terminates abruptly behind. This part fits into what we may call the "cleft" of the plantar cushion, and has been named the "frog-stay," from an idea, perhaps, that it prevented the displacement of the frog laterally. In this sense, the designation is, I think, perfectly correct. As this thin tapering ridge, inserted in the deep fissure that almost makes two complete divisions of the plantar cushion, retains each portion in its proper situation during the time the horny frog is in contact with the ground, and thus, by preventing the elastic mass from being pushed too much to one side or the other at a most momentous crisis in locomotion, it maintains it in a position most favorable for the discharge of its function. By solidly fixing this part of the foot it immensely aids the laminæ—vascular and horny—and what we have named the "toe-stay," in keeping the foot from rotating with the hoof, especially during rapid or violent movements. For this reason, doubtless, we find the frog-stay most largely developed in horses adapted for speed, or what is called "well-bred" horses. Another feature to be noticed, and which affords further evidence that this is the chief, if not the sole function of the frog-stay, is that it is directly in a line with the small projection in the centre of the sole and wall, the "toe-stay." In this manner is the foot fixed securely in the hoof, before as well as behind, and the horny case insured against lateral displacement.

The whole inner or upper face of the frog is perforated by little openings, like the corresponding surface of the sole, for the passage of the papillæ which we have described as covering the surface of the cushion which rests on it. They are consequently widest and deepest in the cavity of the frog, and smallest on its sides and on the frog-stay. Their direction in the bottom of this cavity is forwards; on the sides, towards the circumference of the hoof; and on the stay, backwards.

There is much that is interesting to be noted on the lower or ground face of the frog. We see in it the reverse of its upper surface; the triangular cavity being here represented by a somewhat conical projection that stands well out from the concavity of the side, and the frog-stay being replaced by a longitudinal fissure or cleft that divides the salient horny mass into two branches. The somewhat bulging portion immediately in front of the cleft is the "body" or "cushion of the frog," and corresponds to the deepest part of the cavity, and to the faint transverse depression on the upper face of the sole. The branches correspond to the two diverging channels that limit the base of the frog-stay, and passing to

the points of the heels form an acute angle with the bars, leaving a cavity on each side known as the "lateral lacunæ." The "cleft," or middle lacuna, is a wide space between the branches corresponding to the stay. In an unpared frog in a sound state this space is wide, firm, and rather shallow, and shows no narrow fissure at the bottom.

The sides of the frog are flat and slightly oblique; they are closely united to the bars and the indentation in the centre of the sole; and so firm is this union that maceration in water for some months is necessary to dissolve it. The portions that are unattached aid in forming the angular spaces or commissures we have named the "lateral lacunæ."

What is termed the "base of the frog" is formed by the branches becoming wider and more convex at their extremities, so as to offer two prominences or bulbs, that expand on bending round or embracing the flexures of the wall, to constitute the "glomes" of the frog. From these points they continue their course as a thin band around the upper part of the wall.

The point of the frog reaches the centre of the sole, from which, in the unmutilated condition, it rises in an obtuse point. Around this point a narrow channel courses from the one commissure to the other.

The frog, as a whole, is not so thick as the sole. Its thinnest parts are its sides, especially where it joins the bars. It is, too, composed of softer and more elastic horn than the sole, but this horn is much finer in texture. Like the sole and wall, its layers are harder and more resisting as they recede from the living tissues, and this hardness and resistance is increased in proportion as the organ is allowed to perform its natural function. The frog-stay is composed of denser horn than is found elsewhere in the frog. Its colour is usually darker than the other parts of the hoof when these are coloured; even in white hoofs it has a yellowish tinge. Its structure is fibrous, like the sole and wall, and its fibres have in general the same direction, though they are much finer and more compact.

*The periople.*—The "Periople" (περι, around, οπλη, hoof), perhaps better known as the "coronary frog-band," from its being a continuation of the substance of the frog around the upper part of the hoof or coronet, completes our description of the external aspect of the hoof. Commencing our examination at the heel, bulbs, or glomes of the frog, we see this body arising as a gradually narrowing band that encircles and covers the upper border of the wall around its sides and

front, and, with the frog, forming a complete circle that includes the upper and posterior parts of the hoof.

Generally, the superficial extent or width of this band is extremely variable, from the many causes that are in operation tending to modify or partially destroy it in horses that are submitted to the usual routine of stable management and shoeing. It is best observed in horses whose feet are maintained in a natural condition.

In describing the tegumentary appendages of the foot, mention was made of the 'periopic ring,' a slightly convex space situated between the termination of the hair and the coronary cushion, from which it is separated by the upper coronary fissure. This particular horny band arises from the space that constitutes the ring, and proceeding downwards from it in gradually diminishing width and thickness, surmounts and covers the upper external border of the wall. Looking at it as it passes from the hair down the hoof, it appears as a fine semi-transparent substance like a pellicle of varnish, minutely striated in the direction of the wall-fibres, and sometimes marked by a series of faint transverse undulations or circles, particularly towards the heels; or sometimes, when the hoofs are very dry, it becomes more or less scaly, cracks, and shows vertical or transverse fissures. Its inner face, on reaching the outer face of the wall, adheres so closely to it that it is impossible to disunite them except by some months' steeping in water. It does not adhere very closely, however, to the extremely thin margin of the wall that is lodged in the coronary fissure, and, after extending beyond the part of the wall whose inner face is excavated for the lodgment of the coronary cushion, its union with it becomes less intimate, and it may even exhibit traces of exfoliation. Very often, however, it blends imperceptibly with the wall towards its lower margin, giving it a smooth shining appearance. At the inflections of the wall, it maintains this close adherence, and at this point leaves the denser portion of the hoof, and becomes one in substance with the branches of the frog.

The periople varies in thickness in different parts of its extent, being thickest at the heels or glomes, thinnest at the quarters, and intermediate between these extremes in front. In this respect it resembles the wall, whose thickness depends upon the width of the surface from which it is secreted. Where the wall of the hoof is most attenuated, *i. e.* at its upper border, where it is in proximity to the skin, the periople is thickest. Its thickness, as a whole, may be said to depend upon the amount of moisture it contains; as when

this is abundant it swells out around the top of the hoof to form a soft, prominent, whitish-coloured ring; but when it has lost much of its humidity, it is hard, shrunken, and rugged, and may even fall off in flaky fragments. Its consistence, therefore, depends upon its humidity.

It is to be noted that this band is thickest and coarsest in texture in underbred horses, and thinnest and finest in those which are well bred; it is usually thicker and more tenacious in young than in old horses. Its colour is always lighter than that of the wall, even when this is white.

Like the frog, this coronary band has a fine, close, elastic and fibrous texture, which approximates to that of the wall in its deeper and contiguous layers.

Its action is chiefly to protect that portion of the wall which has not become strong enough to resist the injurious influence of heat and dessication; this it effects by its close varnish-like properties. It has also been said that it concurs in fixing the foot in the hoof, like the band of a sandal-shoe. This, however, it can do only in a feeble manner, because of its tenuity and elasticity. It contributes in an especial manner to the formation of the cutigeral cavity; for though constituting but a very narrow addition to that portion formed by the upper margin of the wall at its front and sides, it suddenly increases towards the points of the heels and at its junction with the frog, so as greatly to widen and deepen this important cavity, more than one half of which is here formed by the periople. Into this wide space on each side is received the posterior extremity of the corresponding very flexible lateral cartilage or bulb of the plantar cushion. From this disposition, it will be understood that towards the heels of the foot the wall of this cavity is made up of extremely elastic horn, which is occupied by equally elastic cartilage and peculiarly arranged fibrous tissue, a combination and arrangement which sufficiently indicates its rôle in the elastic functions of the organ. By its elasticity, the periople allows of that expansion or alteration in form of the coronary cushion which is so noticeable at the top of the hoof during motion, for at this part is to be found the alternate expansion and contraction some observers have fancied to be located at the lower margin of the hoof.

*(To be continued.)*

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## SYNOPTICAL OBSERVATIONS ON INJURIES, ETC., OCCURRING AMONGST ARMY HORSES.

By "HIPPOGRIFF," Royal Horse Artillery, India.

*(Continued from p. 75.)*

THREE years ago we were marching in medical charge of the horses of a cavalry regiment; each had a native groom who rode his charge march after march without a saddle (the saddles and other horse appointments had been sold when the regiment left for England), for which he substituted a folded blanket, part of the horse's clothing. After a while it was found necessary to cause every horse to be dismounted on account of the prevalence of contused and tender backs, resulting from this style of riding. It is a well-known fact that sore backs invariably follow where horses have been ridden either barebacked or with the blanket. For the rest of the march the horses that would be led were led, and the mischief was soon remedied.

When cholera drove every regiment out of the station, we were encamped on an arid and sandy plain, which was intersected by the dry bed of a deep and wide watercourse. The horses had to cross this bed, which was composed principally of large loose boulders to the depth of one foot or more, three times a day for water and once for parade purposes with or without the guns. During the two months we were at this place a great number of shoes were bent, broken and wrenched off. As the ground could not be easily altered for the better, we were compelled to increase the number of nails, and prevent, as far as practicable, the reapplication of shoes; and as it just occurs to us, we may mention, that 90 per cent. of horses wear their shoes two months, and many as long as three months, of course, with monthly removes. Knowing this, we have endeavoured to get the shoes made lighter in the first instance—we need not say whether we succeed in a trifling matter like this, or whether we do not, "units" are not so powerful as "tens"—for our opinion is that horses travel with much more ease and comfort to themselves, and safety to their riders, when they wear shoes that are only just strong enough to prevent their bending and to protect the crust of the hoof, that is, presuming the feet are not mutilated or diseased. When instituting some experiments on "shoeing," we had one horse shod with a pair of fore shoes that weighed, with the nails,

fourteen ounces; the pair of hind shoes and nails weighing thirteen ounces. The horse was hard worked for hunting and tracking purposes, over roads and country of every description, and though these shoes remained on for three months, they were not half worn out, neither were they displaced. Other horses, including trap-horses, upon which we experimented, wore shoes of less weight than the above, but the principle was neither that in ordinary use, nor the one patented by "Charlier." In due course we hope to recount the few experiments alluded to, not by way of producing anything new, for in this we were disappointed, but did not know it till we received Mr. Fleming's invaluable "Horse Shoes and Horse Shoeing," in October, 1869.

We had been experimenting on a small scale for six months on a principle that we imagined was quite a new—let us confess it—an invention. Our spirits were, therefore, not a little damped to find in Mr. Fleming's work, a plate representing, with but trifling differences, the appearance of four shod specimens of feet that we had prepared in June and July, 1869. The principle was known more than a hundred years ago, but it does not, as far as we can make out, appear to have been recently adopted. In our application of this principle we made some slight differences. But we are overrunning our subject.

Coming back to injuries; there are to be seen amongst artillery horses large scars crossing the outer lateral cartilage, in consequence of the part having been run over by wheels.

If a portion of the structure, from which the hoof is secreted, has been carried away, the regularity of the coronary line will be, after cicatrization, destroyed, and so will be the even surface of the hoof under the site of the injury; the quarter, in fact, becomes "false." We know of some cases where the quality of the horn is inferior to that secreted from other parts of the coronet; it commences to split or crumble before it reaches the shoe, and therefore never takes any share in sustaining the superimposed weight. In one case the lateral cartilage is ossified.

Next, we have to remark upon *the inordinate and useless amount of branding that is permitted in the army*. Every horse is more or less subjected to the practice of being lettered and numbered on his forefeet. In the artillery the anterior aspect of the right forefoot bears the letter or number of a brigade, as well as the letters that denote the branch of the corps. The same part of the left foot bears the letter of a battery, and the "battery number."

For example, look at a Horse Artillery trooper. We will

call the brigade "Z" and the battery "W," and ascertain how he is first branded :

His right foot will be marked thus : And his left one thus :

FIG. 1.



FIG. 2.



As these letters and numbers are subject to removal, consequent on the growth and periodical rasping of the ground surface of the crust, they require to be replaced in the sound horn ; it is therefore, not unusual, but the rule, to see, instead of four capital letters on the right foot, as many as seven, or the newly-made four with the upper two-thirds of the disappearing R H A.

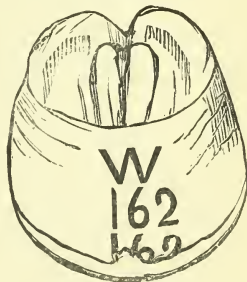
Here is a specimen of what we see every day ; right foot, thus :

FIG. 3.



And the left one, thus :

FIG. 4.



Now, as each of the above letters, &c., when burnt into the hoof, occupies a space measuring not less than three quarters of an inch square, it will easily be seen that no inconsiderable surface and substance of comparatively recently formed horn-tissue must be totally destroyed by the red-hot iron. The depths of the brands vary according to the temper of the farrier and the temperament of the horse, some troopers objecting very much to the practice.

In front of us are two iron brands, each composed of the letters R H A, joined together. By virtue of this arrange-

ment it is intended that they should give an impression at a single heat, and have an advantage over letters that require a separate application. Government issue these brands, but we do not allow them to be used.

If the centre letter were applied first, the brand must be turned either to R or A, and must be brought back over the H; the consequence is that the two perpendicular branches of the H are burnt much deeper than the other letters, and this must always be the case as long as hoofs are convex in front; but when they become flat, or even concave, by reason of inordinate and unnecessary burning, as we know they do, the joined letters can be employed with as little impunity as the separate ones.

We should be very sorry to say how many horses we know with the front part of their fore hoofs presenting flattened aspects, and all due to the destructive influence of branding. This state of things was so evident in a battery of horses that the veterinary surgeon in charge told us, he should feel compelled to carry his report farther than might be appreciated, for he considered—as we did, knowing the horses well—that most of the fore feet were mis-shapen or literally deformed. We must confess the same condition exists among the animals in our charge, and we, like others, have often brought the fact to the notice of those concerned. For our part we do not see the necessity for injuring the hoofs in this way; horses do not abscond, are rarely, if ever lost, and there is always something about each to recognise him by, especially in India. Stud bred horses are branded, under the saddle, on each side the back, and do not need to have their hoofs interfered with, for they are naturally predisposed to be ill-shapen and diseased. As to Australian horses, they are characteristic enough by their branded shoulders or thighs. Such being the case, why in the world is it requisite to mutilate the fronts of army horses' fore feet? The foot is sufficiently tampered with, even in our system of shoeing. We do not allow the score of the rasp to be visible on the crust; but the division of hundreds of horn fibres, the entire destruction of their substance, in parts they can be least dispensed with, and when they are of recent development, as well as the removal of the natural coating of the hoof, are evils sanctioned from the time a horse joins his corps till the time of his quitting the service by death or casting. The practice is a reprehensible one, and might be arrested if represented by the proper quarter. It ought, in our humble opinion, to be discarded at once and *in toto*.

If branding is essential or even considered to be so, it will be infinitely wiser for some other and softer part of the body

to be scorched and permanently emblazoned, than to be continually, month after month, applying a cause which, more or less, is prejudicial to the healthy condition of the fore feet of every army horse.

Of sprains there is nothing special to record ; they are, however, of common occurrence amongst Horse Artillery troopers, resulting from the nature of the work the animals are called upon to perform. No horses are submitted to such severe tests as those of Horse Artillery batteries. The amount of labour expended in the manœuvres of an ordinary field-day taxes their energies and physique. The effort in starting a gun, the sustained and rapid pace, the shock in coming to a sudden halt, the strain in turning as well as in moving over uneven ground, the check in clearing irregularly shaped ruts or watercourses, at which we have seen many native cavalry refuse or fall—each and all of these must severely try the muscular power, the joints and tendons of a horse. The fetlock joints, as well as the joints below, of the fore limbs are very liable to sprain, whilst the fibro-ligamentous and tendinous structures at the posterior part of the legs from the knee downwards are often strained or ruptured from the same causes.

In March last a very unusual accident occurred to the “ride horse of the wheel,”\* of a gun during the general’s inspection of a battery of Horse Artillery. The troop was manœuvring at a gallop, and had to cross at the same pace an irregularly shaped and somewhat deep watercourse on the parade ground.

Here the horse slipped, or was checked by the sudden lurch of the limber when its wheels encountered the uneven ground, and nearly fell. His near hind leg was extended in a backward direction, with the foot lying on its front aspect and slightly inclined to the inner side ; its ground surface and the shoe looking upwards and backwards. Whilst in this position, the left wheel of the limber grasped the outer and lower edge of the shoe opposite the last nail hole, as well as the calkin. As the shoe gave way, the weight above it was transposed to the posterior quarter, heel and frog of the hoof, which now formed, as it were, a fixed point for the struggles of the horse to act upon. In the attempt in a forward direction which the horse made to recover himself and to liberate his foot from the backward and downward pressure of the wheel, the hoof was completely removed from its attachments, and almost as cleanly as though the organ had been macerated. The thin edge at the upper part of the hoof was intact, and the coro-

\* The “ride horse of the wheel,” is the left or near horse ridden alongside the “hand” or right (shaft) horse of a gun.

nary convexity from which the horny fibres are secreted had received very little damage, while the other secreting surfaces were also only slightly injured. The sensitive laminæ were all somewhat frayed, but had separated from the insensitive with an evenness that was surprising; the toe and under surface of the heels, in small pieces, were the only soft tissues left in the hoof. About 20 yards were traversed before the horses could be halted. After the hoof was torn off, the limber, and, perhaps, the gun wheel passed over it, flattening and breaking it. The accident occurred in a few seconds.\* We found the poor animal holding up the injured limb, trembling and bleeding somewhat freely. A committee decided that the horse should be destroyed, acting in the interests of government, and advising on the score of humanity, under our recommendation. This would have been an interesting case to treat, to ascertain in what manner a further secretion of horn would be disposed. So far as we have been able to judge of the growth of the hoof, we are of opinion that if this animal could have been placed under favorable circumstances (we need not describe them here) the horny envelope would have been reproduced, but would not have displayed the same integrity as the lost one. Nor would it have rendered the animal serviceable in the capacity of an artillery trooper.

We do not pause to ask for information on the reproduction of the hoof. The only other case we remember was about 12 years ago. A railway truck had torn away the hoof of a horse employed in moving luggage waggons about the line. We did not see the animal, but we know he was destroyed.

Severe sprains to the muscles of the loins and thighs, and also to the tarsal joints, are of occasional occurrence. Were it possible to search out the causes of these cases, with any prospect of arriving at the truth, heel-ropes, in six instances out of ten, would, in our opinion, bear the blame; but the native groom of India will as religiously evade the truth on these points as the native groom of any other country. On this account veterinary surgeons in this country have often to treat effects, some of them very obscure too, that never have any causes? We are too often debarred the assistance that the history of cases affords; there is no necessity, however, to commit ourselves by hazarding an opinion, though a question, through inadvertency, may be asked.

There is under treatment at the present time a horse suffering from what we have chosen to call "partial para-

\* The sketch of the hoof which reached us with the MS. was too roughly drawn to admit of its being used for a woodcut.—[Eds.]

lysis" of the hinder quarter, meaning that the patient is unable to stand without the assistance of slings, or without resting his thighs against a wall or bar, and that when made to progress, he reels from one side to the other, and is in danger of falling at every step. He is gradually improving, but there is not the slightest clue to the cause or causes to be gleaned. The probability is that he sustained a severe sprain in the lumbar region, whilst rising or rolling when his legs were confined by heel-ropes. Two days ago a native shoeing smith asserted that a horse fell in the shoeing shed on the head of a pair of pincers, and severely injured his shoulder; another native swore the smith struck him with a hammer. This is the description of evidence, if there is any at all, that we have to go upon; therefore, we seldom arrive at truthful histories.

It was our intention to conclude here, but being under orders to assume the charge of another division by reason of the annual reliefs, it will perhaps be advisable to condense our records on "Fractures," and add them to the foregoing, lest we should not find ourselves in a sufficiently communicative mood, in other quarters, to send a separate paper.

No. 1. Comminuted fracture of the right radius about two inches above the radio-carpal articulation, sustained by a kick from a horse in the team of the same gun, whilst at drill.

No. 2 was admitted with a contused and lacerated wound in the region of the right femoro-tibial articulation, received in the same accident that fractured the rider's leg. This horse carried one of the picketing party, who preceded a battery on the march by about twelve hours. It was reported the patient fell over a heap of stones in the dark. Perhaps he did! Eight hours after the accident, tumefaction of the injured parts was so extensive as to render a satisfactory diagnosis difficult. It was ascertained that the patella was severely cut, and that the flesh wounds were deep, but that the joint was not penetrated. Fracture was neither diagnosed nor suspected. Pain and lameness were excessively severe, and neither were improved by the animal being marched eighty-five miles subsequently to the accident. In about twenty days the wound healed under ordinary treatment, but an enlargement of an indurated nature had formed and continued to increase. A succession of blisters might have arrested what was now becoming an abnormal growth, but they did not diminish it or tend to improve the case in any way.

Lameness increased because the action of the complex joint was mechanically interfered with. The patient being

considered unfit for further service, was destroyed. A *post-mortem* examination showed that a fracture, of a comminuted character, had taken place at the outer third of the patella. Partial union had resulted, but the new formation was so uneven as to render it almost impossible for the bone to play over the femoral trochlea. It may perhaps be a little difficult to reconcile the fact that a comminuted fracture of the patella coexisted with an uninjured capsular ligament, but such appears to have been the case, as proved by a careful examination of the wound, by the nature of the discharge, and perhaps by the manner in which the animal performed the subsequent marches; for had the joint been at all exposed to the influence of the air, we imagine a fatal result would have closed the case before we reached our destination. Not only was the integrity of the joint destroyed by the altered condition of the articulatory surface of the patella, and its abnormal influence on the trochlea of the femur, but its action was reduced and confined by the gradual transformation of fibro-ligamentous tissue into bone around its anterior and outer aspects. The cavity of the joint contained fibrinous deposits—products of inflammation.

Fractures of the patella are, undoubtedly, rare, and judging from the anatomy of the structures entering into the formation of so complex a joint, and considering the temperaments of our patients, and the limited power we have in restraining them, it must be seen that treatment will prove unsatisfactory, and that the stifle joint cannot be restored to its pristine condition.

No. 3 was a comminuted fracture of the left, or innominate, which occurred whilst the horse was being groomed, at evening stables. The case is noticed under the heading "Heel-ropes," as "Horse No. 1."

The cotyloid cavity was smashed into eight irregular fragments, and the ilium, the ischium, and pelvis were extensively broken in other parts. The head of the femur, the ligamentum teres, the cotyloid, transverse and pubio-femoral ligaments were scarcely injured, but the capsular ligament, muscular and other soft tissues were much ruptured.

(*To be continued.*)

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## THE RECENT CASES OF RABIES IN LANCA- SHIRE.

WE are indebted to Mr. Alexander Lawson M.R.C.V.S., Bolton, for the following description of cases of rabies among cattle. Mr. Lawson writes us as under :

“BOLTON; 15th February, 1871.

“MY DEAR SIR,—My assistant, Mr. William Dacre, who is a member of the College, attended the cases of rabies among Mr. Peak’s cattle, and also a case in a pet sheep that ran about the stable-yard of Richard Henry Ainsworth, Esq., Mogsbank, near Bolton. His report of these cases is sent herewith, also a letter from Dr. Robertson (in reply to one from me), who attended one of the cases of hydrophobia in a boy. You may make what use of these letters you think proper.

“ I am, &c.,

“To Professor Simonds.”

“ ALEX. LAWSON.

The letter referred to is as follows :

“HORWICH; February 13th, 1871.

“DEAR SIR,—In reply to yours of the 12th instant, I beg to inform you that I only attended one of the patients that died from hydrophobia in this township—the boy Cross. He was bitten in the lip by the same dog that bit Mr. Peak’s cattle. About fourteen days after he was bitten he complained of feeling unwell of headache, and had to leave his work: that night and the following day he was very restless and feverish. On the third day I was sent for. I saw him about noon, and he then presented in a very marked way all the well-known symptoms of hydrophobia; in fact, it was most painful to witness his suffering. He died in about three hours after.

“ Yours, &c.,

“ ROBERT ROBERTSON, M.D.

“To Mr. Lawson, Bolton.”

Mr. Dacre thus describes the cases in his report :

“On the 5th of December last I visited some cows, the property of Mr. Andrew Peak, Terra Cotta Manufacturer, of Horwich, said to have been bitten by a ‘mad dog.’ The subjects of the injury were three two-year old heifers, and the history given of the circumstances was as follows;—On the

afternoon of December 3rd a strange dog, of a rough Scotch terrier breed, was seen chasing the cattle round a large barn, in which they sheltered during the day. He was driven away at that time, but, as it would seem, returned later in the evening, and, getting into the slippon where the cattle were stalled for the night, bit three of them.

“On carefully examining the animals I found that three had been bitten on the muzzle. The wounds were of a very superficial character, such, in fact, as might have been produced even from the scratch of a nail. In all other respects the animals presented every appearance of health. The wounds were scarified and lunar caustic freely applied, and a dose of purgative medicine was administered to each animal. Precautions were also taken by isolating them from the rest of the stock.

“On the 7th they were again seen. The wounds had almost healed, and nothing unusual had been observed in any of the three animals. As no alarming symptoms were shown up to the end of the week, the owner thought the danger had passed, and the heifers were turned into the pasture as usual.

“On the 17th, however one of them was reported to have ‘gone mad.’ She had been noticed, while in the field, to run after and butt the other cattle. She had also fought her way through some wire fencing, and jumped with ease a five-barred gate.

“On examining her I found both the circulation and respiration to be increased. She had ceased to ruminate, and streams of saliva, of a ropy consistency, were running from the angles of the mouth. A viscid discharge, of a yellowish colour, also hung about the vulva.

“She evinced much uneasiness, repeatedly striking the ground with her fore foot, and bellowing at intervals. Upon a bucket of water being placed near her, she immediately upset it, without attempting to drink.

“These symptoms not being thought of a sufficiently distinctive character, the animal was secured in a loose shed, and I saw her next day, in conjunction with Mr. Woods, M.R.C.V.S., of Wigan.

“By this time the disease had declared itself in an unmistakable manner. The general attitude assumed by the animal and the expression of her countenance seemed to indicate intense watchfulness. Sometimes she would stand quite still, with the ears erect and the nose protruded, and holding a quantity of half-masticated straw in her mouth. At others she would walk quickly round the box, as though seeking an object of attack.

“A hole having been made in the roof, a pail of water was lowered by a rope into the box, when she attacked the pail furiously and completely destroyed it. After this she seized hold of the rope by the teeth and hung herself backwards, as a dog would. Occasionally she bellowed loudly, but in a strangely altered tone. A large quantity of saliva also streamed from the mouth.

“She was at once destroyed, but no *post-mortem* examination was made.

“On examining the remaining two heifers they were found to be, apparently, in a perfect state of health. But after an interval of a week one of them exhibited similar symptoms to the first attacked, and was forthwith destroyed.

“Another week again elapsed, when the disease developed itself in the third heifer. She also was destroyed.

#### “RABIES IN A SHEEP.

“On the 2nd of January I visited a pet sheep, the property of H. R. Ainsworth, Esq., of Moss Bank, near Bolton, which was said to be rabid. I was given to understand that a week before a small terrier was seen playfully running after it, but it was not supposed to have been bitten. A week after this incident the animal exhibited symptoms of rabies, and, when I saw it, it was in a state of extreme prostration from the violent and furious assaults it had made on everybody and everything about it. The head was much bruised by constantly butting at the walls, &c., of the loose box. The animal also frequently bleated in an unnatural manner. No extraordinary secretion of saliva was observed.

“A retriever dog was made the subject of a very savage attack, knocked down and jumped upon, and, it was said, was also bitten by the sheep. This dog was destroyed the same day.

“Nothing authentic could be learned respecting the manner in which this animal was inoculated. The distance between the two localities in which these cases occurred is about four miles.”

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## FURTHER OBSERVATIONS ON RABIES.

By W. WORTHINGTON, M.R.C.V.S., Wigan.

IN the March and August numbers of the *Veterinarian* of last year several cases of rabies are recorded which had come under my notice shortly before. Since the publication of those cases, the disease has assumed most alarming proportions in this district, more particularly during the last month or two, and scarcely a week has passed without three or four animals falling victims to the disease. I can enumerate no less than forty-two cases which have occurred within a radius of nine miles of this town during the last eighteen or twenty months, many of which have come under my own notice.

The list comprises four human beings, one horse, eleven cattle, twelve sheep, and fourteen dogs. From the enclosed letter, sent by me to the *Ormskirk Advertiser*, you will understand what a vast amount of damage a single dog affected with rabies is capable of doing. The animal in question, from the Sunday until the time it was killed, on the following Tuesday morning, must have rambled over upwards of 150 miles of ground, and I have since ascertained that not a single animal with which it came in contact escaped its bite.

I have endeavoured, as much as possible, by the insertion of letters and paragraphs in the local papers, to draw attention to the prevalence of the disease in this neighbourhood, and am happy to say that the local authority, both in the borough and county, has at length issued notices ordering the confinement of all dogs.

### HYDROPHOBIA.

*To the Editor of the 'Ormskirk Advertiser.'*

SIR,—During the last eighteen months scarcely a week has passed without some unfortunate fellow-creature or domesticated animal falling a victim to hydrophobia in some part of Lancashire. At the urgent request of many people I forward you the present communication, in the hope that by its publication the vigilance of the public may be roused, and timely precautions taken, against the spread of such a terrible disease.

On Monday, the 9th instant, the inhabitants of Shevington and Mawdesley were thrown into a state of great alarm

by a rabid dog which made its appearance in those townships, and after committing an immense amount of mischief was destroyed the following morning at the farm of Mr. Henry Alty, Black Moor Hall, Mawdesley. The animal was a small-sized sheep dog of a light-brown colour, with a broad band of white hair round the neck, white stripe down the face, white fore legs, and about three inches of white at the extremity of the tail.

I add the above description, as many people may have seen the dog in other places than those hereafter mentioned without suspecting the nature of its malady, and may hereby receive timely warning.

As far as I have been able to ascertain, the dog was first seen on the preceding Sunday at Rufford, from whence it passed through Mawdesley, over Hunter's Hill through Wrightington to Welch Whittle, in which neighbourhood it appears to have remained during the night. Early next morning it was again seen at Mossy Lee, in Wrightington, and after severely injuring a sheep near Wrightington Hall, passed into the lower part of Shevington, traversing nearly the whole of the township during the day, and attacking indiscriminately every animal with which it came in contact.

About four o'clock in the afternoon it again passed through Wrightington, by way of Anderton's Mill, into Mawdesley, and here for the remainder of its brief existence its depredations were indeed fearful, scarcely a farm having escaped its visitation during the night and following morning. In this township alone nearly a score of dogs which had been bitten by it were shot and buried last week, and many others may probably have since been destroyed.

Amongst the victims in Shevington were several dogs, a sheep, a calf, and a cow; a horse belonging to J. Tayleur, Esq., of Shevington, was also ferociously attacked by it whilst at work near Appley Bridge, but, being seized by the hairy part of the tail, fortunately sustained no injury. Providentially, no human beings have been injured, although several have had narrow escapes.

The whole of the dogs which are known to have been bitten in Shevington have been destroyed; the other animals are under my own immediate notice, and will also be destroyed directly the disease manifests itself.

That the dog was rabid there is unfortunately not the shadow of a doubt; the characteristic symptoms of the disease were well developed during life, and a *post-mortem* examination which I made of the animal revealed unmistakable evidence of rabies. As a rabid dog, in the latter stages of the malady

is invariably irresistibly impelled to ramble and do mischief, and is almost incessantly on the move, it is probable that many dogs in the above townships have received slight and unsuspected bites. As a means, therefore, of preventing the extension of the disease, I would most earnestly suggest that every dog, to which even a shadow of suspicion is attached, should be immediately destroyed, or kept in the most rigorous confinement for a period of at least ten months. Those who have once seen this truly horrible disease, or who entertain the slightest regard for public safety, will not, I am sure, for a moment hesitate to adopt such an easy and effectual precaution. Yours respectfully,

WM. WORTHINGTON, M.R.C.V.S.

WIGAN, 17th January, 1871.

P.S.—Several dogs and cattle which were bitten by this dog have since become rabid.—W. W.

## THE PRINCIPLES OF BOTANY.

By Professor JAMES BUCKMAN, F.L.S., F.G.S., &c.

(Continued from p. 79.)

FROM what has been already advanced it will be seen that grasses differ very much in quality, presenting, indeed, various degrees between those that may be esteemed as highly nutritious and those which are so poor and innutritious as to be little if any better than weeds.

If we inquire into the causes of these differences we shall find that they arise partly from the structure and mode of growth of the grasses themselves, and partly from the capabilities of the soil. As a rule, it may be said that species without hairiness, on the one hand, or harshness, on the other, and which have a green and succulent undergrowth which readily springs up after the hay is cut, are best. Such examples as have soft down hairs, as *Holcus lanatus*, woolly, soft grass, are next to useless. Again, such hard, harsh specimens as *Aira cæspitosa*—Tussac grass—are, as it were, mere woody fibre, covered with an epidermis largely composed of silica. These are only partially eaten by cattle, and that only in the young state.

The Tussac grass, or Bull-pate, is an example of a species growing in a separate bunchy form; these are usually useless. Good species have the tendency to mix with other

herbage, and not to grow distinctive, as do the jungle grasses. But, however much of quality may be traced to distinct species, still more is due to the soil and climate; thus, some forms which are valueless in the wild state, become good when cultivated.

The *Agrostis stolonifera*, which, in our arable fields, is a pernicious pest, from its couch-like underground *rhizomata*, and the paucity and harshness of its herbage, is nevertheless a valuable grass in the irrigated meadow, as its mode of growth tends to keep the turf together, while it allows a free passage to water between and among the roots; at the same time irrigation so much improves the herbage that it becomes almost inexhaustible in quantity and of first-rate quality.

That cultivation, as manuring, harrowing, and rolling of pasture, greatly improves it there can be but little doubt, but somehow or other the smaller farmers cannot be induced to exercise care, much less to go to expense, in manuring grass, his theory being that, if he takes hay every second year, the animals in depasturing in the intermediate years "make sufficient manure for grass." That animals do bring up and leave a quantity of manure in depasturing is quite true, but as this could only have been derived from the herbage on which they have fed, by merely feeding off a field, nothing is added to its manurial stock, whilst the hay-making constantly takes off a considerable quantity. If our farming friends put their sheep on turnips by day, and then should fold them on their meadows at night, something may be transferred from the manured arable to the pasture; but in reality the opposite system is usually adopted, few farmers thinking it advisable to rob the arable to enrich the pasture, while the pasture is constantly robbed in favour of the arable.

As regards the value of pasture, we may then conclude that the best meadow will be that which consists of the best growth of the best kinds, but it must be borne in mind that not only may bad kinds be considered as weeds, but all pastures will have a variable proportion of plants other than grasses, some few of which may be useful in the crop, but by far the larger number of these can only be considered as interlopers if not positively injurious, from possessing noxious or even poisonous qualities.

Now, if we look carefully into the natural history of such interlopers in meadows as we should deem to be weeds, we shall find that they might readily be classed under the following heads:

1st. Plants which are weeds by reason of their taking up space without adding to the crop, either of grass or hay.

2nd. Plants innocuous in themselves, but which yet take up space in the pasture without yielding food, and also dilute the quality and quantity of the hay.

3rd. Plants which, by reason of their mechanical structure, are inconvenient to cattle, both for pasture and hay.

4th. Plants of poisonous properties.

5th. Plants which, though not poisonous, impart a disagreeable flavour to milk, butter, and cheese.

6th. Useless grasses, sedges, rushes, and the like.

We now venture to remark upon the heads as here laid down, and in so doing shall offer lists in each division, which, it should be stated, is not meant to be complete as embracing them all, but only as containing the more prominent species.

1. *Plants which are weeds in pastures without adding to the crop.*—There are few pastures without a varied selection of specimens which have this effect, which is produced in two different ways:—first, by plants which grow so flat on the ground that the scythe does not touch them; and, secondly, that, by reason of their early growth and short existence, they are dead before haymaking; and though some of them may be eaten in early pasturage, they are of little value as food. These are clearly indicated in the following:

*Table of useless Pasture Plants.*

<i>Botanical name.</i>	<i>Trivial Name.</i>	<i>Remarks.</i>
Plantago media . . .	Broad-leaved Plantain	} The leaves of these grow too close to the ground to be eaten off by cattle, or be cut by the scythe.
Leontodon Taraxacum .	Dens de Leon . . .	
Bellis perennis . . .	Daisy . . . . .	
Primula veris . . . .	Cowslip . . . . .	} These take up room in growing, are not eaten by cattle, and being dead before hay-making, add little or nothing to the rick.
„ vulgaris . . . .	Primrose . . . . .	
Orchis morio . . . .	Green-winged Orchis	
„ mascula . . . .	Early Purple orchis .	

If we take the plantain as a type of these, we have in it a plant which lies flat to the ground, with a circle of leaves from five to ten inches in diameter; the space, then, that it takes up in a field is not inconsiderable.

But the daisy should teach us something beyond this, as its presence in quantity is an evidence of extreme poverty in

a pasture. We have seen fields all white from the presence of the "wee modest crimson-tipped flower," looking so bright in the sunshine, with its silvery stars dotting the green field, that we have been ready to exclaim, "Surely this cannot be a weed?" But, alas, all is not gold that glitters or silver that is bright, for on the spot where a daisy is growing a grass-root is not.

2. *Diluent plants*.—This offers a somewhat large list, as all the plants found in the pastures which have a tall growth, and have no mechanical hindrances or any poisonous qualities, must be ranged under this head.

*Table of Plants which take up space.*

<i>Botanical Name.</i>	<i>Trivial Name.</i>	<i>Remarks.</i>
Rumex spees . . .	Docks . . . . .	Everywhere.
Arctium lappa . . .	Burdock . . . . .	The borders of fields.
Petasites vulgaris .	Butter Burr . . .	By water-courses.
Heraclium Sphondylium	Cow Parsnip . . .	} These and other Umbelliferæ are common and most unsightly.
Anthriscus vulgaris .	Wild Parsley . . .	
Cardamine pratensis .	Ladies' Smock . . .	In wet meadows.
Rhinanthus Christigalli	Yellow Rattle . . .	In very poor meadows.

These, though only offered by way of examples, yet, in themselves, they make up a formidable list of plants injurious to the pasture; their large leaves and stems, in most, take up much room to the injury of the grass, and though it is quite true that they go far in making up weight in the trusses of hay, yet the hay will always be of an inferior description, whilst the coarser parts will be rejected. In fields where plants of this character prevail we shall often have a good pasturage for cattle, that is, the animals will get on well on the *grasses*, of which only they will partake, and then one is too apt to be astonished that good feeding meadows should yield a poor hay, with the fourth of its weight and bulk of these objectionable plants! These, then, should be rooted out, for where a plant of no use can and does grow, it takes up the space which should and would be occupied by better species.

3. *Plants mechanically injurious*.—Among these the most prominent will be the thistles and nettles. As regards the thistles it will readily be understood that their pointed spines are objectionable in hay, and even the young leaves of these seem not to be eaten by the cow or the horse, though certainly the ass does not object to them.

To show the injury they inflict, both to the pasture and the rick, it will only be necessary to quote the following:

*Table of space occupied by Thistles.*

	Diameter of leaves in inches.	Height of plant in flower.
Musk Thistle . . . . .	25 . . . . .	24 . . . . .
Wetted Thistle . . . . .	30 . . . . .	38 . . . . .
Small flowered Thistle . . . . .	— . . . . .	18 . . . . .
Spear Thistle . . . . .	40 . . . . .	36 . . . . .
Woolly-headed Thistle . . . . .	48 . . . . .	50 . . . . .
Marsh Thistle . . . . .	24 . . . . .	30 . . . . .

Nettles, too, take up room in the pasture and injure the hay.

4. *Poisonous plants.*—The most prominent of these will be the *Colchicum autumnale*—meadow saffron. The colchicum, in all its stages of development and every part of the plant, contains an active principle of very poisonous properties, which has been named by the chemist *veratrine*. The presence of this renders it a very active medicine, and pharmaceutical preparations are made from the *corns*, commonly called the roots, and from the seeds, but the flowers are probably still more replete with the active principle, and consequently more poisonous than any other part of the plant. These medicinal qualities have for ages recommended colchicum as a remedy for gout; but it is so powerful a medicine, and withal so uncertain in its effects, that these require the sedulous watching of the medical practitioner—facts that are mentioned only to show the powerful effects of colchicum on the human system.

In the autumn we constantly hear of cases of cattle poisoning by the colchicum, of which we shall furnish examples when we come to speak of the history of the colchicum itself. At present it is only necessary to point out that fields much inhabited by this plant are rendered nearly useless for autumn depasturing on account of the legends regarding the injury they have occasioned to stock.

5. *Ill-flavoured plants* are weeds in pasture, not because they merely occupy space to the exclusion of better, nor that they are ill-flavoured to the animals partaking of them—for it would seem that they are not so to the extent of preventing their being constantly eaten—but because such plants, especially the

*Allium vineale*—Crow garlic,

„ *ursinum*—Hog's garlic,

*Erysimum alliaria*—Jack-by-the-hedge,

impart a most disagreeable flavour to dairy produce, and are, therefore, highly objectionable in the pasture.

All the plants named in the foregoing list, with many others not mentioned, can only be considered as weeds in

pasture ; the best meadows will be those that are conspicuous by their absence. Still, there are many plants which cannot be called grasses which are of value when mixed with grass. Of these, the most prominent are the different kinds of clovers. Practice and observation will teach the intelligent farmer, and those to whom is committed the well-being of his stock, the different teachings which they are capable of communicating. For the present we must be content with having pointed out some of these facts in reference to plants different from grasses. In our next we must refer to the same set of circumstances as occurring from the presence of many of the grass allies themselves.

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## DISEASE OF THE UTERUS OF A BITCH.

By JOHN GERRARD, M.R.C.V.S., Market Deeping.

I AM induced to send you the particulars of a case of uterine disease in a bitch, as it corresponds so closely to the case related in your last by the Messrs. Gowing, Camden Town, and your note attached thereto, that I am inclined to think such a morbid condition of the organ is of more frequent occurrence than is generally supposed or suspected.

I am unable to indicate any successful mode of treatment ; but a statement of the symptoms and appearances may enable some one to form a diagnosis of an obscure and hitherto unobserved affection. This always goes a long way to secure the good opinion of our employers.

On the 10th of November, 1870, a French poodle, nine years of age, about ten pounds in weight, was brought for my examination, and said to be in want of opening medicine, as she had a great desire to defecate, but could not do so, and had been in this state for three days previous, having eaten nothing all that time. Nothing unusual could be observed by her general appearance. Pulse rather excited, breath fetid, mucous membrane of mouth black, teeth rather loose, belly tense—moderate pressure causing pain—great desire for seclusion, and occasionally straining violently. In addition the attendant stated that she had been in heat some days previously, but had been kept secluded, so that nothing had to be suspected from that cause. Thinking that she was suffering from the effects of having eaten some indigestible substance, and that it had passed on towards the rectum, I administered jalap  $\zeta$ ij in an ounce of castor-oil and  $\zeta$ ss syrup of buckthorn ; I also gave her

an enema of water and soap, of which she was very intolerant. The enema was instantly returned, and along with it a few scybala, which seemed to relieve her; repeated the injection in a few hours, but nothing came away. Twenty-four hours after, as nothing had passed, I gave her another drachm of jalap in an ounce of syrup of buckthorn, and repeated the enemas. All food was withheld for three days, but water allowed, of which she seemed immoderately fond; on the fourth day I offered her a small piece of liver, but she did not look at it; next day gave some milk, which she lapped eagerly. All this time there was no passage, and the belly was evidently increasing in size. She urinated freely. On the sixth day she took five grains of calomel with half a drachm of jalap, made into a pill; in about fifteen minutes this was returned, and, thinking it rather bulky, I divided it, and gave it at twice. No effects followed, and she getting rather weak, I gave her some milk and wine, and continued the enemas, but with no results. On the seventh day gave ten drops croton oil in a pill of jalap; this also was returned. About four hours after gave ʒj castor oil, ℞ss extract hyoscyamus in watery solution. Eight hours afterwards some hardened fæces were voided along with an injection which had been given. As she continued to strain violently, and the abdomen getting harder, I put her into a bath of about 85° Fahr. This had the effect of reducing the straining, and after being in the bath about fifteen minutes she began to pant and breathe hard, continuing to do so after being removed from the bath. During the night she passed some fæces, and looked a good deal relieved, but would eat nothing, but always anxious for any liquid when presented. On the morning of the eighth day no change was observable, excepting that she was more disinclined to move or to stir on being moved. Continued to give her milk and wine. In the evening I put her into a bath, which caused her to pant and breathe very heavily, which she did for a number of hours after, when she began to cough and sneeze, as if affected with bronchitis. After administering some Spiritus Ætheris Nitr. in warm milk, and wrapping her up comfortably, I left her for the night. She died on the morning of the ninth day.

On opening the abdomen, the first and only thing observable was the uterus extending over the whole floor of the cavity; indeed, it seemed the only organ present, entirely concealing the intestines, which were quite empty. At the first glance I thought it contained five fœtuses, as it presented dilatations and constrictions similar to a gravid uterus. The body of the organ to the os was also distended and tense,

the whole presenting very much the appearance of two strings of sausages one may see on a butcher's stall, united into one at the end. On plunging the scalpel into the body of the uterus, a quantity of sanious, flaky pus escaped, but none came from either of the horns. All seemed separate and distinct, and only came away when each compartment was separately opened. The pus in each compartment was much of the same nature and appearance, only that which was in the extremities of the horns was more bloody, and in a less mature condition than that in the body of the organ. The walls of the organ were thin in substance, excepting at the Fallopian tubes, where the inner coat was thicker, and had a velvety appearance, of a greenish tinge, and was streaked with blood. The partitions seemed thickened round the margins and thin in the centre; one of them seemed to be open. The vagina was healthy, the os uteri impervious and swollen; bladder empty. The contents of the chest all normal, as well as the trachea and larynx. The presence of the owner and his groom, to bear away the remains for interment, prevented my making a minute examination of the ovaries, or of anything else that could have enabled me to arrive at a conclusion as to the cause of the disease, or give any indications of treatment for a similar case; the appearances, however, seemed to satisfy the owner that nothing could have been done to save her, which is often a great consolation to dog-fanciers, more especially female.

Whether on examination the fluid would have been found to be pus I am unable to say, but to the unaided eye it had all its characteristics.

Whether this disease corresponds to the collection of fluid in the uterus of the larger mammals, or may be regarded as false conception, I am unable to determine, but it seems in some way connected with impregnation, commencing, as it did, from the cessation of the period of œstrum. I should be glad if you or any of your readers would favour me with an opinion.

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## DEATH OF EWES FROM EATING MAIZE.

By THOS. OLVER, M.R.C.V.S., Truro.

ON the 30th of January I was called to see some Shropshire Down ewes, heavy in lamb, and in good condition, the property of a gentleman residing in this neighbourhood.

On my arrival I found that six had been removed from the flock; two were dead, and the others were lying down in unnatural positions, appearing very dull and stupid, and not caring to move. They were tympanitic, and breathed with difficulty; the bowels were constipated, and the animals would not take food of any kind.

My first idea was that they had eaten something of a poisonous nature, therefore I at once went to the field from which they were taken, but could not find anything of a deleterious kind in the herbage. I did find, however, another sheep unwell, which I had removed.

It appeared that these sheep had been kept at another part of the farm, and entirely on green food, but that two days previously to my seeing them they had been brought nearer the house, because the land was covered with snow, and the shepherd had given them some straw-chaff, decorticated cotton-cake, and *unbroken maize*.

I made a *post-mortem* examination of the sheep that had died, and found, on opening the rumen, that it contained a large quantity of ingesta of usual appearance, mixed with which was a lot of *unbroken maize*, which I was surprised to see; but on coming to the reticulum, I found it completely filled with unbroken maize, quite hard, and appearing as if it had been just swallowed, except that the grains were a little larger from absorption of moisture; the third and fourth stomachs contained little or nothing, and every other organ of the body appeared normal. I therefore concluded that the unbroken maize, taken in large quantities, was the cause of death.

I ordered that all the rest of the flock should take Ol. Ricini, Mag. Sulph., and Liq. Ammon. Arom. Two died and the remainder recovered.

The next day I made a *post-mortem* of the two that had died, and they were in the same condition.

I ordered change of food for the remainder of the animals, after which they all went on well.

I might add that all the sheep which were taken ill were aged, therefore would probably eat a larger quantity. I believe the young ones had never been given anything of the kind before.

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DISEASE IN THE MOUTH OF A HEIFER ARISING  
FROM A FOREIGN SUBSTANCE BEING FIXED  
IN THE CHEEK.

By HARRY OLVER, M.R.C.V.S., Edingall, near Tamworth.

ON Monday, the 9th of January, I was requested by Mr. Hatchett, of this place, to see a two-year-old heifer, which I did on the following morning, and found that she had an enlargement on the side of the face, which I was informed had existed since the first week in July, 1870, but had lately been getting much larger.

On external examination, the growth appeared to be a morbid deposit arising from an injury, but not being able to satisfy myself why it varied so much in size, as it was described to do from time to time, I determined on passing my hand up the mouth to examine it more particularly, when, opposite the two last molar teeth, I felt a smooth hard substance resembling bone, which appeared to be growing from the side of the mouth. After some manipulation I discovered a small opening at the inferior part, which I gradually enlarged so as to admit two fingers. I then removed from between the substance and the side of the mouth more than a pint of partially masticated decomposing food, after which I proceeded to extract the offending substance, which, in about half an hour with the aid of instruments, I succeeded in doing, when I found it to consist of a flat piece of tin, resembling the cover of an ordinary mustard canister, with the edges flattened, but so broken into small pieces as to leave sharp points which cut like so many knives. The tin was about three inches across in either direction, and being placed perpendicularly it must have had a cutting action every time the mouth was closed.

The muscles and mucous membrane on the side of the mouth were almost entirely ulcerated away, but with soft nutritious food and careful treatment the animal is now progressing favorably, although, of course, she is in an emaciated condition. It appears to me very extraordinary that a beast could live without any extra food or attention for so long a time, with such an impediment to its masticatory organs, as, doubtless, the tin had been in the mouth from the first appearance of the tumour.

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## EMBOLISM OF ILIAC ARTERIES.

By SAMUEL LITTLE, Student, Veterinary College, Edinburgh.

THE subject of this case is a grey mare, about fourteen years old, the property of Mr. Milner, of Kinoulton, Nottinghamshire.

She had been in that gentleman's hands but a few months when I first saw her. He had bought her of Mr. Coleman, of Long Clawson, and the latter gentleman purchased her in the autumn of 1869 of Lord Seymour, with a view of using her as a hunter, but finding a defect in the action of her hind extremities—a general weakness shown in dropping of the quarters and dragging the toe of the off hind foot along the ground, very obvious after she had been ridden a short distance, and disappearing on rest—he determined to get rid of her; and accordingly he sold her to Mr. Milner, having apprised him of her state. Mr. Milner thinking the mare's ailment of no moment, commenced training her for a steeplechase; finding, however, the animal incapable of undergoing the necessary preparation, in consequence of lameness of an intermittent character in the off hind leg—lameness occasioned by a few minutes' trotting exercise, and vanishing on rest—he abandoned the attempt, and set her aside as a brood mare. Mr. Marriott, of Cotgrave, Mr. Milner's veterinary surgeon, was called in to see her, and he pronounced her to be suffering from an injury to the hip-joint.

Treatment was had recourse to; a medicament was applied over the hip-joint; nevertheless the intermittent lameness continued.

On the 24th of May, 1870, the mare was sent to Belvoir Stables, a distance of twelve miles, to be stinted to "Light Bob." She had scarcely proceeded a mile on the journey when the usual lameness appeared, and it gradually increased in intensity until Harby, a village on the way, was arrived at, where, from pain and exhaustion, she fell upon the road. My father was then summoned to see her, but he being from home I answered the call. I found the mare lying all her length on her right side, bathed in sweat, now and then raising her head and looking upon her reeking body, and at the same time showing an inclination to roll; her belly was greatly distended; the pulse was full, strong, and numbering 88; the nostrils dilated, the breathing accelerated and irregular, and the mucous membranes highly injected.

The mare evinced no disposition to get on her legs, nevertheless she was able to do so; and when she was put into a stable she seized the rack and manger with her teeth, and her whole frame was agitated with violent tremors. The pain and lameness of the hind legs were excessive. The animal was continually moving from one hind leg to the other, and occasionally she raised the off hind foot from the ground and retained it in that position for some time. Now and then the hind quarters dropped suddenly, as though the hind legs had lost for the moment the power of supporting the body; nevertheless, the mare invariably recovered herself, never falling to the ground. There were also present crouching of the quarters, and a semiflexed condition of the joints of the posterior extremities, a state most conspicuous in the off limb. The longissimus dorsi, glutei maximus and externus, and the oblique muscles of the abdomen, with some of the posterior intercostals, were in a state of spastic rigidity; the abductor and adductor muscles, and also the muscles of the anterior and posterior crural regions, were evidently relaxed; the gastrocnemii being apparently elongated, thus allowing the point of the os calcis to recede a great distance from the tibia. The mare's legs were cold, and displayed a remarkably fine or clean appearance.

I gave the mare an anodyne draught, which was followed by a dose of physic.

Three hours subsequent to my first seeing the mare, namely, at 5 o'clock p.m., I again visited her with my father. At that time the symptoms which I have related, with the exception of the distension of the abdomen, which had subsided an hour after the administration of the draught, were still present, though they had lessened somewhat in intensity. The patient was now removed to a stable about 400 yards distant. At the commencement she experienced difficulty in progression, and as she proceeded, her back became arched, and her quarters more drooping; her hind feet dragged on the ground, and occasionally she moved, only supporting herself upon the front of the hind fetlocks. She perspired profusely, and her breathing was accelerated and embarrassed. Having gone through two thirds of the distance, and being in extreme distress, she fell from want of power in her hind parts. After a short interval, the urgency of the symptoms having somewhat abated, she got up and with great difficulty walked to the stable; but when she arrived at the door she again fell. Here she lay several hours in extreme agony. My father now intimated that the symptoms were indicative of embolism, or obstruction of the arteries of the posterior extremities, he

having seen two analogous cases; in the one a hind, in the other a fore extremity being affected. Both he and I successively explored, through the medium of the rectum, the termination of the posterior aorta, and also the iliac arteries. That part of the posterior aorta within reach possessed no tangible indications of disease; the right external and the left internal iliac arteries, however, from their origin so far as they could be manipulated, were, according to the testimony of our sense of touch, choked with solid matter, being hard, pulseless, motionless cords, painless on pressure. The right internal and the left external iliac arteries pulsated, but, even in them, the pulsation was of a jarring or thrilling character. The plantar arteries of the hind legs were large, rigid, and pulseless; the outer plantar arteries of the fore legs having the same characters, the inner ones, however, being smaller in volume, and pulsating. The inner plantar vein of the off fore leg was absent, or, at least, closed to the passage of blood. The mare had perfect control over her rectum and bladder, and exquisite sensibility of the extremities.

On the morning of the 25th the patient was on her legs; she had taken a little food and water during the night; the pulse was more frequent, 96, but it was smaller, and not so resisting; there were still a weakness and a continual shifting of the hind legs, which were not so cold as yesterday, but even now there was a coolness about them. The morbid blood-vessels were found in the same condition.

On the 26th the mare was lively, had a good appetite, had gained strength, moved quickly around the box, and to an ordinary observer appeared in perfect health. No change was observable in the state of the arteries.

On the 28th the mare moved lightly and cleverly out of the stable, flexing her limbs as she used to do, and carrying herself with an air of gaiety; but having been trotted a hundred yards or so, a want of power of the hind legs became obvious; they were imperfectly flexed, their action being slow and of a dragging character, and before she had gone two hundred yards the symptoms observed on the 24th again recurred; but as the exertion was not further continued, they were of shorter duration, and on the following day they had entirely disappeared.

From the extent of the embolic condition of the arteries, and from experience in previous cases, my father gave an unfavorable prognosis. Upon this Mr. Milner wished to have the opinion of Mr. Marriott, who had recently attended the mare. Accordingly, on the 2nd June, my father and I

met that gentleman in consultation. On this occasion the mare, as seen in the box, evinced no symptom of disease; trotting exertion, however, quickly elicited the phenomena I have noticed. At first Mr. Marriott entertained the opinion that the mare was suffering from a spinal affection; but when we had demonstrated to him the condition of the arteries of the extremities he at once gave acquiescence to our diagnosis, and remarked that the case was both singular and important, and that he had not previously seen an animal so affected.

The next day, the 3rd, the mare returned to Kinoulton, where she was in the care of Mr. Marriott. I saw her with my father several times at intervals of three weeks, and on each occasion no sensible change had taken place in the obstructed vessels; but on the last visit I noticed the super-addition of lameness of the near fore leg.

As regards the nature of the obstruction in the arteries, it is highly probable that it consists of fibrinous coagula, the result of inflammation, of a strumous character, of the serous membrane of the vessels. This assumption I rest upon the facts elicited by the *post-mortem* examination made by my father of two similar cases; the external iliac artery and its branches in the one, and the humeral and its branches in the other being plugged with a firm fibrinous deposit, separable from the sides of the vessels, non-organised, and perforated by a tenuous canal. In this instance, however, the embol may be of a totally different nature; for we know that the arteries of the horse are subject to a disease termed atheroma; a cœcoplastic matter being occasionally found on their serous membrane, and this matter being not unfrequently absorbed and replaced by a calcareous deposit. A few years ago my father sent to the *Veterinarian* the particulars of a case of cancer of the lungs and atheroma of the left ventricle of the heart, and of the large arteries, and I think that is the first case of its kind recorded in the annals of English veterinary science. In it the serous membrane of the left ventricle and of the large arteries was rigid from the presence of calcareous matter.

Now, if in this case I am describing the iliac arteries were lined and made rigid by a calcareous deposit, I should expect, in addition to the absence of pulsation in them, a distinct vibration, and I should also expect from pressure to crush the walls of the vessels; but there was no vibration in them, nor was I able to crush their walls by pressure with the fingers.

The intermittent lameness of a paralytic character was a

salient feature, and was unquestionably a legitimate result of defective nutrition. As long as the mare was kept in a state of quietude, or even when having moderate walking exercise, the collateral circulation, assisted probably by a small channel in the embol, was adequate to support the limited demand of muscular power; but when exertion as in trotting was called forth, sufficient blood was not furnished to support the nerves conveying the impression of the will to the muscles; or, it may be, to enable the muscles themselves to respond to a stimulus provided the nerves were in a fit state to convey the impression produced by that stimulus.

Another well-marked symptom, referable to the perverted circulation, was coldness of the extremities.

What still remains to be described is the manner in which the obstructed arteries of the hind extremities gave rise to a firm and persistent contraction of the muscles of the quarters, back, abdomen, and ribs.

Firstly, then, it may be that the mare, finding the muscles of the hind legs unable to fulfil their ordinary office, called into action, through the stimulus of the will, other muscles to act as substitutes for those already incapacitated. But I hold that this rigid contraction of the muscles was involuntary, for it continued as long as the circulation was accelerated, and even when the mare had assumed the recumbent position, a time when she could scarcely be expected to be exercising her volition on muscles then painfully contracted. Now, in endeavouring to explain the manner in which this rigid contraction was brought about, I assume that the strong rapid current of blood in the posterior aorta, occasioned by the heart's increased action due to exertion, meeting with resistance from the external iliac artery on one side, and the internal iliac on the other, caused an inordinate quantity of blood to be driven with increased force into and through the vessels of the spinal cord; produced congestion of that nervous centre, which congestion acting as an irritant or central stimulus, gave rise to contraction of those muscles abundantly supplied with blood, and that received their motor nerves from the stimulated parts of the spinal cord.

This case is necessarily incomplete from the absence of a *post-mortem* examination; still, I have thought it sufficiently interesting and important to be worthy of record. The mare is still living.

[As Mr. Little suggests, this case, though interesting, is incomplete; but should an opportunity of making a *post-mortem* examination occur, we do not doubt that Mr. Little will take advantage of it and publish the result.—Eds.]

## Pathological Contributions.

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### CATTLE PLAGUE.

LITTLE or no diminution has taken place in the extent of the cattle plague in Eastern Europe. We learn that the disease is still very rife in Transylvania, Buckowina, and Galicia, but declining in Poland.

In Belgium the disease is on the increase, being particularly severe in the village of Battincourt. Strict sanitary measures are being adopted.

The Governor of Luxembourg has also prohibited the movements of cattle in the communes of Muno, Sainte-Cécile, and Chassepierre, in consequence of the prevalence of the cattle plague in the French village Pure, near to the frontier. Nor are the northern departments of France alone affected with this scourge; the information from Brest on February 10th was to the effect that the disease was making such progress among the large droves of cattle which had been brought together for the relief of Paris, that it was found practically impossible to bury the dead sufficiently fast, and that the Government had in consequence appropriated two old war-ships for the reception of the carcasses, which, when laden, were to be towed out to sea and sunk.

Since then the papers further record that the disease continues to exist in a most virulent form at Landerneau, in the neighbourhood of Brest. That 3000 cattle, collected together for re-victualling Paris, were more or less affected, and that about a hundred were dying daily.

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### SPLENIC APOPLEXY.

NUMEROUS cases of this disease have occurred recently in different parts of the country, and under circumstances the very opposite to each other, as well as among animals varying greatly as to age and condition. One correspondent informs us that two feeding heifers, which had been purchased about three months previously, died very suddenly within three days of each other. The first was found dead in the morning, having been thought to be perfectly well over-night, and the other sunk within a few hours of being observed to be unwell. Both animals exhibited on dissection well-marked

lesions of splenic apoplexy. The same correspondent further states that on another farm a similar case had occurred, the victim being also a feeding heifer, and he adds that he had just heard of the death of five beasts on a third farm. It was thought that, as all these animals had been fed upon a compound cattle-cake, made chiefly of cotton seeds, linseed, and locust beans, the deaths might possibly be attributed to this cause. An analysis of the compound had been made, but nothing injurious was discovered.

A second correspondent writes that he had just been called to an outbreak of splenic apoplexy, in which five young animals had died within a few days, and an in-calf cow was then suffering. On this farm the malady was first observed among some well-bred shorthorns in August last, which were then at grass. The measures then adopted arrested its further progress, but in November the disease reappeared, and on this, as on the previous occasion, four or five animals died very quickly after each other. No cause of these several outbreaks was apparent.

From a third correspondent we learn that in his district the disease had reappeared on a farm on which several animals—store stock—were lost last year, and that he feared the present outbreak would prove equally disastrous.

The free use of antiseptic agents, especially the sulphite of soda, conjoined with chloric and sulphuric æther, and the thorough cleansing of the sheds and yards, even to the carting away of the manure, and subsequent disinfecting them with carbolic acid, are prophylactic means which ought not to be neglected in any outbreak of the disease now occurring.

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## FOOT AND MOUTH DISEASE.

SINCE our last report a continuous diminution in the number of outbreaks of this disease has taken place, although fresh attacks have occurred in some districts. The number of counties now returned as afflicted are sixty, and the several centres of the disease 799.

We have also received information of the existence of the disease near to Kallundborg, in Denmark, and in the far-distant republic of Buenos Ayres. In the latter-named country the severity of the malady was said to be declining.

## PLEURO-PNEUMONIA.

ACCORDING to our latest information pleuro-pneumonia exists in thirty-two counties of Great Britain to a greater or less extent, while it continues to prevail with equal virulence in the London dairies. With regard to the question of the further importation of cattle the subjects of the malady, we may remark that very recently the Secretary of the "Home Cattle Defence Association" sent a letter to *The Times*, in which he stated that some Dutch cattle had been imported at Thames Haven, passed by the inspector, and forwarded by rail to the market lairs, where, on a closer inspection, between the time of their arrival and sale in the market, several of them were found to be affected with pleuro-pneumonia.

This statement was well calculated to create alarm in the mind of the British farmer and others interested in the question of preventing any additional risk being incurred of increasing the already large number of cases of this disease, and consequently *Mr. Alderman Lawrence* asked, in his place in Parliament, whether the Vice-President of the Committee of Council on Education could give an explanation of the statement which appeared in a letter to *The Times* of the 31st of January:

"That a cargo of beasts from Holland landed at Thames Haven last week was passed by the inspectors there as sound. These animals were taken thence to the Maidenlane station, Holloway, and thence to the Market lairs, where, on close inspection, several of the beasts were found to be affected with pleuro-pneumonia."

*Mr. W. E. Forster* said, in reply, that, having seen the statement in the letter to *The Times*, he caused inquiry to be made, and, as far as could be ascertained, the statement appeared to be entirely without foundation. No case of pleuro-pneumonia was detected in the lairs after the most careful examination, and no notice had been given of such a case by the owners, as was required by the Act, on the existence of any disease being discovered.

The reply given by *Mr. Forster* called forth another letter from the Secretary, which we give *in extenso*, and from which it will be seen that this alarming statement was promulgated merely upon hearsay evidence.

"IMPORTED CATTLE DISEASE.

"*To the Editor of The Times.*

"SIR,—It has been my duty to communicate to *The Times*

during the past four years many instances of imported cattle disease, the genuineness of any one of which has never been disproved. I confess, therefore, to surprise in observing that in Parliament last night the accuracy of the most recent instance reported by me was (albeit somewhat late in the day) officially disputed. I am sure you will permit me a few words in explanation."

"The case in point appeared in your columns on the 28th of last month, and not on the 31st, as stated by Mr. Alderman Lawrence. A report of the occurrence to which his question referred had reached me some days before the date of my letter. Nevertheless, I refrained from giving publicity to it until I had made careful inquiry, and had elicited from a large importer of Dutch cattle some particulars relative to the matter in question. I understood that on Thursday, the 19th ult., 170 Schiedam oxen and twenty-seven sheep were landed at Thames Haven by the "John Wells," from Nieu-Diep, which animals, being too late for the Islington market of that day, were most of them disposed of in the lairs at Holloway the following days. The trade at the next Monday's market proving brisk, a salesman interested in the cargo in question remarked to another salesman, also interested, that it would have been well to have held over the whole of the animals for the Monday's market. 'No,' answered the salesman addressed, 'for three of the beasts have been killed in the lairs on account of the lung disease.' This conversation was reported by one of the salesmen—Mr. Alexander—to a member of our association, who forthwith applied to me on the subject. The information was so precise, and my informant so reliable, that I felt I ought not to withhold it from you, and I confidently hope you will deem me fully justified in making the communication I did."

"I have the honour to remain, Sir, your obedient servant,  
"JOHN WALLER.

"Home Cattle Defence Association, Feb. 15th."

Further, with reference to the prevalence of pleuro-pneumonia, THE LORDS OF THE COUNCIL, with a view to keep in check its extension, have issued the following ORDER :

*At the Council Chamber, Whitehall, the 16th day of February, 1871, by the Lords of Her Majesty's Most Honourable Privy Council.*

PRESENT.—Lord Privy Seal, Mr. Forster.

The Lords and others of Her Majesty's Most Honourable Privy Council, by virtue and in exercise of the powers in

them vested under the Contagious Diseases (Animals) Act, 1869 (in this Order referred to as the Act of 1869), and of every other power enabling them in this behalf, do order, and it is hereby ordered, as follows :

1. This Order shall take effect from and immediately after the sixteenth day of February, one thousand eight hundred and seventy-one; and words in this Order have the same meaning as in the Act of 1869.

2. Where a Local Authority is authorized by the Privy Council to put in operation this provision of this Order, such Local Authority may cause all cattle affected with pleuro-pneumonia within their district to be slaughtered, subject to the following provisions :

- (1.) The Local Authority shall, by way of compensation for every such animal, pay to the owner thereof such sum, not exceeding twenty pounds and not exceeding one half of the value of the animal immediately before it was affected with pleuro-pneumonia, as to the Local Authority seems fit.
- (2.) They may require the value of any such animal to be ascertained by their officers, or by arbitration, and generally they may impose conditions as to evidence of the slaughter and value of any such animal.
- (3.) They may, if they think fit, withhold compensation in respect of any such animal, where the owner or the person having the charge thereof has in their judgment been guilty, in relation to such animal, of any act in contravention of the Act of 1869, or of any Order or regulation, or licence of the Privy Council or of a Local Authority, or has, in relation to such animal, failed to comply with the provisions of the Act of 1869, or of any such Order, regulation, or licence, in respect of the giving of notice of disease, or in any other respect.

3. Where any animal has been slaughtered in pursuance of this Order, the owner thereof shall not be entitled to recover in respect of the insurance thereof any sum which, together with the payment which he receives for the same under this Order, would exceed the sum which he would have been entitled to receive in respect of the insurance.

4. Every Local Authority shall keep, in such manner and form as the Privy Council from time to time direct or approve, a record, stating the date of any order for slaughter, and the execution of the order, and other proper particulars; and such record shall be evidence if any question arises concern-

ing an order for the slaughter of any such animal, or concerning compensation in respect thereof.

5. Where a Local Authority is authorized by the Privy Council to put in operation this provision of this Order, such Local Authority may, from time to time, with the view of preventing the spreading of pleuro-pneumonia, make regulations for the following purposes, or any of them :

For prohibiting or regulating the movement out of any field, stable, cowshed, or other premises, of any cattle affected with pleuro-pneumonia, or of the carcasses of any cattle which have died or have been slaughtered in consequence of being affected with pleuro-pneumonia.

For prohibiting or regulating the removal of hay, straw, litter, or other thing commonly used for food of animals, or otherwise for or about animals, that has been in the same field, stable, cowshed, or other premises with cattle affected with pleuro-pneumonia.

Provided that such Local Authority shall, from time to time, define the area within their district within which any such regulation shall have effect, and they may, from time to time, revoke or alter any such regulation.

6. Where a Local Authority is authorized by the Privy Council to put in operation this provision of this Order, such Local Authority may, from time to time, with the view of preventing the spreading of pleuro-pneumonia, regulate or prohibit the holding of any specified market, fair, auction, sale, or exhibition of cattle within their district, and may, from time to time, alter or revoke any such regulation or prohibition.

7. Provided that the Privy Council, if satisfied on inquiry, with respect to any regulation or prohibition made by a Local Authority under this Order, that the same is of too restrictive a character, or otherwise objectionable, may direct the revocation thereof, and thereupon, as from the time specified in that behalf by the Privy Council, the same shall cease to operate.

8. Expenses incurred by a Local Authority in pursuance of this Order shall be defrayed out of the Local Rate.

9. If any person acts in contravention, or fails in any respect to comply with the provisions of this Order, or of any regulation of the Local Authority made thereunder, he shall be deemed guilty of an offence against this Order.

(Signed)      ARTHUR HELPS.

## THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

“RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of January, 1871, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	NUMBER OF ANIMALS AFFECTED.					DISPOSAL.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered at place of landing.
Antwerp .	London	Foot-and-Mouth	...	...	...	12	12	12
Bremen .	„	Sheep-scab	...	1200	...	...	1200	1200
Ostend .	„	Foot-and-Mouth	...	...	...	154	154	154
„	„	Sheep-scab	...	288	...	...	288	288
Total . .		Foot-and-Mouth	...	...	...	166	166	166
„ . .		Sheep-scab	...	1488	...	...	1488	1488
Total . .			...	1488	...	166	1654	1654

“ALEXANDER WILLIAMS,  
Secretary.

“Privy Council Office,  
“Veterinary Department, 13th February, 1871.”

### Facts and Observations.

**FORAGE.**—Vine leaves and the cuttings of young vine twigs are largely given in France to cattle, in a fresh state, and also partly salted for winter forage. Since France possesses 2,500,000 hectares of vintage ground, this new utilisation of material will furnish food for a great number of cattle.—*The Chemists' and Druggists' Advocate*, Oct. 20, 1870.

**GRAPE SUGAR.**—The *Boston Journal of Chemistry* says that large factories have been established in New Orleans, Buffalo, and Brooklyn, for making grape sugar from corn. The latter is steeped in weak soda lye, for the purpose of softening the

husk and gluten, and is then ground wet, and run through revolving sieves to separate impurities. It is afterwards made to flow through ways or troughs, in which the starch gradually settles as a white powder. The wash water is run into a large cistern, and allowed to ferment and produce a weak vinegar. The starch from the troughs is put wet into the mash tub, and treated with water containing one per cent. of sulphuric acid, for eight hours. The acid is neutralised with chalk or carbonate of lime, and the liquid evaporated to get rid of the gypsum, and afterwards further evaporated in vacuum pans, and run into barrels ready for crystallisation.—*Ibid.*

ICAJA.—MM. Rabuteau and Peyre have been experimenting with the root of a plant in use at the Gaboon as an ordeal poison, and locally known as m'boundou or icaja. It will be remembered that it was from this source that the highly valuable Calabar bean was obtained and utilised in medicine. The authors state that, even in very dilute decoctions, it is very bitter, and appears to contain one or more alkaloids, since the aqueous decoction is largely precipitated by iodide of potassium, and also by phospho-molybdic acid. The poisonous effects of this substance bear some similarity to the effects of brucia; but the authors state that, under certain conditions, this poison does not hurt men. Some of the lower animals are readily killed by it; a dose of three milligrammes of the alcoholic extract placed under the skin of a frog kills it; and rabbits and dogs are killed by doses of from fifteen to twenty-five centigrammes of the same extract introduced into the stomach.—*Ibid.*

TREATMENT OF WOUNDS BY PNEUMATIC OCCLUSION.—One of the last numbers of the *Gazette Médicale de Paris* contains a suggestion by M. Guérin for treating wounds by the exclusion of the atmosphere. This is accomplished by placing over the wound a small sac or cylinder of caoutchouc, to the extremity of which a pipe is inserted that is attached to a balloon or chest destitute of air, and which consequently exerts a constant suction power over the seat of injury. By this means, according to M. Guérin, the approximation of the edges of the wound, and their consequent healing by first intention, is facilitated, while it prevents the absorption of pus. By this means, in fact, the wound is placed in the condition of a subcutaneous injury, or, even if this be not completely effected, the period of inflammatory swelling of such wounds when exposed to the air is shortened; whilst, if there be much loss of substance, it promotes the exudation of plastic lymph, and the formation of a cicatrix. He relates various cases of injury he has treated successfully by this means.—*Lancet.*

## THE VETERINARIAN, MARCH 1, 1871.

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Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

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## ON THE ORIGIN OF THE VACCINE DISEASE.

RESPECTING the efficacy of vaccination as a protective against smallpox, it is not our province to offer an opinion. Facts are, by repute, stubborn things, and those unfortunate people who are blind to their teachings are not likely to be reached by arguments based upon the facts which they are incapable of appreciating.

The opponents of the system of vaccination are not only inaccessible to the evidences of reason and experience, but they have somehow contrived to stumble into a state of entirely hopeless confusion respecting the nature of the affection which is termed "vaccine" disease, and which they describe as a compound of maladies affecting the horse and the cow. Will you give your children a disease which is derived from the horse and the cow? is the pathetic appeal to the father and mother of the age. Something of the same kind was said in Jenner's time, and doubtless with considerable effect. There is, we admit, a deficiency of respectability, to say nothing of dignity, in the idea of being the victim of a disease to which cattle are obnoxious. We may conscientiously consume the flesh of oxen and repair our wasted tissues with the milk of the cow, but to introduce a few drops of transparent lymph originally derived from vesicles on a cow's udder, and since transmitted through innumerable human systems, is a thing not to be contemplated without horror. Such wretched sentimentalism can only be tolerated by the uneducated, but it is unfortunately among that class that smallpox is usually most rife.

Among the members of the Anti-Vaccination League there appears to exist some sort of cloudy belief that the vaccine disease originated in the horse. Their creed is that the matter from the "greasy heels," as they are called, in horses, is conveyed to the udder of the cow, presumably

by the hands of the milker, and induces the eruption which is distinguished as cow-pox. Dr. Jenner himself was probably a convert to this doctrine to some extent, but whether he held it or not is of no consequence, the idea has long since been dispelled.

“Grease” is a vulgar name for a local disease of the skin of the heels of the horse, due to exposure to dirt and moisture; since working horses have been more carefully tended the malady has decreased in frequency, but it is still common in large establishments where the nature of the work is favorable to its occurrence. The disease goes on for years without interfering with the animal’s general health, and, with all respect to the medical writer on vaccination whose pamphlet fell into our hands a year or two ago, “grease” of the horse’s heels has no connection whatever with tuberculous disease of the animal’s lungs.

Cow-pox is an eruptive disease which has not appeared in the cow, unless it has been produced by inoculation or exposure, in our experience for very many years.

Reports of an outbreak of cow-pox among cattle have reached us from time to time, but on inquiry they have turned out to be either quite unfounded or cases of spurious eruption on the teats of cows, and, notwithstanding the fact that horses with greasy heels exist on many farmsteads now as they did in Jenner’s time, cows do not manifest any susceptibility to the influence of that kind of virus.

Far more significant in its bearing upon the origin of cow-pox is the fact that at the time of the prevalence of that disease among cattle smallpox was also rife among men. Of the identity of the two diseases there can exist no doubt. Mr. Ceely, of Aylesbury, Mr. Badcock, of Brighton, and others, have, on different occasions, produced distinct vaccine vesicles in the cow by inoculating the animal with the matter of human smallpox, and there are instances on record of cows having taken the disease by mere contact with the linen of smallpox patients.

Cow-pox we are strongly inclined to believe to be a disease which is not natural to the bovine species, but one artificially induced by the introduction of the virus of human smallpox into the system of an animal

which is but little susceptible to its action, and hence suffers only to a slight extent. Cow-pox is, in fact, small-pox modified by the system of the cow; and vaccination, instead of being the introduction into the human subject of a new and strange malady, is but the return, in a mild form, of a disease which naturally belongs to the human race. Upon this ground and upon no other can we understand the undoubted efficacy of vaccination in preventing the spread of smallpox.

Other objections than those which we have referred to have been urged against vaccination, but with them we have nothing to do, as they belong to the province of human medicine; we merely take the opportunity to assert that vaccine lymph *per se* can only produce vaccine disease, no other malady can be introduced by it, but, as a matter of course, if a bungling operator takes with the lymph, blood and pus, and possibly other inflammatory products from the vesicle on the arm of a patient in a diseased condition, and transfers them to the circulation of a healthy individual, mischief will result, not from the vaccine matter, but from inoculation with morbid products which will act as blood poisons. It is hardly possible to imagine that a professional operator would make such a mistake, and it is needless to suggest that none but competent persons should attempt to collect lymph for the purpose of vaccination. We hold it to be the duty of the members of the veterinary profession to do their best to remove the absurd prejudices which still obtain among the uneducated classes against a perfectly harmless operation, by combating on every occasion the erroneous notions which are entertained in respect of the origin of cow-pox.

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#### CONNECTION OF MR. FLEMING WITH THE EDITORIAL STAFF OF THE *VETERINARIAN*.

It affords us much satisfaction to be able to announce that our valued correspondent, Mr. George Fleming, will from this date take an active part in the management of the *Veterinarian*. We cannot doubt that our readers will

hail this announcement with equal gratification to ourselves, seeing that it is an additional proof of our resolve to make the *Veterinarian* all it should be as the organ of the profession. They will also infer from the circumstance that the loss which might otherwise have been felt with regard to an *Analysis of the Foreign Journals*, through the death of Mr. Ernes, will be provided for.

Mr. Fleming's acquaintance with foreign languages, his untiring zeal and love of research, eminently qualify him to fill this hiatus, as well as to undertake general editorial duties.

His name appears this month for the first time in association with other highly valued colleagues on the wrapper of the Journal.

### Extracts from British and Foreign Journals.

MUSTARD. By M. COMMAILLE.

WHITE mustard possesses medicinal properties which are very difficult to be explained. Our knowledge of its chemical composition, like that of many other organic substances, leaves much to be desired. Let us glance first at the actual state of science concerning this substance.

White mustard, *Sinapis alba*, belongs to the important family of the *Cruciferae*, which furnishes products for use in medicine, food, and the arts. Like all its congeners, it contains sulphur among its constituent elements, which sulphur readily manifests its presence when putrefaction takes hold of a plant of this family.

It is admitted that one part at least of the sulphur present in the crucifer, and consequently in white mustard, is in a form which gives easily hydrosulphocyanic acid, represented by the chemical formula  $\text{H CyS}$  or  $\text{HC}_2\text{NS}_2$ .

This acid is rich in sulphur, containing 54 per cent. of its weight, and is very poisonous in its free state. It was discovered by Kinck in 1804. The same acid is met with normally in human saliva.

In white mustard the hydrosulphocyanic acid is combined with a particular base, sinapine, which has not yet been obtained in the dry state. When attempts are made to do so, it splits up into an acid, sinapic acid,  $\text{C}_{22}\text{H}_{12}\text{O}_{10}$ , and a new

base, sincaline,  $C_{10}H_{14}NO_2$ . But as the formula for sinapine is  $C_{32}H_{24}NO_{10}$ , it follows that in the separation it has taken up two equivalents of water. The sinapine, it will be observed, is not sulphurised, but is nitrogenised, as are nearly all the organic alkalies. It gives well-crystallised salts. The formula for sulphocyanate of sinapine is  $HC_2NS_2$ ,  $C_{32}H_{24}NO_{10}$ .

Black mustard, *Sinapis nigra*, is distinguished from white mustard by the absence of sinapine. The sulphocyanic acid is also found there united to another substance, allyle, which exists also in garlic. It is an alcoholic radical, of which a great number of combinations are known. The sulphocyanate of allyle is represented by  $C_2NS_2$ .  $C_6H_5$ . It is much more rich

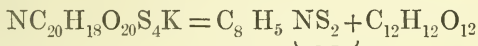
allyle.

in sulphur than the sulphocyanate of sinapine.

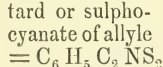
This difference explains how it is that white mustard in contact with water gives off, upon putrefaction, an odour, disagreeable no doubt, but very far from the horrible stench given off by black mustard under the same conditions.

But the sulphocyanate of sinapine does not pre-exist in the white mustard any more than the sulphocyanate of allyle in the black. They are both the result of a reaction between the natural principles of these seeds in contact with water by a fermentation that is developed very quickly. So likewise the odoriferous and sapid principles in black mustard, which is so well known, the volatile oil, is produced by the action of a certain substance named myrosine upon the myronic acid combined with the potash in the seed.

The myronate of potash ought, according to MM. Will and Kœrmer, to be considered as the essence of mustard, sugar, and the acid sulphate of potash. Thus, we have—



Myronate of potash.      Essence of mustard or sulphocyanate of allyle      Sugar.



Acid sulphate of potash.

A fermentation, possible only in the presence of water, is absolutely necessary in order that black mustard may acquire its pungent properties.

Further research is necessary upon this subject, since, according to received opinions, fermentation is never pro-

duced except under the influence of organized living bodies. Now, myrosine, the presumed ferment of mustard, does not fulfil this condition. However that may be, myrosine is met with in white mustard, but myronic acid is not, hence the absolute impossibility of its furnishing essence of mustard. This principle is the sulphocyanate of sinapine before spoken of.

Sinapisine, discovered by MM. Henry and Garot, is sulphurized, crystallisable and soluble in alcohol. It is crystalloid, like myronic acid; whilst myrozine, which does not crystallise, and is coagulated by alcohol, warmth or acids, like other substances that approximate to albumen, is a colloid.

To finish this brief history of the chemistry of mustard, it may be added that the white contains much mucilage, and that its ash contains 10 per cent. of sulphate of potash, arising from the destruction of the sinapisine.

If, now, we take advantage of the knowledge previously acquired, we shall be enabled, perhaps, to raise a corner of the veil which has hitherto hidden the mysterious therapeutic virtues of white mustard.

The purgative properties of this seed have been explained as a mechanical action of carrying through and expulsion—sweeping of the intestine. The purifying properties have been attributed to the presence of sulphur and to a specific action which, considering the integrity of the mustard in the fecal matter, is not very clear.

If we examine a mustard seed by the eye or under a microscope, we see that it is nearly round, scarcely wrinkled at the surface, neither very large nor very small. Left in cold water, it soon becomes rosy and very mucilaginous, acquiring a perceptible, but not disagreeable, flavour. The action of warm water produces this result much more rapidly. The seeds then roll one upon another with the greatest facility.

It is to these peculiarities that it appears in part to owe its purgative property. Seeds of larger size, the surface of which could not be acted upon by the liquids of the stomach and intestines, might, without doubt, purge more or less, but would greatly fatigue the organs, which could not support a large quantity of them; besides, the total surface being much less, the mucilaginous principle would be dissolved in smaller quantity.

Very small seeds, like the poppy, for instance, would be often arrested in the long course that they have to run; soon the whole intestinal passage would be covered, and

there would be no progression of the mass. Black mustard, independently of its very irritating properties, is too small.

The extreme readiness with which white mustard gives with water an abundant mucilage (for which reason that having a thin perisperm should be chosen) adds to the facility, already very great, of the movement of the seed due to its convenient size and round form. Until the contrary is proved, it would appear that it is to this union of properties that white mustard owes its value as a purgative.

The depurative properties of this seed do not appear so easy to explain, since it is rejected in the excreta apparently without having undergone any modification. But this appearance is deceptive. The penetration of a liquid into seeds which have not a thick perisperm is easy. By osmose a very rapid exchange takes place with uncontrollable force, between the liquid charged with the soluble substances of the seeds and the liquid that surrounds them. Moreover, we know by the law which governs dialysis, which has been so well explained by the late Mr. Graham, that membranes allow crystalloids to exude easily (sinapisine is a crystalloid) while they retain colloids (myrosine is a colloid). It is not impossible, then, that sinapisine should be rapidly carried off from the mustard-seed, although they remain intact, to be absorbed by the liquids of the digestive canal, and transferred by assimilation into the entire organism. That the sinapisine should be carried off as such, or that it should be transformed beforehand into sulphocyanate of sinapine, would matter little, sulphur being found in both substances.

Sulphocyanate of sinapine is, without doubt, an energetic poisonous principle, but it is among such substances we find the most medicines. It is only necessary that the doses should be so suitably apportioned, that they may not accumulate in the stomach, and that the elimination or destruction should keep pace with the administration of a fresh quantity, without which there would soon be symptoms of poisoning.

The less energetic character of black mustard, and its apparent inertness when employed as a condiment, should not be quoted in opposition to these views; for there the sulphocyanic acid is not combined with a base but with an alcohol radical, forming the sulphocyanate of allyle, a very irritating substance; not a salt, but an ether—that is to say, a substance absolutely different.—*Journal de Pharmacie et de Chimie.*

ON THE WELDON PROCESS FOR THE MANUFACTURE  
OF CHLORINE.

(*A Paper read before the British Association.*)

MR. W. WELDON, F.C.S., the author, said the process was one for the manufacture of chlorine by means of a perpetually regenerated reagent, consisting mainly of a compound containing the elements of peroxide of manganese and lime, and which was previously unknown. He had described the process last year at the Exeter meeting, when it was in operation at only two works. It is now either in operation or on the point of being adopted at almost all the works in this country, and at a number of works in France and Germany. In consideration of the fact that the production of chlorine will probably be completely revolutionised by the Weldon process, and considering, likewise, that chlorine is largely prepared in the neighbourhood of Liverpool and in other parts of Lancashire, the author has agreed to the request of Prof. Roscoe, that he should submit to the section a brief account of the practical results which the process has been found to yield under more extended experience, and of the development which it had undergone during the year. The author first described the apparatus employed, and exhibited a small model of it; and then proceeded to state that the chloride of manganese, which results in the ordinary preparation of chlorine, and which is generally acid, is neutralised by adding to the liquor finely divided carbonate of lime. The liquor then consists of a neutral mixed solution of chloride of manganese and chloride of calcium, and contains, in suspension, a large quantity of sulphate of lime and smaller quantities of oxide of iron and alumina. The clear solution, after settling, is oxidised by passing into it a blast of atmospheric air from a blowing engine, and heated, if necessary, by a current stream. Milk of lime is then run into the oxidiser until the liquid ceases to give a manganese reaction with solution of bleaching powder. A further quantity of milk of lime is added, and ultimately from eighty to eighty-five per cent. of the manganese is converted into peroxide. The mixture is allowed to settle, the chloride of calcium solution forming the supernatant liquid is run off, and the residual black mud containing the manganese peroxide is used in the stills where hydrochloric acid is decomposed and chlorine gas produced. A residual liquor such as was commenced with results, and the round of operations is begun again; and so on, time after

time indefinitely. After giving an outline of his mode of treating still liquor, Mr. Weldon described at considerable length the details of the process, both as to quantities, materials employed and obtained, and the nature of the chemical compounds formed at different stages of the process. As explained by Prof. Roscoe, the principle upon which the process depends is that, although when alone the lower oxides of manganese cannot be oxidised by air and steam under the ordinary pressure to the state of dioxide, yet this is possible when one molecule of lime is present to each molecule of oxide of manganese. The manganous oxide is precipitated from the still liquors with the above excess of lime, and by the action of steam and air on this, a black powder, consisting of manganese dioxide and lime, or calcium manganit ( $\text{MnO}_2$  Ca O), is formed. This compound is again capable of generating chlorine from hydrochloric acid, and thus the chlorine process is made continuous with a working loss of only  $2\frac{2}{3}$  per cent. of manganese.

A short discussion followed the reading of this paper, in the course of which Mr. Gossage stated that his experiments on the improvement of the chlorine process had extended over thirty-five years, and he was glad Mr. Weldon's efforts had been attended with such a large measure of success.

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#### THE EFFECTS OF CARBONIC ACID.

At the meeting of the British Association, Dr. B. W. Richardson read a paper on some "New Physiological Researches on the Effects of Carbonic Acid," and in the course of an interesting communication he explained that the observations he had made were new, in that they related to the direct action of carbonic acid on animal and vegetable fluids, and they were interesting equally to the zoologist and botanist as to the anatomist. He first demonstrated from a specimen the result of subjecting a vegetable alkaline infusion to the action of carbonic acid under pressure. The result was a thick fluid substance which resembled the fluid which exudes as gum from some trees. When this fluid was gently dried it became a semi-solid substance, which yielded elastic fibres, and somewhat resembled caoutchouc. This observation had led the author to study the effect of carbonic acid on albumen, serum of blood, blood itself, bronchial secretion, and other organic fluids. When the serum of blood was thus

treated with the carbonic acid under pressure and gentle warmth, 26° F., the colloidal part was separated; but when the blood with the fibrine removed from it was treated there was no direct separation, the blood-corpuscles seeming for a time to engage the gas by condensation of it. But blood containing fibrine, and held fluid by tribasic phosphate of soda, was at once coagulated by the acid. The bronchial secretion was thickened by carbonic acid, and a tenacious fluid was obtained, resembling the secretion which occurred in asthma and bronchitis, while secretions on serous surfaces were thickened and rendered adhesive. After detailing many other facts, Dr. Richardson concluded by showing what bearing this subject had of a practical kind. In the first place, the research had relation to the question of elasticity of organic substance; and secondly, on the direct action of carbonic acid on the production of vegetable juices. But the greatest interest concentrated on the relation of the research to some of the diseases of the animal body. Thus, in instances where the temperature of the body was raised and the production of carbonic acid was excessive, the blood on the right side of the heart had its fibrine often precipitated, and in many other cases fibrinous or albuminous exuded fluids were solidified, as was the case in croup. The author, in the course of his paper, explained how rapidly blood charged with carbonic acid absorbed oxygen when exposed to that gas; and held that carbonic acid in the venous blood was as essential to the process of respiration as was the oxygen in the pulmonary organs.

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#### GEOLOGICAL SYSTEMS AND ENDEMIC DISEASES.

SOME little time ago, Dr. Moffat read a paper showing that the soil has an influence on the composition of the cereal plants grown upon it, and on the diseases to which the inhabitants are subject. The district in which he practises consists geologically of the carboniferous and new red sandstone, or Cheshire sandstone systems. The inhabitants of the first are engaged in mining and agricultural occupations, those of the latter in agriculture. Anæmia, with goitre, is a very prevalent disease among those living on the carboniferous system, whilst it is almost unknown among those living on the new red sandstone system, and consumption is also more prevalent amongst the inhabitants of the former.

As anæmia is a condition in which there is a deficiency of the oxide of iron which the blood naturally contains, Dr. Moffat was led to make an examination of the relative composition of the wheat grown on the soil of Cheshire sandstone, carboniferous limestone, millstone, grit, and a transient soil between Cheshire sandstone and the grit. The result of the analysis shows that the wheat grown on the soil of Cheshire sandstone contains the largest quantity of ash, and that there is a larger quantity of phosphoric acid in it than in the soil of the carboniferous and millstone and grit system; also a much larger quantity of oxide of iron than in either of them. He has calculated that each inhabitant on the Cheshire sandstone, if he consumes 1 lb. of wheat daily, takes in nearly five grains per day of the sesquioxide of iron more than the inhabitants of the carboniferous system, and who seems, therefore, to be subject to this liability to anæmia, in consequence of the deficiency of iron and phosphoric acid he consumes.

It is not only in the wheat grown upon the carboniferous system that there is a deficiency in the quantity of oxide of iron and the phosphates, says Dr. Moffat, but also in the blood of the animals reared upon it; so that the inhabitants upon that system take in a minimum quantity of these constituents of the blood, compared with that taken in by the inhabitants of the Cheshire sandstone. He stated that sheep were liable to anæmia—a fact which he attributed to sheep-walks being upon trap and limestone hills, in the soil of which there is but little if any iron.—*Journal of the Society of Arts.*

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#### MONKEY NUTS.

THE pods of the ground nut (*Arachis hypogæa*), commonly known by the name of "monkey nuts," chiefly used for the expression from the seeds of a light-coloured bland oil, said to be extensively used for mixing with olive oil, are now reported to be used in America for making so-called chocolate. For this purpose they are beaten up in a mortar and the mass compressed into cakes; and it is said to form a most agreeable chocolate, without a particle of true cocoa. The Americans also prepare the seeds as a dessert sweetmeat by parching them and beating them up with sugar.—*Nature.*

## ROYAL COLLEGE OF VETERINARY SURGEONS.

PROCEEDINGS AT THE QUARTERLY MEETING,  
JANUARY 4TH, 1871.

PRESENT:—The President, Professor Spooner, Professor Brown, Deputy-Professor Pritchard, Mr. Withers, Mr. Fleming, Mr. Harpley, Mr. Robinson, Mr. J. C. Broad, Mr. Cartwright, Mr. Naylor, Mr. Moon, and the Secretary.

*The Secretary* read the notice convening the meeting.

The minutes of the last meeting were read and confirmed.

*The Secretary* read the report of the Finance Committee, which showed that the present liabilities of the College were £75 12s. 3d.; and also the Treasurer's account, from which it appeared that the balance at the banker's on the 1st of January, 1871, was £291 16s. 7d.

*Professor Brown* proposed that the report be received.

*Mr. Naylor* seconded the motion.

*Mr. Withers*: That balance does not show the interest upon the £500 invested in the names of three trustees; it will be handed over to me, and will appear in the April account.

The report was then received.

On the motion of Mr. Cartwright, the report was adopted.

*Mr. J. C. Broad* said the Finance Committee were of opinion that the Council should take into consideration the desirability or otherwise of holding the Christmas examinations, inasmuch as they are invariably held at a loss to the funds of the College; and also come to a decision as to the number of times a candidate may present himself for examination.

*The President*: I may say that this matter comes before me now for the first time, otherwise I should have requested the Secretary to put it into the notice. As they are both subjects of great importance, I think the gentleman who has brought them before us ought to give notice that at the next quarterly meeting he will bring them forward for discussion.

*Mr. J. C. Broad* then gave notice that he would do so.

*The Secretary* announced the results of the Christmas examinations.

*The President* gave notice that at the next meeting he should propose for the consideration of the Council whether or not a pupil who had been rejected by one section of the examining board should be allowed at a subsequent period to appear before the other section of the Board. There had

been several instances in which such an examination had been permitted, but he himself thought such a course very irregular.

*The Registrar* then read the obituary list.

*The President*: You have seen by the notice that the subject of the report of the proceedings of the last special meeting of the Council is to be brought forward for consideration. The report for the *Veterinarian* is taken by the Secretary from the shorthand writer's notes. Printed slips containing the shorthand writer's report were sent to each gentleman who took part in the discussion at the last meeting. By one gentleman the slips were returned with the whole of his remarks on a particular subject crossed out. The omission of these remarks rendered the speeches made by one or two other gentlemen wholly unintelligible, and therefore I, as president, felt it my duty to consult one or two of the gentlemen who took part in that discussion, and the opinion was unanimous that the report was not fit for publication in its then mutilated form, and that the matter had better be brought before the Council at this meeting, so that we may decide whether the expressions used at this Council, if correctly reported by the shorthand writer, shall go to the public, or be suppressed at the will of any particular individual. I am of opinion that when a report is faithfully made by the shorthand writer, it is scarcely within our power to alter it in the manner in which the last report was altered. Of course verbal corrections may be made, but I think we are not justified in altering the sense.

*Professor Spooner*: Surely you do not intend that a gentleman speaking at this Council shall necessarily have what he says reported without his consent?

*The President*: The object of printing the shorthand writer's notes is to convey to the profession and the public what takes place at this Council, and nothing should be uttered that ought not to be published.

*Professor Spooner*: It appears that the President and Secretary have taken upon themselves the responsibility of preventing the publication of the report without consulting the Council at all. I contend they had no right whatever to suppress the publication of the report; at any rate it was most inconsistent, and certainly showed a want of courtesy towards me to do so without communicating with me on the subject.

*The President*: It would have been much more discourteous if we had published it without consulting you. I had no object in view but to make this report intelligible. The

whole thing may be suppressed, if the Council thinks proper, but I could not take upon myself to send it for publication in a garbled state.

*Professor Spooner* : If any erasures I made interfered with the sense of the observations made by other gentlemen, surely you or the Secretary should have communicated with me, and you know perfectly well that I should have been very happy to make any corrections which I considered necessary. I think you have pursued a most improper, injudicious, unwise course.

*The Secretary* then read the shorthand writer's report of the last meeting, and afterwards pointed out the erasures which had been made by Professor Spooner.

*The President* : The erasures which I considered objectionable were those alluding to Professor Gamgee and to the Scotch schools. Mr. Fleming and myself replied to those allusions, and if Professor Spooner's remarks are erased Mr. Fleming's and mine would be utterly unintelligible.

*Professor Spooner* said his object in making the erasures was to avoid having anything published which might be calculated to excite unpleasant feelings.

*The President* : Gentlemen, I wish to draw attention to the expression "presumption," which has been applied to the gentleman who took this step. I was the person who took it in my capacity as President of this College. I beg you to remark that I said from the first that I took it upon myself, after consulting other members of the Council. Gentlemen, if you do not support me, and demand an apology, I shall with much regret take the liberty of resigning my post after the business of this evening is over.

*Mr. Fleming* said the desirability or otherwise of publishing the reports had been considered at a previous meeting, when the Council were unanimous that the reports should be published *in extenso*, in order to give the profession an idea of what was done. Such a publication would exercise a most salutary effect, and prevent remarks being made which must prove offensive.

*Mr. Naylor* proposed that the report should be published as it came from the pen of the shorthand writer.

*Professor Spooner* : If it is proposed to publish the shorthand writer's report without my amendments, I protest against anything I said being published at all, and I shall hold the parties publishing it responsible for anything that comes out of it.

*Professor Brown* : As I am the only representative of the *Veterinarian* present, I must say that I cannot undertake

the responsibility of publishing the report after Professor Spooner's protest.

*Deputy Professor Pritchard*: I have an impression that it was decided to send these slips to the members of the Council, not only to enable them to correct anything they considered ungrammatical, but also to remove whatever they considered offensive to persons who may have been alluded to.

*Mr. J. C. Broad*: I understood that the object of sending slips was that the speakers might see that they were fairly reported.

*Mr. Withers*: I think Professor Spooner will make some apology for hasty expressions.

*The President* suggested that the report should be published without Professor Spooner's allusions to Professor Gamgee and to the Scotch Schools. Of course this would necessitate the erasure of certain observations made by Mr. Fleming and himself.

*Mr. Fleming*: You could not say to the profession that such a report was a truthful one.

*The President*: I merely propose it as a means of getting out of a great difficulty.

*Professor Brown* proposed that the amended report should be subjected to further necessary corrections before it was sent for publication.

*Mr. Cartwright* seconded the motion.

*The President* said these alterations could be made by a committee consisting of the President, the Secretary, and another member of the Council.

*Mr. Harpley*: Are we to understand that the portion objected to is to be omitted?

*Professor Brown*: Yes, and that the consequent expressions are to be erased also.

*Professor Spooner*: Before anything that was said by me is published I desire to have an opportunity of looking over it.

*Professor Brown*: After we get your corrections in your handwriting there will be no objection to publishing it?

*Professor Spooner*: No.

*Mr. Fleming*: I should like to ask if this is to be looked upon as a precedent for future reports.

*Professor Brown*: My impression is that the Council really has no choice in the matter. When proofs are sent to an individual he has a perfect right to strike out every word he said if he thinks proper. Whether it is wise to do so or not is a matter for his own consideration. I would suggest

that for the future each member should receive slips containing the report of the whole discussion and not merely his own speech. If we once admit the principle of correction it seems to me that it is impossible for us to fix a limit. It is only under very exceptional circumstances that any difficulty will arise, and I really do hope we shall go back to our old system. While Professor Spooner's protest stands on the minutes we are not justified in publishing anything at all, but I am sure he will not object to having that entirely left out.

*Professor Spooner*: Certainly not.

*The President*: Would it be just to the Council and to the body politic with which we have to do to publish a report mutilated in any way we think proper?

*Professor Brown*: If you once allow alterations to be made you cannot fix a limit. I do not refer to any wholesale alterations, any entire subversion of a man's meaning, but if a man makes use of an expression which he thinks may offend another and do himself injury he has a right to strike it out.

*Mr. Fleming*: It would not be fair to allow a speaker who happened to say "Yes" at this board to alter it to "No." Such a course would at once absolve him from the consequences of his evil speaking.

*Professor Brown*: What a person states at this Council renders him as liable to have an action brought against him as what he states in a public paper.

*Professor Brown's* motion was then agreed to.

The following letters were then read:

(1) From Professor Spooner, dated November 9th, 1870, acknowledging the receipt of a letter from the Council.

(2) From Professor Turner, Edinburgh, acknowledging with thanks the honour of being elected a member of the Scotch section of the Court of Examiners.

(3) From Professor Bloxam, acknowledging the honour of being elected member of the English section of the Court of Examiners.

(4) From Dr. Dunsmere, enclosing account for specimens of drugs and chemicals required for the examination tables in Scotland.

(5) From Mr. Graham Michell and Mr. John Sheriff of Calcutta, enclosing their examination fees, and stating that Colonel Wintel, a magistrate, would preside at their examinations.

(6) From Messrs. Wormald and Anderson.

(7) From Mr. Thomas Paton of the Army Service Corps, applying for his diploma granted in 1868.

(8) From Mr. Stanley, requesting to know if Mr. Tremlett of Old Bond Street was a member of the college.

(9) From Mr. Frederic Lees, solicitor, Nottingham, requesting to know if a person named Burrows, who had sworn in Court that he was a member of the Royal College of Veterinary Surgeons, had made a truthful statement.

(10) From Mr. Gadsden, Philadelphia, enclosing the card of a Dr. R. Courtney, who represented himself as a member of the Royal College of Veterinary Surgeons of London, and requesting to know if such a name appeared on the Register. He suggested that in future the names of the members of the College practising in the United States should be published in a separate list in the Register.

*The Secretary* stated that there were upwards of sixty members of the College practising in America, and thirty-five in Australia.

It was then decided that in future issues of the Register a separate list should be made of those members of the College who practise in foreign parts.

(11) From Mr. Taylor, Ashton-under-Line, requesting to know if Mr. George Crooks was a member of the College.

(12) From Mr. Gardner of St. Ives, Hants.

(13) From the Secretary of the Central Veterinary Medical Society, conveying the thanks of that Society to the Council for the use of the board-room during the ensuing twelve months.

(14) From Mr. Lawson, stating the reason of his absence from the Council.

(15) From Mr. Field to the same effect.

(16) From Mr. Dray to the same effect.

(17) From Mr. Dawson of Madras, containing an obituary list of members of the profession in the India Company's service.

(18) From the Central Medical Society, calling the attention of the Council to a clause in the Medical Bill which is about to be brought before Parliament.

A motion by Professor Brown, seconded by Deputy Professor Pritchard, to refer this letter to the Parliamentary Committee was agreed to.

*Mr. Fleming*: As it is likely that the Lancet Bill will be brought to an issue in the forthcoming session of Parliament I think it necessary for the Committee to look to it in time.

*Mr. Harpley*: I should propose that the Parliamentary Committee be summoned within a week.

*The Secretary* announced that there were only sixteen copies of the Register left on hand. Since the last issue

ninety-two members had been added to the list, and a great number of corrections would be required in any re-issue. It was necessary for the Council to decide whether any more copies of the present Register should be printed, or no step should be taken until after the April examinations, when an amended Register could be published.

*The President*: It was thought at a meeting a short time ago that it would be desirable to delay the matter until the April examinations were over, in order that those gentlemen who obtain their diplomas then may have their names introduced. I propose that an amended copy of the Register be issued, and that after the examinations in April a supplemental sheet be printed and issued with every copy sent out after that time.

*Professor Spooner*: I think it would be infinitely better to strike off fifty copies of the Register as it now is, and wait until the month of April and then have a regular reissue.

After some further discussion it was arranged that the publication of the Register should be deferred until after the April examinations.

*The President*: Gentlemen, the business of the evening is now over, and with very much regret I beg leave to resign my post as President of the Royal College of Veterinary Surgeons. It will not lead to any inconvenience, because there are Vice-Presidents, who can take the chair until a new President is elected, unless you wish to elect one at the next meeting of the Council. I do it with very great regret; but I feel that I have no alternative after the way in which I have been treated on this occasion, and on two or three previous occasions. I therefore now vacate the seat, and the business of the evening is over.

After a pause,

*Professor Spooner*: There seems to be an impression in the minds of some of the members that your retirement is referable to your feeling yourself insulted by me. You did not say so.

*The President*: Why do you ask?

*Mr. Withers*: We are quite unanimous in the feeling.

*Professor Spooner*: If that is your reason I am quite willing to say to you that I never had the slightest intention of giving you any personal offence, in any way or shape.

*The President* accepted the apology; and the meeting separated.

SPECIAL MEETING OF THE COUNCIL, JANUARY 24<sup>TH</sup>, 1871.

Present:—Professor Simonds, Professor Brown; Mr. Wilkinson, Mr. Fleming, Mr. Greaves, Mr. Robinson, Mr. Harpley, Mr. J. C. Broad, Mr. Lowe, Mr. Field, Mr. Cartwright, Mr. Withers, Mr. Naylor, Mr. Moon, Mr. Hunt, Mr. T. D. Broad, Mr. Cowie, Mr. Silvester, Mr. Coates.

On the motion of *Mr. Harpley*, seconded by *Mr. J. C. Broad*, *Professor Brown* was voted to the chair.

*The Secretary* read the notice convening the meeting.

The minutes of the last meeting were then read and confirmed.

Letters were read from Mr. Pritchard, Mr. Dray, and Mr. Gowing, regretting their inability to attend the meeting.

*Mr. Wilkinson.*—At the last meeting of Council circumstances occurred which rendered it necessary for me, in the view I took of the transaction, to resign my post as President of the Royal College of Veterinary Surgeons. I do not wish to use any harsh term, and, therefore, I will select the mildest I think can be applied in this case. The offence offered to me as president of the Royal College of Veterinary Surgeons was offered to every member of the Council and every member of the body corporate, and I gave notice at an early part of the evening, when the animadversion was first made, that as a well-wisher to the College I could not have the President offended in my person, and that unless the animadversion were withdrawn, it would be my duty to resign my post at the close of the meeting. The matter then went on, and a repetition of the offence, as you all know, happened, and at the end of the meeting, after mature consideration, for I was thinking of the matter from the time of the first observation to the close of the meeting, I resigned my post as President. I did it with great reluctance, because I think it is a very important crisis, and I very much regret that I should have been the means of disturbing the progress of very important events which we have before us; but at the same time I could not see that, as a gentleman, I had any alternative, and therefore I resigned my post. After I had left the chair some of my friends—and I hope I have not an enemy in the Council—congregated in a part of this room; what was the nature of their conversation I do not know, but it led to our friend—for I will still call him our friend, and I will still call him my friend—coming up to me and stating that he understood that the reason of my having resigned was that his remarks had been construed by me as personal to myself. Now, I wish it to be clearly understood that I did not take

the animadversions as personal to myself, but as offered to the President of the College. I was elected by the Council to fill that honorable position, and I did not feel that I should be doing my duty to the Council if I retained it after such animadversions had been passed upon me. Still, I did not take it as a personal offence in the least. It could not have been a personal offence to me; but if it was an offence, and you all agreed that it was, it was to you through your President. What took place was reported, and in the shorthand writer's report, and also in the minutes, there is an account of what is called an apology being afterwards offered to me, and I, with all the cordiality I could command, accepted it, and agreed, as I understood, to retain my place as President of the Royal College of Veterinary Surgeons. The slips containing the report of that meeting came back to me in due course, and I found that some alteration had been made. Perhaps you may think it was a mere matter of form, but as the alteration had been made, I did not feel that I was in any other position than that which I held immediately after I had resigned. It now remains with you, Gentlemen, to say whether I, as your servant, have done right or done wrong. I am perfectly in your hands, and shall be very well satisfied with any course you may pursue. If another president is elected I can only promise you that my exertions shall be given to the important matters which are now before the Council with as much zeal and energy as I can command in order to bring them to a successful issue. I now leave the matter entirely in your hands, and it is for you to determine whether you are satisfied that what was printed conveyed the real meaning of the transaction, or whether you think that some alteration ought to be made, not only in the shorthand writer's report, but also in the minutes of the proceedings of the Council.

*Professor Simonds* asked if Mr. Wilkinson had received from the gentleman with whom the altercation occurred anything, either a statement or an act, which confirmed him in the view he had taken; and if his view now was that he simply reverted to the position he was in immediately after tendering his resignation.

*Mr. Wilkinson.*—I have not received any communication, either directly or indirectly, such as has been alluded to by Professor Simonds, and I revert to the position that I was in when I resigned.

*Professor Simonds.*—Were you asked on that occasion by the Council to reconsider the determination you had come to?

*Mr. Wilkinson.*—Yes. A member of the Council asked

me if I would resume—I think that was the word used—and I said I should be very happy to do so, but now the import of what was said, which induced me to resume, has been changed.

*The Secretary* read a copy of the shorthand writer's notes relating to this subject.

*Professor Brown.*—You have now the whole case before you sufficiently to enable you to form some judgment of the state of affairs. It is quite evident that the President resigned in consequence of feeling himself insulted by a member of the Council; it is also evident, and can be proved by the shorthand writer's note if any of you wish it, that the gentleman who was supposed to have conveyed the insult afterwards said, "I am quite willing to say to you that I never had the slightest intention of giving you any personal offence in any way or shape; and if you feel I have given you that personal offence, I shall be only too happy to make matters all right." It is added, "The President accepted the apology," and I believe we all left with the understanding that we retained our President. On the slips containing these notes being sent to the member of the Council who is accused of having given the insult, he struck out the statement, "If you feel I have given you that personal offence I shall be only too happy to make matters all right," and wrote at the bottom, "I made no apology; it was an explanation." I place the matter before you as it appears; I know nothing about it personally; but in any case you will permit me to suggest that we cannot afford to lose our President upon any ground of this kind. It is now open for you to discuss the matter in any way you please.

*Mr. Robinson* thought the word "apology" ought not to have been used in the report, as what was said was really an explanation, but as full and complimentary as one man could give to another. He therefore moved, "That Mr. Wilkinson be requested by this Council to withdraw his resignation."

*Mr. Silvester* supported the motion, and expressed a hope that no more would be heard of the matter.

*Mr. Greaves*, in seconding the resolution, said the Council ought to consider whether the matter should be allowed to end without their expressing some censure, or at least an opinion that such things ought to be avoided in future. The President was elected unanimously by the Council, and the whole country approved of the act; and it was, therefore, greatly to be desired that he would feel it his duty to withdraw his resignation, so that he might assist in carrying out those important measures which the Council had in hand.

*Mr. Fleming* said he was present at both of the meetings at which the scenes occurred, and he thought the President had just cause for resigning, for he was not treated with the respect which, as President of the College, he was entitled to. The offence, no doubt, was unintentional, but certainly it was perpetrated, and therefore, before re-electing Mr. Wilkinson, the Council ought to express their opinion that the offence was such as to justify him in the step he had taken.

*Mr. Hunt* agreed with Mr. Fleming that a vote of confidence ought to be passed before requesting Mr. Wilkinson to re-instate himself in the chair, and he, therefore, proposed that such a vote should be agreed to.

*Mr. Naylor* seconded Mr. Hunt's proposal.

*Mr. Robinson* thought, in requesting Mr. Wilkinson to withdraw his resignation, the Council would express their confidence in him as much as if they passed a formal vote of confidence.

It was then unanimously agreed (1) "That a vote of confidence be presented to our late President." (2) "That Mr. Wilkinson be requested to resume the chair as President."

*Mr. Wilkinson*.—I cannot move from this seat to that chair without offering to you, collectively and individually, my best thanks for your expression of confidence in me as President of the Royal College of Veterinary Surgeons. It has always been my wish to conduct myself as a member of the Council—and I have been a member for some years—in such a decorous manner as not to call forth any severe animadversions against the course I was pursuing. On the late occasion I felt I had no alternative. I now, with very great pleasure, resume my seat as President, not only because of your very great kindness and sympathy, but because I think I am very much involved in the important matters which are now before the Council for completion with reference to the practical examination. I therefore with great pleasure take the chair, and I thank you individually and collectively for your kindness.

Mr. Wilkinson then resumed the chair as President.

*Professor Simonds*, in again alluding to the report, said that he thought the spirit of what took place would not be affected by the omission of the words which had been objected to by Professor Spooner, and he therefore proposed that they should not appear in the report.

*The Secretary* read a letter from Professor Spooner (through Deputy-Professor Pritchard) enclosing the corrected proof.

*Mr. Hunt* seconded Professor Simonds' proposal, but was strongly opposed to any material alteration being made in

the reports of the meetings of the Council by the members to whom the slips were sent.

*The President* suggested that the report should be read by the Secretary, and any alterations which any gentleman wished to make might be made at once, after which the report could be published *in extenso*. If this plan were not approved of, the report might be referred to the committee for preparation for publication, the committee consisting of the President, Professor Brown, and the Secretary.

*Mr. Fleming* said it was not fair or honest to the profession to erase important sentences from the report. The course which the Council adopted with regard to the publication of the reports of what took place at their meetings, was a very unusual as well as expensive one. Sending round slips to each member showed a want of confidence in the committee, and caused a great deal of trouble. He was sure no gentleman would wish to say anything either against individuals or against institutions which he would be ashamed to see in print. He therefore moved, "That the drawing up of the reports be left to the Committee, and that the slips be not sent to the various speakers."

*Mr. Naylor* seconded Mr. Fleming's proposal to refer the reports to the existing committee. He was decidedly of opinion that the reports ought to be published *in extenso*, as one guard against any one saying things at one time which he might wish to suppress at another.

*Professor Simonds* suggested the nomination of a committee to consider the best course to pursue with regard to the reports in future.

*The President* thought the committee should consist of the whole Council, but asked if Professor Simonds would take the subject up.

*Professor Simonds* gave notice that at the next quarterly meeting he would introduce the general subject of publication of the reports of proceedings of Council, for discussion, but he did not think it necessary to have a committee of the whole Council.

The Council decided that the printed report of the last meeting should be referred to the existing committee.

#### *The Practical Examination.*

A letter was read from Professor Spooner, dated 12th January, 1871, stating that the Governors of the Royal Veterinary College were of opinion that it was not desirable that the practical examinations should be carried on within the walls of that college.

*The Secretary* read the report of the Practical Examination Committee.

On the motion of *Mr. Naylor*, seconded by *Mr. Cartwright*, the report was received, and the Council then considered the various clauses *seriatim*.

Clause I recommended that a sub-committee should be appointed, and credited with the pecuniary means necessary for making the preparations for the practical examinations.

*Professor Simonds* moved that the word "sub" should be erased. This was agreed to.

*Mr. Cowie* suggested that the Committee should be empowered to make any arrangements necessary in Scotland as well as in England.

*Mr. Silvester* thought it was desirable that the Committee should consist of residents in London.

Clause II recommended that the Committee should be entrusted with the authority of the Council to develop and carry out all the details.

This was agreed to.

Clause III recommended that in case the required number of examiners should not be present at the examinations, the Committee should be empowered to obtain assistance from other members of the College, who, however, should not have the power to vote.

*Mr. Harpley* thought it would be desirable for the Committee to nominate gentlemen from among themselves, and, therefore the Committee should be rather a large one.

The clause was then agreed to.

Clause IV related to the Examination in Scotland, and recommended that as *Dr. Dunsmore* might not be able to attend all the examinations, one of the examiners should be solicited to act for him as deputy-secretary.

This was agreed to, as was also

Clause V, which recommended that the Secretary, *Mr. Coates*, should be directed to communicate to the authorities of the several schools at the earliest opportunity, informing them when and where the practical examination will be held.

*Mr. Harpley* moved the adoption of the report.

This was seconded by *Mr. Withers*, and agreed to.

*Mr. Silvester* then moved that the Committee should consist of all the members of the Council residing in London,—*Mr. Lowe*, *Mr. Field*, *Mr. Harpley*, *Mr. Withers*, *Mr. Gowing*, *Mr. J. C. Broad*.

*Professor Simonds* said, if aid to the examiners was to be given by members selected from the Committee, it would be desirable to include in its number gentlemen residing out of London.

*Professor Brown* said the report did not propose that the assistants should be selected from the Committee, but from among the members of the College.

It was ultimately agreed, "That a Committee be appointed, consisting of the members of the Council residing in London, with power to add to the number from the members of the Royal College of Veterinary Surgeons."

The Secretary was then directed to obtain 200 diplomas and fifty records of examinations.

#### *Report of Parliamentary Committee.*

*The Secretary* read this report, and on the motion of *Mr. T. D. Broad* it was received.

*Professor Simonds* said, in reference to the *Lancet* Medical Bill, it appeared to the Committee that if the clause to which objection had been taken became law, there would be a recognition of individuals who were not members of the Royal College of Veterinary Surgeons. All, however, that was necessary was to ask the framers of the Act, instead of the words, "Nothing in this section shall impose any penalty on any person engaged solely in the cure or treatment of the diseases or injuries of animals, and not of human beings," to insert the words, "Nothing in this section shall impose any penalty on any person engaged solely in the cure or treatment of animals as a member of the Royal College of Veterinary Surgeons."

*The President* thought that as the clause did not recognise the Royal College of Veterinary Surgeons, it would, if it became law, be a negative proof that no such institution had been established by Royal Charter. It would, however, be a great advantage if the veterinary profession were recognised in association with the medical profession. The insertion of the clause would in some degree give sanction to practise to those who, according to the Charter of the College, had no right to practise.

*Professor Brown* proposed that the report should be adopted. This was seconded by *Mr. Hunt*, and agreed to.

*Professor Brown* proposed, "That the Parliamentary Committee form a deputation to the proprietors of the *Lancet*."

*Mr. Moon* seconded the motion.

*Professor Simonds* thought it would be better to limit the deputation to three or four gentlemen.

On the motion of *Mr. Hunt*, seconded by *Mr. Cartwright*, it was agreed that the deputation should consist of the President, Professor Simonds, Professor Brown, Mr. Fleming, and Mr. Field.

*The Registrar* announced with regret the death of Mr. Ernes, late a member of the Council.

*Professor Simonds* proposed that a letter of condolence should be sent to Mrs. Ernes, expressing the sympathy of the Council with her in her great bereavement, and in the loss which the Council and the profession had sustained.

*Mr. Silvester* seconded the motion, which was unanimously agreed to, and a committee consisting of the President and Professor Brown was appointed to prepare the letter.

On the motion of *Mr. Greaves*, Mr. Morgan, of Liverpool, was unanimously elected a member of the Council, in the room of the late Mr. Ernes.

*The President*.—There is only one more subject, but perhaps it is the most important of all that have come before you this evening; it is with reference to a letter which we have received from Professor Gamgee, by which he has made the Royal College of Veterinary Surgeons a present of the skeleton of the celebrated "Eclipse." This is a matter of so much importance that it would not be consistent, with my views at all events, if we dealt with it in the way we usually deal with presents which are made to the College. I think no member of the Council, nor any other individual, except some of you gentlemen who intend to endow the College, could confer such an honour upon the Royal College of Veterinary Surgeons as the placing within its museum as its own property the skeleton of the celebrated "Eclipse." I therefore propose this subject be deferred for further thought and consideration, in order that we may do honour to Mr. Gamgee, and acknowledge the great benefit he has conferred upon the College, by some means which by-and-bye, perhaps, will suggest themselves to some members of the College, or some committee that may be formed for the purpose. I merely bring it before you now in order that you may know that such a step has been taken by our friend Mr. Gamgee, and to state my opinion that it is of so much importance that I do not think we should do ourselves justice, or do him justice, or do the skeleton justice, if we treated it as an ordinary affair. I, therefore, propose that the subject be postponed till the next meeting.

*The Secretary* then read the letter from Professor Gamgee accompanying the present.

*Mr. Fleming* moved, and *Mr. Harpley* seconded, a resolution, "That the letter from Professor Gamgee be inserted in the minutes." This was unanimously agreed to.

The proceedings then terminated.

## CENTRAL VETERINARY MEDICAL SOCIETY.

## OFFICIAL REPORT.

AN ordinary General Meeting of the above Society was held on Thursday, February 9th, 1871; the President, George Fleming, Esq., F.R.G.S., M.R.C.V.S., in the chair. After the disposal of the usual preliminaries, Messrs. F. J. Stanley, H. Lawrence, and F. W. Wragg, having been recently admitted Fellows of the Society, were formally presented by the President.

A number of morbid specimens were laid on the table. The first were the upper and lower maxillary bones of a pony, furnished by the President, with a copious history, illustrating a peculiar and painful disease aggravated by the blundering ministrations of an ignorant pretender of the veterinary art. Attention was directed to the animal in consequence of great emaciation and persistent copious salivation; the advice of the quack doctor being sought, that worthy pronounced the affection to be "a bit of cold," and accordingly a "condition ball" was administered. No amelioration, however, took place, and the creature grew poorer every day. He was at length taken in possession by the officer of the Royal Society for the Prevention of Cruelty to Animals, who found he could not feed, and the owner was summoned before the magistrates. In the meanwhile, the animal died, and a *post-mortem* examination was instituted, when the cause was found to exist in large accumulations of "fox-tail" grass in the alveolar cavities, by the sides of the molar and incisor teeth.

The occurrence gave rise to an affection which, hitherto, has been generally omitted from scientific works, yet, nevertheless, points out peculiarities in the vegetation of districts, which the educated practitioner will not fail to admit to the category of evils which militate against the well-being of domestic animals.

*The President* also exhibited a kidney of large size, recently taken from the carcase of a horse; the specimen consisted in reality of two organs combined, attended with some variation of the position.

*The Secretary* was desired to make a dissection of the morbid part, and report to the next meeting.

*Mr. Joseph Woodger*, sen., brought a specimen showing the disease "seedy toe."

*The President* thanked Mr. Woodger, and stated that at a future meeting he hoped to be able to advance his views upon the nature of the disease. So far he was of opinion that it consisted of a decline in the secretion, or constitution of the epithelial cells, secreted by the sensitive laminæ, uniting them to the horny laminæ.

*Mr. W. Hunting*, referring to the formation of horn tumours within the hoof, said he had found them to consist of homologous

horn substance, lying between the horny laminæ and the wall proper.

*Mr. Thomas Burrell, jun.*, referred the occurrence of "seedy-toe" to faulty methods of shoeing, which destroy the equal and natural pressure of the foot, throwing unnatural strain upon parts mutilated and weakened.

*The Secretary* (G. Armitage) called attention to the fact that, at a former meeting, *Mr. Woodger* had said that the disease was very common in Bath. It would be profitable to inquire whether *Mr. Broad* of that city, who is known to practice a conservative system of shoeing of the feet of horses, finds any annoyance from it among the animals coming regularly under his special treatment. By its presence or absence, we may form an opinion as to the agency of strong and healthy hoofs in preventing its occurrence.

*Mr. J. Woodger* said *Mr. Broad* had many cases among horses regularly shod at his forge.

Considerable discussion then followed relative to the propriety of making an attempt to establish a new veterinary nomenclature.

*Mr. W. Hunting*, having introduced the subject, was followed by others who agreed that definite terms for the majority of the affections observed in domestic animals, are desiderata of the greatest importance, and the matter was referred to a future meeting for further consideration.

*Mr. A. Broad* next brought forward his paper on "Fistulous Wounds and Abscesses."

The *Author* confined his remarks to poll-evil, fistulæ of the withers, and quittor. After a lengthy enumeration of causes, the treatment of the several affections was closely examined. Great reliance was placed upon the use of setons, for the insertion of which minute directions were given. The instrument used by *Mr. Broad* was laid on the table.

Astringent and caustic dressings also formed the subject of notice, the several objections to each were mentioned, and reasons were given for entertaining preference for the seton. Blisters and the actual cautery likewise were referred to, but the author did not advance any arguments in favour of their general adoption, and concluded by inviting free discussion upon a subject of great interest, no less in science than in a humane course towards animals of the greatest value and usefulness.

*Mr. J. B. Martin* (Rochester) exhibited specimens of diseased bones of the foot arising from quittor, and added his testimony in the treatment of the disease to the use of the actual cautery. He had been required to treat numerous cases of most severe nature, and his success was due to the practice of reaching the end of all sinuses by a pointed instrument. In his opinion, the cautery was most effective, least painful, and most conducive to rapid healing. He had also found setons very serviceable, but placed greater reliance upon the plan of destroying the sinus, removing dead tissue, and treating the parts as a common wound.

*Mr. J. Woodger*, sen., argued in favour of the actual cautery; and *Messrs. W. Clark* and *H. L. Simpson* spoke of the efficacy of chloride of zinc.

*Mr. J. R. Cox* said the wounds which terminate in fistulæ, as a rule, are in no wise different from those which, inflicted in similar parts by analogous means, terminate favorably under early and suitable treatment. Delay, neglect, and maltreatment frequently make matters worse, and the collateral destruction of tissue aggravates the condition of the already damaged parts. Diseased or actually dead tissue is imprisoned by surrounding swollen and congested parts through which no passage can be effected except by a slow process of reduction by solution. It is his practice to expose such deposits and remove them as soon as possible, after which the conditions are improved by the ordinary treatment for wounds generally. *Mr. Cox* then went into important details illustrating the advisability of dividing the plantar nerve during severe suffering from acute abscess and extensive chronic sinuses in the foot, by which much of the difficulty of treatment and consequent delay, together with corresponding animal suffering, loss of condition, &c., is avoided.

*The Secretary* referred to the importance of early attention to injuries in the vicinity of the coronet, poll, and withers, by which sinuses or fistulæ may be avoided. He advocated, with previous speakers, the necessity of removing in chronic disease all dead and imprisoned portions of tissue, and advised treatment by free incision, the actual cautery and caustic injections. The importance of exercise or work, as soon as either could be undertaken by the animal, was mentioned as being useful in promoting a more certain expulsion of pus and morbid matters; he urged the practice recommended by *Mr. Cox*, namely, simple neurotomy, when the pain was very intense.

*Mr. W. Hunting* briefly reviewed the action of the remedies spoken of, and drew attention to the objects for which each is designed, the principle of cure being the removal of the cause. He considered the use of poultices in these affections was a question upon which deliberative minds should offer an opinion. His lead him to the belief that they are resorted to more frequently than is desirable, whereby parts are maintained in a state of congestion too long, and their loss of vitality thereby insured, thus adding intensity to existing morbid conditions, and producing bad results which a proper system of surgery would enable us to avoid altogether.

*Mr. F. J. Stanley* spoke of the efficacy of carbolic acid after free incision of the sinuses has been made, and the parts reduced to the state of a common wound.

*The President* then briefly passed over in review the various opinions given by the speakers, the majority of Fellows having taken part in the debate, adding the results of his experience on the question, as derived from practice abroad as well as at home. The use of the actual cautery, he said, possessed more of the appearances than reality of a barbarous treatment. Its effects are highly useful in ordinary wounds as well as fistulæ, as he had found among

animals galled with the saddle, when with his regiment in China. The irritation caused by flies retards the healing process, but, by the use of the cautery, disagreeable effects were almost always removed.

*Mr. Broad* afterwards replied. The thanks of the meeting were conveyed to the essayist and President respectively, and the proceedings closed.

At the ensuing meeting, on March 9th, the Secretary will bring forward his remarks on the present existing enzootic disease among horses, known as influenza.

## YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE eighth annual meeting was held at the Queen's Hotel, Leeds, on Friday, the 27th January, at 12.30 noon. The President, Mr. Robert Nicholson, in the chair. The following members were present, viz. Prof. Williams, Edinburgh School; James Freeman, Hull; Charles Patterson, Dewsbury; Joseph Freeman, Keyingham; P. Walker, Bradford; William Taylor, Wetherby; William Edmundson, Harmby; Charles Secker, Knaresbro'; John Faulkner, Wetherby; P. Smith, Winterton; S. F. Fallding, Wakefield; John Schofield, Pontefract; J. W. Anderton, Skipton; and Messrs. E. C. Dray, John Cuthbert, William Broughton, Wm. Fearnley, and J. H. Ferguson, Leeds. Messrs. D. Maclean, Royal Artillery; William James Anderton; and Joseph Faulkner, were present as visitors.

Apologies for non-attendance were received from Mr. Constant, 5th Dragoon Guards; George Morgan, Liverpool; P. Taylor, Manchester; A. Lawson, Bolton; and Messrs. T. Greaves, M. E. Naylor, D. McTaggart, John Fryer, Thomas Pratt, James Bale, John Freeman, and William G. Schofield.

*The Secretary* read letters announcing the resignation of Messrs. J. T. Astin, Huddersfield; George Bourdass, Bridlington; and John Job Cooper, Market Weighton.

*Mr. Dray* proposed, and *Mr. Taylor* seconded, the election of Mr. John Henderson Ferguson (late of Ayr, successor to Mr. Dray) as a member.—Carried.

*The Secretary* (in the unavoidable absence of Mr. Naylor) proposed, and *Mr. Fearnley* seconded, the following addendum to Rule 3, viz. "That any gentleman when nominated as a member of this society, being at the time a member of any other veterinary medical society, be admitted a member of the society upon payment only of the annual subscription of 10s. 6d.—Carried.

*The President* then delivered the Inaugural Address.

GENTLEMEN,—You have done me the high honour of electing me to fill, for the forthcoming year, the Presidential Chair of your

association. I thank you sincerely for this mark of your confidence and esteem, and in accepting the position I assure you I do so with many misgivings as to my ability to discharge properly its duties. Indeed, I cannot hope to discharge them in the same satisfactory manner which our late worthy President Mr. Freeman and others who preceded him have done, but throwing myself on your kind indulgence, and with the help of our very efficient Secretary, whose labours are most valuable to this association, and who I know will give me every possible assistance, I will endeavour to do the best of which I am capable. I am of opinion that every one of us should take greater personal interest in the welfare and advancement of our profession, and should be willing, although at some sacrifice of time and trouble, to take his share in promoting the general good, and it is with this end in view that I have consented to accept the office of President for the coming year.

In addressing you as President, my remarks will be very brief, and, I fear, very commonplace, and perhaps in substance only a repetition of what has been often said before; yet still believing, as I do, that these associations are of the most vital importance to the standing and the prosperity of the veterinary profession, I cannot do better than express my views in regard to them, even at the risk of repeating what others have said far more forcibly than I can hope to do. Some few years ago there was not a veterinary association in the provinces—why, I do not know—but now, thanks to the energy, ability, and perseverance of such men as our friend Thomas Greaves (all honour to his name), who has stirred up the profession and been instrumental in instituting several associations similar to our own, there are many in active operation, their number is steadily increasing, and they are becoming a means by which much good may be done, not only to the profession generally, but to the country at large. To the profession these associations do good by bringing the members together, making them personally known to each other, enabling them to enjoy social intercourse, to exchange ideas, and to make united efforts for the general benefit of the whole body. To the country their benefits must be equally great, for when we consider what a large portion of the wealth of this country consists of live stock, and how intimately the well-being of the people is concerned in the health and general sanitary condition of the animals coming under our care, we cannot but see at once that any institution which has for its object the advancement of veterinary science must be a national boon. The value of these associations ought also to be felt and acknowledged by every man practising as a veterinary surgeon, from the youngest to the oldest and most experienced. The advantages they offer should be highly valued; indeed, for my own part, I have not only through their means formed acquaintance and enjoyed the society of many kind and genial friends, but I hope I have profited by the interesting and agreeable meetings we have had together. The valuable papers which have been read from time to time by the various members, together with the discussions which have arisen upon them, have thrown light—*the valuable light of experience*—upon a

variety of points in a manner not to be obtained by any other means. I feel strongly that these meetings are calculated to be of the greatest possible advantage even to the most experienced amongst us ; and if so, what must they be to young men just entering upon practice, or who have as yet had only little experience ? To these they cannot but be invaluable, and I am greatly astonished that there is any young practitioner to be found who does not appreciate and avail himself of the advantages they offer ; his, however, is the loss if he fails to do so.

Whilst on this subject I must express my regret that there are young men in our own district who have not yet joined this association, or, who having joined, have left again, pleading want of time, or distance from the place of meeting. Neither of these are to my mind sufficient reasons for standing aloof, and I am afraid our young friends do not properly appreciate the advantages the association offers to them. I would strongly recommend young men to attend the meetings regularly, and take a real interest in the proceedings. I should like to see the name of every properly qualified practitioner throughout the length and breadth of the country enrolled in one or other of these associations, and I hope the day will come when this desire will be realised. A great deal has been said and written as to the legal status of the profession, and also as to the education of those entering it ; these are most important subjects to us as a body, and I believe that it is only through the instrumentality of our associations that we can grapple with such questions. With regard to our status we must agitate, and continue to agitate, until we obtain from the legislature a due acknowledgment of our position. We certainly have not occupied hitherto that legal position to which we have a right, but we are steadily progressing towards it, and if we are true to ourselves we must soon attain to it. For my part I have never been able to see why we have not just as great a right to be protected against men without diplomas practising as veterinary surgeons, and styling themselves such, as have the members of the Royal College of Surgeons or Physicians to be protected from a similar class.

Then, with reference to the subject of education, here again I look to our associations to bring about by their united efforts a great improvement in this important matter ; it is undeniable that greater strictness as to the general education of students is much needed for their own sakes and for the credit and respectability of the profession, but do not let me be understood as considering book learning to be everything. I believe we can boast of men in our profession of the highest learning and attainments, and I would that their numbers were much greater than they are, but I believe that we are entitled equally to boast of others whose opportunities having been small, have entered the profession under great difficulties in this respect, but who by uprightiness, integrity, and indomitable perseverance have raised themselves to a respectable position amongst us. Still, knowing as I do what a help education is to a man in making his way in the world, I say let us by all means do our best

to ensure a good education to young men entering the profession, and, as I before observed, this is one matter amongst others in which our associations may be of the greatest use and benefit.

In commencing another year I am happy to say that, whether I regard our position as a society or our prospects as a profession, I feel very hopeful for the future. As an association, we fully maintain our position, and I believe our usefulness also; let us endeavour not only to maintain, but greatly to increase both, and by doing this we shall promote the best interests of the profession; let us never forget that union is strength, and that while we can do little singly, united we may do great things.

I cannot sit down without alluding, with much regret, to the serious loss our association is about to sustain by the removal from amongst us of our good and tried friend Mr. Dray, whom I may call the father of the society. His loss will be greatly felt by every one of us, and by none more than by myself; he is an honour to the profession, and will carry with him, not only the best wishes of every member of this association, but of all who know him.

The President then alluded to the address about to be presented to Mr. Dray, in doing which he said—A very pleasing duty now devolves upon me. I have before alluded to the great loss our society is about to sustain by the removal from amongst us of our old and tried friend Mr. Dray. It would take me a long time to enumerate all the many excellent qualities he possesses, but these are as well known to most of you as to myself, and you are also aware of the great interest he has always taken in the welfare of the profession generally, and of this society in particular. So strongly has this been felt amongst us, that we could not allow him to leave us, and this part of the country, without carrying away with him some token of our esteem and good wishes. This has taken the form of an address, which I will now ask our worthy Secretary to read.

The address having been read—the President added, I have only to say that it so fully expresses my own sentiments and those, I believe, of every member of this society present, that further comment from me is needless. I now present this address to you, Mr. Dray, in the name of those members whose names it bears. I trust that the good wishes which it expresses for you may be abundantly realised.

*The Secretary* moved, and *Mr. Secker* seconded, a vote of thanks to the President for his excellent inaugural address.—Carried.

*Mr. William Taylor* then read a paper "On the Diseases of the Intestines in Cattle," detailing the causes, symptoms, *post-mortem* appearances, and treatment of the various maladies affecting these organs, in a concise and practical manner.

Professor Williams, Mr. Fearnley, and Mr. James Freeman having made a few remarks upon the essayist's treatment of enteritis, the discussion of the paper was adjourned until the April meeting, at which time also Mr. Beale, of Otley, kindly consented to bring in a paper.

COMPLIMENTARY DINNER AND PRESENTATION OF AN  
ADDRESS TO MR. DRAY.

The whole of the gentlemen above named afterwards sat down to a complimentary dinner given to Mr. E. C. Dray, in consequence of his retiring from the active duties of the profession. After doing full justice to the repast the usual loyal and patriotic toasts were duly honoured, the "Army and Volunteers" being acknowledged by Mr. Maclean and Mr. Patterson; the toasts of the "Royal College of Veterinary Surgeons," the "Veterinary Schools" and the "Examiners" were severally responded to by Mr. Dray, Professor Williams, and Mr. Sæcker.

In responding to the "Royal College of Veterinary Surgeons," *Mr. Dray* said, As one of the Vice-Presidents of the Royal College of Veterinary Surgeons I respond to this toast. I regret that Mr. Greaves and Mr. M. Naylor are not present this evening; their absence is owing to a special and important meeting of the Council taking place in London at this time, in consequence of the resignation of the President (Mr. Wilkinson), the death of Mr. Ernes, and other urgent business. The resignation of Mr. Wilkinson is to be deplored, as he was a staunch and energetic member of the Council, ever ready to advance and defend the rights and privileges of the profession, an excellent friend to the army veterinary surgeons, and a thorough gentleman. The death of Mr. Ernes is to be lamented. He was a fearless exposé of abuses, and a spirited reformer. His translations from foreign works in our monthly periodical will be much missed. I am afraid I cannot speak very eulogistically of what the Council have done, but you must coincide with me some good has been effected. The preliminary examination is a step in the right direction, one which I hope is only a prelude to further reforms—such as the practical examinations, &c. I trust, now the drag has been partially removed, the machine will move on in the right direction; but if you want to increase its speed you must attend in numbers at the annual meeting in Red Lion Square, the first Monday in May, make your voices heard there, and elect men who are ardent and enthusiastic in the cause. The so-called Charter requires many additions and improvements. Empiricism must be checked. Now it is rampant. The veterinary surgeon should be exempt from serving on juries, and other judicious measures require advocating. To effect these changes, I opine a different element wants introducing into the Council. It remains with yourselves to accomplish these desirable reforms.

*The President* then, in eulogistic terms, proposed the health of Mr. Dray, and presented to him a beautifully engrossed address, expressing the feeling of esteem and regard of the members, and their regret upon his leaving the neighbourhood.

*Mr. Dray* said there are few who possess the gift of making a post-prandial speech, or suitable reply for honours conferred; nothing is more difficult, therefore it cannot be any surprise that I

have not been endowed with this oratorical qualification. Although I am deficient in such power, it must not deter me from responding in brief and simple language to the kindly feelings you have this evening expressed towards me. First, I must thank you for inviting me to this complimentary dinner, and for the hospitable manner I have been entertained. Secondly, accept my grateful acknowledgments for the honour you have paid me, by presenting me with this illuminated address on my retiring from the profession and the duties of Honorary Treasurer of this society. As you may suppose, in receiving this testimonial of your good will my mind is impressed with most pleasurable recollections. To win esteem from all is an impossibility; but to gain the regard of those who have signed this address, and others of the profession whom I have been closely connected with, is an achievement any one might be proud of. The Yorkshire Veterinary Medical Society is a success, and I flatter myself (without egotism) that my exertions have contributed to its firm foundation. In a financial view it stands high, if not the highest of all the veterinary medical societies, which is very gratifying to me as your late Treasurer. I am quite convinced these associations have done, and are doing, good for the advancement and interests of the profession. The old motto "union is strength" never has been more verified. I question if the small reforms that have taken place would have been accomplished if these associations had not been formed. Recollect what pressure from without can effect in parliamentary affairs, and if you are united, you cannot fail to improve your position in veterinary politics. It would be an act of remission were I not to allude to the high compliment I received at your hands, in electing me your first President, and then in the subsequent year re-electing me. This distinction will ever be appreciated, and I trust in that selection you have had no occasion to regret. As your Treasurer, my efforts (as this night's proceedings can testify) have not been unavailing, but have merited your approbation. My endeavours to promote the success of this society have been most cheerfully given, and I should have been contented (on my resignation) without any testimonial, being amply rewarded by the position and prosperity this association has attained. In electing me an honorary fellow, you have multiplied my obligations to you. I shall be always most happy to attend the meetings, when opportunities will permit me, and when absent my best wishes will ever be with you. I consider under your able President, most efficient Secretary, and your new Treasurer, you cannot retrograde, but continue to progress. In retiring and bidding you farewell, allow me again to thank you for your kindness, and hope I may ever deserve and retain your good opinion.

A number of other veterinary toasts, interspersed with vocal music, followed, and a very enjoyable evening was passed by all present.

WM. BROUGHTON.

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## THE LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

### ANNUAL MEETING AND DINNER.

THIS annual gathering was held at the Spread Eagle Hotel, Corporation Street, Manchester, on the 25th January, at 5.30 p.m. The President, W. Whittle, Esq., occupied the chair. The following gentlemen were also present:—Messrs. T. Greaves, Peter Taylor, Tom Taylor, John Lawson, T. Walley, P. B. Phillips, Locke, Anderson (Manchester), Morgan, Kenny, Leather (Liverpool), D. Maclean (Royal Artillery), J. Hanly (4th Royal Irish Dragoon Guards), Woods (Wigan), Brookes (Pilkington), W. I. Challinor (Worsley), A. Challinor, Dacre, Lowe (Bolton), J. Bostock (Altrincham), Woolmer (Heywood), and the Secretary.

After a few remarks from the Secretary relative to the number of invitations sent out and replies received, the President proceeded to read his inaugural address.

GENTLEMEN,—I will preface the few brief remarks I am about to address to you by thanking you for the honour you have conferred upon me in electing me your President. I confess I feel diffident in occupying that position; but with a little indulgence on your part, and a determination on mine to do the best I can, I trust we shall not at least retrograde in our endeavours to promote the advancement of our profession over preceding years, but, on the contrary, I am hopeful we shall rather add to our already acquired stores of professional knowledge by the scientific and practical papers we are looking forward to receive during the year from members and their friends. I have no fear that the subjects will not do infinite credit to the writers; and, gentlemen, my particular wish is, that we may be favoured with a good attendance at our meetings, not only to give encouragement and support to the essayist, but to take part in what I consider the most valuable portion of the evening's proceedings, the discussion which the paper may evoke; and I need not say that I trust we shall have an animated and exhaustive discussion after each and every paper read during my official year.

I have heard the assertion made by persons, whose opinions on most subjects I should value, that the profession of which we are members has not, nor is now making that progress and scientific advancement the public has a right to expect from it, as compared with its sister, the medical profession.

Well, gentlemen, I do not consider it at all incumbent on me to attempt to prove that in times past our profession has, if I may use a homely phrase, "kept pace with the times in which we live;" in fact, my own opinion rather tends in an opposite direction; but I nevertheless maintain that, since the formation and establishment of this and kindred veterinary medical associations throughout the kingdom, much has been and is being accomplished in an onward direction

not only to elevate the veterinary profession scientifically, but also the social standing of the members themselves. To confirm what I now assert, I have only to refer you to the pages of our Journal, where you will find published essays emanating from societies like our own, which reflect the highest credit upon the writers, and which, I doubt not, have afforded valuable information, not only to ourselves, but also to absent though equally earnest members, whose sojourn is in distant lands.

Socially, I have a very high opinion of associations like this, and there can be no doubt their influence is beneficially felt in more ways than one, and if to that influence none of the scientific advances have taken place which I have alluded to, I still maintain that a material and lasting benefit to the members has been accomplished, by the fact of their becoming personally and intimately known to each other. Those little weaknesses in human nature—doubt, suspicion, jealousy, and the impression that your advance upwards can only be obtained by the falling, lowering, or disparagement of your fellow-members—these feelings, I say, gentlemen, are dispelled, and in their stead those of respect, trust, and confidence in each other are established, and the firm manly feeling is produced and cemented that the upward road to prosperity is much easier and pleasanter to attain and keep possession of when accompanied and supported by our fellow-members and friends.

We have two other reasons for asserting that our profession is certainly not retrograding, namely, the institution of a preliminary examination prior to admission within the walls of our colleges, and the adoption of a practical examination prior to the candidate obtaining his diploma. In regard to the former, I think, in the first place, too much praise cannot be accorded to our professors for so promptly carrying out this test of the pupils' qualifications in an educational point of view, and there can be no two opinions about the fact that our ranks, gentlemen, will and must be vastly benefited and improved by introducing a class of members who, it is reasonable to suppose, will be in every way better prepared to comprehend and store up that scientific and professional knowledge which will be there imparted to them, than would otherwise be the case if the college doors were, as heretofore, open to all comers irrespective of any education the candidates so applying may have previously obtained.

What is it that makes the young veterinarian feel so diffident and anxious when he places himself in the harness of practice—even should he leave college with all the honours, application and attentive study can confer upon him—but the want of that practical knowledge which it has been an impossibility for him to obtain, unless he has had the good fortune to have acquired it prior to his college studies, by the daily practical lessons he had received during a sojourn of three or more years with a member of our profession? I am of those who conscientiously believe we have many such in our ranks. This being so, gentlemen, let us hail the introduction of this new test of the candidate's prac-

tical knowledge before admission into the body corporate, by giving the Council all the support we can, individually and collectively, to carry out this practical examination at the end of the present session in such a manner that a stimulus may be given to the student to familiarise and prepare himself more thoroughly, by close attention, not only to animals lame and diseased, but also to those in health.

Again, gentlemen, our knowledge in regard to the treatment of disease can be contrasted most favorably with the past.

You do not find, as a rule, the veterinarian armed with those most unmistakable weapons of depletion, "aye, and I am afraid in a good many cases death," the fleam and blood-stick. I well remember the days when it would have been thought a dereliction of duty to be called to a case without these things in your possession. I have been long since convinced that our poor patients have great need to be thankful that they can now look us in the face as friends, and I can fancy the relief and satisfaction it would be to them were they able to comprehend that the days of "bleeding and giving a purge" in nearly every class of disease, irrespective of its nature, were at an end, and that treatment based on the principles of assisting and supporting nature's laws to rectify themselves is now the rule, when the functions of health are interfered with or disturbed by disease. There is no doubt, gentlemen, the most successful practitioners are amongst those who have possessed themselves with a thorough knowledge of the laws of health in animals. With such, the disturbing influence, and consequent disease, from whatever cause they may arise, can, in the majority of cases be accounted for, and, as the term goes, "cured."

Contrast our knowledge and treatment of canker in the foot of the horse now with that of a few years ago. It is chiefly through the indefatigable perseverance of our respected and mutual friend Mr. Greaves that this troublesome, tedious, and in most cases so thought incurable disease is now almost in every case cured by him. I can bear witness to many successful cases myself, and I doubt not other members can add their testimony also. His mode of operation and subsequent treatment has gone forth to the profession in the shape of the valuable and practical paper which he read before this association some time ago, and I doubt not, results as satisfactory may be obtained by other members if only carried out with the same energy that our friend has displayed.

Then, again, we have to thank our colleague Mr. Broad for introducing to the profession the shoe he has invented for laminitis, which has already afforded relief to large numbers of cases, so much so that Broad's shoe for laminitis has become a household term amongst us; and I wish to testify my approval of its benefits in every case in which I have adopted it.

I am reminded here of a subject of great importance both to the owners of draught horses in London and also to the poor horses themselves. To the former, inasmuch as I firmly believe to them at least a third of the (motive) horse-power is sacrificed—no small con-

sideration this, considering the number there are in the metropolis—and to the latter it is of no less importance, as it has for its object their ease and comfort. I allude, gentlemen, to the present mode of horse-shoeing in London, which is at the present time being ably discussed in the pages of the *Animal World*. Several letters from eminently experienced practical men have appeared therein, strongly advocating the substitution of the calkin and toepiece shoe in place of the present system of flat shoeing. My own convictions, and I think those of any person who has witnessed the difficulties and struggles of the poor creature to keep on his legs, even without taking into consideration the load he may be drawing, are that not an hour should be lost in adopting the calkin and toepiece shoe, as there is no doubt it would add vastly to the animal's comfort, without tending, as asserted by some members, to the production or increase of lameness and disease. My own experience extends to near thirty years, and I am a most decided advocate of the calkin and toepiece shoe, believing we have fewer cases of lameness from its use than with the system now practised in the metropolis.

There are, however, gentlemen, other formidable diseases, as rabies and glanders, in which little, if any, progress has been made in the way of cure. The poisonous agency in rabies still remains without an antidote, and by what means the saliva is converted into evidently poisonous a character to life is to us still clouded in mystery. I know of no finer subject than this for an energetic and enlightened mind to investigate and study; and let us hope that by the aid of skill and science some light may be thrown upon the nature of this disease which will enable the practitioner to overcome and prevent its terrible consequences. Glanders, if not so immediate in its effects, is almost as fatal in its results. It is one of those diseases which demands, and ought to have, more of our attention and study than I fear it often receives. What reward would be too great to the person who could succeed in introducing a cure for this formidable and destructive disease? Certainly he would deserve more than the thanks and good wishes of his fellow-members.

Another subject of importance to the members of our profession is that of the appointment of inspectors under the Contagious Diseases (Animals) Act. I think, gentlemen, we are all agreed that our present position in reference to the carrying out of that Act is not what we think it ought to be, or at all satisfactory to the profession at large. Surely the vast amount of capital, the cattle, &c., of Great Britain represent ought to be placed in other hands than those of the police. I can quite understand that in a county like Cheshire, where the losses have been heavy, expenses great, and the rate at present paid so high, the local authority would be most anxious to cut down the working expenses to the lowest point; but even here I can see no justifiable reason for neglecting the services of the very persons who have been educated in the knowledge which is required in carrying out the provisions of this Act, and in their stead appointing a class of men who, however well adapted they may

be for filling their legitimate position, certainly are not fitted for those of cattle plague inspectors.

I cannot but think, gentlemen, that if the subject of the appointment of inspectors was brought before the notice of the Privy Council, an arrangement more satisfactory to the members of the profession would be the result, and a benefit conferred upon the parties most affected by the Act, the cattle-keepers.

Another subject in which we are interested is that of the National Veterinary Benevolent and Defence Society. I am glad to think that the machinery and assistance of the latter branch have not been required during the past year, and let us hope they may not be for a many years to come. It is, however, gratifying to feel that in the hour of need we have not only willing friends, but also available funds at call to aid and support our unfortunate brother-member in the cause of right.

The Benevolent Fund, gentlemen, commends itself to the sympathy of us all, as anything must do that has for its object the relief and succour of the poor destitute widow and fatherless children. I know of no object more deserving of our support than this, and I trust the members will yearly increase, until we have not a single veterinary surgeon who is not also a sympathiser with, and supporter of, this branch of the society. It is gratifying to us to know that the funds, if slowly, are surely growing, and I am informed that candidates for its benefits at the present time are the widow and family of one who, when living, was an active and intelligent member of our society.

In taking this cursory and brief review of our position as members of an enlightened and useful profession, I think I have advanced sufficient evidence to show that, if our progress onwards has been slow, it has most certainly been sure, and that on the whole we have done, and are doing, good service both to our employers and the public at large.

I beg to thank you, gentlemen, for the kind attention you have shown me.

A vote of thanks to the President for his very able and highly interesting address was proposed by *Mr. Morgan*, seconded by *Mr. T. Taylor*, and supported by all present.

The remainder of the evening was spent by the members and their friends in doing justice to the dinner and the toasts following it.

W. AUGUSTUS TAYLOR, *Hon. Sec.*

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## NORTH OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

THIS association held its annual meeting in the Mechanics' Hall Buildings, Aberdeen, on Saturday, 28th January, when eighteen members were present. In the absence of Mr. Dewar, President, the Vice-President took the chair.

The minutes of last meeting having been read, the Treasurer submitted his financial statement for the past year, which showed a very favorable balance to the credit of the association.

The following members were elected office-bearers for the ensuing year:—Mr. Hay, Ellon, *President*; Mr. Cassie, Newmachar, *Vice-President*; Mr. Mellis, Inverurie, *Secretary*; Mr. Thomson, Aberdeen, *Treasurer*. Council—Messrs. Keith, Strichen; Neil Barron, Turriff; Deuchars, Cruden; Masson, Kintore; Duncan, Methlie; Symon, Forgue; Balfour, Montrose; Fowlie, Faichfield; and Robbie, Banchory-Ternan.

*The President*, as arranged at last meeting, opened the discussion on the nature and treatment of laminitis, as recommended by Mr. T. D. Broad, of Bath, by reading extracts of an essay which that gentleman had submitted to the West of England Veterinary Medical Association, and which was reported in the January number of the *Veterinarian* for 1869.

A letter to the Secretary from Mr. Broad, explanatory of the shoes which had been found so eminently successful in the treatment of laminitis, as also a specimen set which had been kindly forwarded, were submitted to the meeting. A very interesting discussion followed.

*Mr. Neil Barron*, Turriff, said that he was glad to be able, in some measure, to bear favorable testimony of the mode of treatment as recommended by Mr. Broad. He had applied shoes, something similar to the pattern before them, to a mare whose feet were down in the soles and corrugated in the walls and elongated in the toes, like those of a donkey; and in less than six months one would not have known that ever she had been affected with laminitis. He had not tried Mr. Broad's system in the acute stage of the disease.

*Mr. Balfour*, Montrose, had tried Mr. Broad's plan of shoeing on several horses with feet similar to those described by Mr. Barron, but had never seen any special benefit to result from their application, and he was very sceptical as to their remedial agency in any stage of the disease.

*Mr. Cassie* admitted that he had never tried the new mode of treatment, but was of the opinion that if the shoes could be applied and the animal kept moving, in an acute case, before it passed the congestive stage, more serious results might be prevented; but should the disease pass beyond the congestive stage, movement for some time, with Mr. Broad's or any other form of shoes, would, in his opinion, be against a cure; inasmuch as it would tend to effect a separation of the hoofs from the parts to which they were attached.

*Mr. Thomson* had tried these shoes on several horses affected with a subacute form of the disease, and from his limited experience he was led to anticipate that considerable amendment would result from their application, conjoined with the other measures suggested by *Mr. Broad*.

*Mr. Diack* had seen shoes with higher toes than heels put upon a horse with puniced feet, but instead of his walk being improved he went worse. He had not as yet tried *Mr. Broad's* shoes to a horse suffering from laminitis, but thought their application would be rather difficult in an acute case, as he had often found it even difficult to remove the old shoes, and to put on new ones in chronic cases, and with the feet so tender, would be even a more serious matter.

*Mr. Masson* viewed the system favorably, and intended giving it a trial on the first opportunity.

*The President* was inclined to support *Mr. Broad's* mode of treating the disease they had been discussing. He had frequently seen horses that had been ill of the complaint recover rapidly when they were able to be removed into a grass field where they were compelled to move about in search of food. A good many years ago a pony of his own had a very acute attack of the disease, from which he did not expect it to recover; but as he felt unwilling to summarily dispose of so faithful a servant, he had it put into a grass field without shoes, and after several months it perfectly recovered, and at the present time was doing daily duty without any trace of ever having been affected by the disease.

At the close of the discussion the Secretary was instructed to convey the thanks of the meeting to *Mr. Broad*, for the opportunity he had afforded them of discussing his essay, and also for his kindness in forwarding the set of specimen shoes to the association.

Most of the members expressed their willingness to give the system a trial, and report upon it at a future meeting.

*Mr. Barron*, Cullerlie, submitted a very interesting communication on an "Abscess on the Brain of an Ox," for which he received the hearty thanks of the meeting.

*Mr. Duncan*, Methlie, undertook to read an essay at the association's midsummer meeting, after which the members adjourned to *Mrs. Reid's* restaurant for dinner, where they spent a very agreeable hour in social conversation.

JAMES THOMSON, *Secretary pro tem.*

## WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

THIS association held its quarterly meeting at the "Athole Arms Hotel," Dundas Street, Glasgow, at three o'clock on Wednesday, the 22nd of December, 1870.

*Present*—Professor Williams, Edinburgh Veterinary College;

Professor Fordie, Glasgow Veterinary College; Messrs. Anderson, senior, Anderson, junior, Cockburn, junior, Robb, and Findlay, of Glasgow; Robinson, Greenock; Donaldson, Paisley; Kerr, Beith; Sharpe, Hamilton; Blackie, Bellshill; Borthwick, Kirkliston; Cunningham, Slateford; John Macdougall, Colgraine; J. Spreull, Milngavie; Aitken, Edinburgh; A. Pottie, Renfrew; and the Secretary.

The ex-President, *Alexander Pottie*, stated that his term of office as President for the year 1870 had now expired, and it afforded him very great pleasure to bring forward for election, as his successor, Professor Williams, who had taken a marked interest in this association since coming amongst them, had attended nearly every meeting, and contributed on several occasions to their advancement by reading papers and freely entering into the various discussions which arose. He would vacate the chair in favour of their new President, thanking the members, individually and collectively, for the attention and kindness they had so liberally bestowed upon him during the time he had performed the duties of president.

*Mr. Alexander Robinson* seconded the proposal to elect Professor Williams President for the year 1871, which was carried unanimously.

*Professor Williams*, on taking the chair, said that he assumed the position of President of the association for the incoming year with a vast deal of pleasure. He looked upon this election as a very great honour. To be President of the oldest and the second largest association of the country was an office which he was delighted to accept, and he trusted to be able to conduct the society's proceedings with the same *éclat* and benefit which had characterised his predecessor.

Messrs. J. Sharpe, John Macdonald, and John Donaldson, jun., were next elected Vice-Presidents, and Mr. D. Maclean Secretary and Treasurer.

After the minutes of a former meeting had been read and confirmed,

*The Secretary* laid on the table a letter he received from Mr. John Bryce, of Stirling, wherein he detailed a case of fracture of the spine, the result of an accident to a mare while struggling on the ground, during an operation for the excision of "*anberries*." The owner of the mare having threatened to institute legal proceedings, Mr. Bryce called upon the association to advise and aid him professionally in his defence.

The case was freely discussed and duly considered, and the Secretary was instructed to inform Mr. Bryce that the association would be very glad to aid him as far as they possibly could.

*Messrs. Pottie, Macdougall, and Donaldson, jun.*, related several cases of rheumatism which they had lately met with among cattle in their respective districts. The disease had appeared in an acute and epidemic form, affecting principally the sheaths of the flexor tendons, and generally terminating favorably after a few days' treatment.

*Mr. James Anderson* next gave a description of a case of a collec-

tion of small dust-balls lodged in the rectum of a dog, which were extracted, the patient ultimately doing well.

*Professor Williams* brought to the society's notice a curious case which he had at present under treatment. The subject was a bay mare in plethoric condition, and his diagnosis was congestion of the liver, accompanied by paralysis of the off hind leg, which were ushered in by catarrhal symptoms. The patient was put into slings and the usual treatment adopted. The liver symptoms were now disappearing, and the animal was gradually regaining the lost power of her limb. All this, he thought, might have arisen from reflex action, due to a deranged or diseased stomach.

*Mr. Anderson* expressed as his opinion that lameness in liver disease was an exceeding rare occurrence. He had never met with many instances of it all the years he had been in practice.

*Mr. Robinson* next gave the history of a most interesting case of shoulder lameness, accompanied by symptoms of disease of the liver, the autopsy showing that a thorn had penetrated the substance of the gland.

*Professor Fordie* then read his essay on the "Pathology of Broken Wind," which was of a most scientific character.

After a long discussion, it was moved by the *President*, "That the subject be again brought before the association at its next quarterly meeting."

In the meantime *Professor Fordie* promised to comply with the unanimous wish of the members to hand over his essay to the Secretary to be forwarded for publication in the *Veterinarian*, so that they might be able to peruse its contents carefully before the meeting.

A vote of thanks was then given to Professor Fordie.

D. MACLEAN, *Hon. Secretary.*

## Veterinary Jurisprudence.

### CRUELTY TO ANIMALS.

AN important case relating to farming was recently heard before the Bench of Magistrates at Brigstock.

*Mr. W. C. Loveday* was charged with having cruelly treated twenty lambs by having neglected to supply them with sufficient food and nourishment on December 16th. Summonses were also taken out against him for having been guilty of like cruelty to twenty sheep, two calves, two cows, and two steers. In the course of the evidence a police constable stated that he visited defendant's premises, and "In the first field I found thirty-two lambs, four beasts, two stirks, and two heifers. They were in a wretched state, and three lambs were not able to stand. There was no food, no

fodder, and not a blade of grass in the field. In the next field there were thirty-four sheep, two cows, and two calves. Part of a dead cow was in the shed. I could not get into the shed without knocking the lock off. I then went into the rick-yard, and saw about thirty-two lambs, three of which could not stand. I lifted them up, but they could not stand, and fell down again. The lambs appeared to be all of them in a state of starvation. I have visited the farm every day since. When I first visited the premises four of the lambs were dead, and fourteen have died since. Two of the lambs that were dead had been taken down to Brigstock by the defendant."

For the defence it was contended that the lambs had died from disease and not starvation, and the excessive drought had contributed in a great measure to the loss of the natural keep. As a rule the defendant had an excellent character for farming, and his cattle and sheep brought good prices.

After hearing the evidence, Lord Lyveden said the bench had come to the conclusion, notwithstanding the difference in the medical evidence, that it was their duty to convict the defendant of the offence with which he was charged, conduct which was very discreditable to a British farmer. They did not wish, however, to convict on more than one case, and, therefore, the other summonses would be withdrawn, with the consent of the prosecution, on the payment of costs. The utmost penalty they could inflict in one case was £5, and their decision was that the defendant pay a fine of £4, with costs amounting to £3 3s. 6d.—*Chamber of Agriculture Journal*.

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AN allied case was heard at the Brill Petty Sessions, Buckinghamshire, on Saturday, February 11th, before the Duke of Buckingham and other magistrates. Emanuel Hall, of Long Crendon, farmer, was charged, on the complaint of Mr. H. P. Andrewes, Chief Constable of the Royal Society for the Prevention of Cruelty to Animals, with cruelly ill-treating, abusing, and torturing eighty-eight sheep, three horses, and four pigs, at Long Crendon and Shabbington. Mr. Andrewes conducted the prosecution.

*William Sinclair*, one of the officers of the society, stated that he went to the defendant's farm at Long Crendon on the 1st inst., and found there in a meadow, about a quarter of a mile from the home-stead, fifty-four sheep in a wretched and debilitated state. The ground was covered with snow, and there were no signs of food about. The animals were nothing but skin and bone, and witness could lift any one of them with one hand. He had a conversation with the defendant, who told him that four of the sheep had died—he supposed, he said, because they had not had enough to eat. Witness next visited defendant's farm at Shabbington, where he found thirty-four sheep in the same state as those at Long Crendon. On the former farm he saw two ricks of clover, two of barley, ten of wheat, and one of beans.

*Mr. A. Cherry*, veterinary surgeon, of Brixton, had also visited both farms, and described the sheep as in a state of starvation. They were half-bred Downs. A large number of them could hardly walk. He lifted several of them one by one with one hand, and could have lifted three. When he took them up it was like holding an empty bladder. They ought to have weighed as fair store stock from 50 lb. to 70 lb. each, but those he lifted did not, in his opinion, weigh 30 lb. each. Witness could not discover any disease about the sheep, and their state he considered was owing to insufficiency of food. At Shabbington witness saw two horses drawing a cart which were in a very weak condition, as if they had had no food for two meals.

Defendant was convicted for cruelty to fifty-nine sheep, which were described by the witnesses as worse than the others, and was fined 2s. for each, or £5 18s. in all, and ordered to pay the costs in each case, £2 7s. 6d., making the total penalty £10 13s.

*Mr. Andrewes* said the moiety of the fine, which was payable to the informant, would be given in aid of the Bucks Infirmary.

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## READING COUNTY COURT.

### HICKS *v.* CLARKE.—A JURY CASE.

THIS was a case heard on January 18th, before a jury, in which the plaintiff, George Hicks, a cattle-dealer, claimed £24 10s. of Mr. James Clarke, of Silver Street, for the value of two cows sold to him.

Mr. Rolland appeared for the plaintiff, and stated the case as borne out by the evidence. Mr. Greene appeared for the defendant.

*The plaintiff* said: On the 19th October the defendant Clarke bought two cows and two calves of me; he paid me for them, and took the cows away. A fortnight after that he came to me, saying they did not give sufficient milk, and asked me to exchange them. He paid me £29 for the two cows and calves. Upon my return from London, Clarke and his wife came to me and said he had chosen a black cow and a white cow, and I consented to take £3 and the first two cows in exchange. He paid me the £3, and was to return the two cows at eight o'clock the next morning, but they were not sent. In the morning his man wanted to take my cows away, and said he did not know anything about Clarke's cows. I said something was not quite right, and I shouldn't spare mine till I had seen Clarke's cows. I went into the town, and upon my return I found that my two cows had been taken, and Clarke's were there. I saw that Clarke's cows had the foot and mouth disease. I know what it is well, as I have had forty bullocks with it. The law will not allow us to remove them. The disease had been very bad in the neighbourhood where the cows were. I consulted a veterinary surgeon, who said the cows had the disease very bad indeed. I offered Clarke that I would take his cows back when they were well.

Re-examined by Mr. Greene : I believed the calves sold were the calves of the two cows. I did not warrant them so then, but will do so now if required, as I believe they are. It is quite possible to make a mistake about that matter. I gave notice to the inspector, Waterman, of the cows having the disease, and had an action against Clarke two months ago. Waterman was called then as a witness, and he said they had no disease; he sent the subpoena back the day before the court, saying he was going on Clarke's side. (Laughter.) I sent the cows back to Pilgrim's field, where they are now. I bought the calves with the cows at Bristol market.

*Abraham Atto* said, the bargain was £3 to boot, and neither cow was in calf. He went with Hicks to Waterman, who, when he came back, said the cows were very bad indeed with the disease.

Cross-examined : Clarke said the reason he wanted to get rid of the cows was they did not give milk enough. They had the foot and mouth disease very bad indeed.

*Mr. Pilgrim*, market gardener, said : I have some fields ; Clarke has some cows there. I thought two had the disease, and sent word by his man to Clarke. That was on the Sunday before the 2nd November. The man took them away.

Cross-examined : My cows have been with the two since, and have not had the disease. I thought the two had the disease.

*Mr. John Wallin*, veterinary surgeon, Theale, examined two cows in Pilgrim's meadow on the 25th November, and found them suffering from the foot and mouth disease ; they had been suffering for some time, perhaps a month.

Cross-examined : I hold my certificate from the Royal College, dated 1838-9. Both cows were suffering in the feet ; their mouths were better. I don't think any man of experience would mistake the disease.

*Mr. Howell*, veterinary surgeon, said he examined the cows on the 25th November, and both were recovering from the foot and mouth disease, which they had had very bad. They were the cows that Hicks said he had sold to Clarke.

*Mr. Greene* asked for a non-suit, as it ought to have been an action for barter, and not for goods sold and delivered, but

*His Honour* thought the claim was good.

*Mr. Greene* made a long and spirited defence, reviewing the evidence of each witness. He called

*Mr. Clarke*, the defendant, who deposed to buying the cows, and calling in Mr. Waterman a few days after, who said they were two useless old cows, and the big one was in calf. I saw Hicks in the market, and he said what was wrong he would make right, and I left as he spoke fair. The next week I went to Hicks, and he asked £5 to exchange them ; I told him I had been laughed at over the matter, and it was the first time I had had to do with cows, and it would be the last.

Cross-examined : I deal in fish and potatoes. I keep lodging-houses, and I have been convicted and paid £2 10s. before the

magistrates, for harbouring convicted thieves in the lodging-houses, but I had no control over them, and had ordered them off, but they would not go, and the police ordered them off.

*Thomas Lovegrove*, cowkeeper, Hosier Street, said he saw two cows in Silver Street, belonging to Mr. Clarke, on 18th October. He saw nothing about the foot and mouth disease. He said to him, "How came you to buy this old cow? I believe it is in calf." The two old cows and calves were not worth more than £20 at the outside.

Cross-examined: I have been convicted for having a horse that was stolen in my possession; I was unjustly convicted. I saw the cows about four days before the last trial.

Re-examined: It was fifteen years ago I was convicted.

By *Mr. Rolland*: How many years' transportation did you have?

*Witness*: I can't say. (Laughter.)

*Mr. Rolland*: When did you come out of prison?

*Witness*: I can't say. (Laughter.)

*Mr. Waterman*, inspector of cattle under the Contagious Diseases (Animals) Act, said: I found the cows in a poor state, without any milk, and suffering from travelling, but nothing much the matter with them. About three weeks after that I found a pustule on the nostril of one, and one was lame. I could not catch one, and milked them both. I told Hicks I did not see much the matter with them. The foot and mouth disease is infectious, and if other cows had been with them they would have caught it. I did not report the cows as having the disease. The cows were worth about £10 each at that time. I never said to the plaintiff that the cows had the disease very bad.

Cross-examined: I have been before the magistrates at Henley for removing diseased cattle at night. I was fined 3s. and £1 6s. 9d. costs. This was not done by ignorance or by design. I ought to have killed the animals, but I did not; it was not likely. I remember ordering a cow in fever to be killed, and the carcase to be sent to London to be eaten. It is frequently done. It is not detrimental to health. (Sensation in court.)

*Mr. Rolland*: What, and you the borough inspector!

*Witness*: I had no hesitation in ordering it; and should do it again. (Sensation.)

*Mr. Rolland*: It is right the borough magistrates should know of this.

*Witness*: One of the cows belonged to a magistrate.

*Mr. Rolland*: Did you say the cow that had the fever and was killed was tolerable, and that it was fit meat to be eaten?

No answer.

*Mr. Rolland*: Did you pass it?

*Witness*: I did. (Sensation.)

Cross-examination continued: Both Clarke's cows are in calf; I cannot swear to that, I believe it. Pustules are not symptoms of foot and mouth disease. Pustules on the nose is not a sore mouth. The lameness exists now, and is the result of travelling.

Re-examined: The cows are sixteen to twenty years old. (Laughter.) The pustules might be from turning out to grass.

Mr. Flanagan, veterinary surgeon, holding the appointment to the County of Berks as general referee in these matters, said: I inspected the cows on the 11th December; they were in a poor condition. I saw no pustules. I don't understand what Mr. Waterman means by pustules. The cows had not had the foot and mouth disease within two or three weeks. I should not expect traces if they had the disease five weeks before. One cow is in calf and the other is lame, the result of an accident.

Cross-examined: The cows could not have been so bad as Mr. Howell and Mr. Wallin made out. They might have been bad. Mr. Wallin and Mr. Howell have exaggerated. I have not done so. They could not have got well in the time. That is not an exaggeration.

Mr. Frederick Grace, labourer, Silver Street, said that Hicks said "What is wrong I'll put right. I'll have no misdealings with any one."

The plaintiff, recalled, repeated his evidence respecting what Mr. Waterman said, that the cows had got the disease very bad, and they ought to be attended to. That was the reason I subpoenaed him.

Atto, re-called, swore that Mr. Waterman said the cows had the disease very bad indeed.

Alfred Catt said he heard Waterman say the cows had the disease very bad.

Mr. Greene said he must recall Mr. Waterman.

Mr. Rolland said he had no doubt Mr. Waterman was prepared to deny all this.

Mr. Greene again addressed the jury on the part of the defence, imputing perjury to the plaintiff and his witnesses.

Mr. Rolland summed up, and the jury returned a verdict for the plaintiff for the full amount claimed, and his Honour gave costs.—*Berks Telegraph.*

## ARMY APPOINTMENT.

WAR OFFICE, Feb. 14th.

VETERINARY DEPARTMENT.—John William Evans, gent., to be Acting Veterinary-Surgeon, *vice* Phillips, promoted.

COMMUNICATION FROM "JOHN STEER" ON  
THE ALLEGED IMPORTATION OF CATTLE  
FROM HOLLAND THE SUBJECTS OF PLEURO-  
PNEUMONIA.

BUFFALO FARM, PIGSBY; 20th Feb., 1871.

DEAR SIR,—For the information of farmers, as well as meat consumers, will you allow me to ask who Mr. John Waller is? I take a natural interest in British meat, and am sensitive, I hope, as to the privileges of foreign importers. I hold (as all well-thinking farmers do) that we who are thoroughly English should not have our *thoroughly English* prices deteriorated by foreign competition, and I am delighted when a discovery is made which tends to obviously elevate the cost of beasts in the market. But I am, I candidly confess, completely puzzled about this Mr. Waller. I read letters of his constantly in the *Times*, in which the wrongs of us meat-producers are enumerated, and I naturally feel sentimental and injured. I read his letter too in the same powerful organ of public opinion, pointing out that pleuro-pneumonia of cattle had been recently brought in by our natural enemies, the importers of foreign cattle; and when, with a revulsion of feeling which I cannot fully express, I remark to my Betsy (my wife, Mr. Editor), "Waller's the man for my money!" I am shaken to my centre—and it takes a good deal to shake *it*—by an announcement in the Parliamentary reports that in answer to Alderman Lawrence, the Vice-President of the Council said "the statement appeared to be entirely without foundation." Now, sir, I want to know who Mr. Waller is? and if *you* can't tell me, I must ask you to permit me to let loose a suspicion of my own. Betsy and I both think that he is an emissary of the foreign cattle importers, who wants to interfere with our hard-earned profits, who wants, in fact, to *milk our cows*. I have a horrid suspicion that these vaccine-Jesuits, so to speak, have taken means, under a fictitious name, to injure our prospects, to throw doubt and ridicule on our natural desire to keep the cattle-market to ourselves; in fact, to insert the thin end of the wedge, and to destroy the little amount of *protection* we enjoy in the trade of cattle, and to establish by artful measures the principle of free-trade in beasts. Your sincere friend,

JOHN STEER.

To the Editor of the '*Veterinarian*.'

ERRATA.

In Vol. xliii, No. 515, page 829, line 10, for *Sirula* read *Simla*; page 830, line 3, for *administerial* read *administering*; page 830, line 7, for *mediums* read *medicines*; page 832, line 7, for *presented* read *prescribed*; page 833, line 24, for *to transfer* read *by transfer*; page 833, last line, *read* relief of troops; page 835, line 7, for *continuation* read *combination*.

In Vol. xliiv, No. 518, line 5, for *liver* read *kidneys*.

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Communications and Cases.

OBSERVATIONS ON THE ANATOMY AND  
PHYSIOLOGY OF THE HORSE'S FOOT.

By GEORGE FLEMING, M.R.C.V.S., Royal Engineers.

(Continued from p. 158.)

*The hoof of the hind foot.*—With the exceptions already noted, there is no marked difference between the hind and the fore foot, so far as its internal or vascular structures are concerned. The tegumentary covering is, of course, more extensive in the latter than the former, to correspond with the larger superficies of the elastic apparatus and the os pedis. It is not until we compare the hoofs of the thoracic and the abdominal limbs, that we observe anything particularly striking, and here we have a notable divergence in the general configuration. The hoof of the hind foot is more elongated from before to behind, and consequently more oval, than that of the fore extremity; the heels are also lower, which makes this hoof appear to be higher at the toe than the fore one. The sole is more concave on its lower surface, and the frog is much smaller; the frog-stay is less developed, and the toe-stay is often very small. The wall is not so thick at the toe, but is thicker towards the quarters and heels than in the anterior hoof. Altogether, it may be asserted that the horn of the hind hoof is less strong and resisting than that of the fore one.

*The hoof as a whole.*—Though the shape of the hoof has been defined as above, and though this is the conformation of the majority of well-formed feet, yet it must not be forgotten that not only do different countries afford different shaped types, each well adapted to the circumstances under

which it has to act its part, but even in the same region do we find dissimilar forms which are each calculated to meet certain requirements. No doubt domesticity, and the artificial and often injurious treatment this part obtains at the hands of man, causes a wide divergence from the original shape, but Nature herself does not always supply us with models of perfection. We see this frequently in the case of young horses whose hoofs have not been shod, and which nevertheless, in consequence of unequal wear, require to be "trimmed," in order to keep them from more or less distortion. And Signor Pellegrini, Professor in the Veterinary School at Milan, has observed that the unshod horses employed in Italy in agricultural or other labour always wore their hoofs more at the outside than the inside, so that the peasants were obliged, from time to time, to remedy this very visible defect by having the inner side cut down, as when it had grown too long the foot became so twisted that the animal travelled with pain and difficulty. And the same observer states that in Lombardy, in the province of Bergamo, there is a breed of horses whose hocks are so much turned-in that while yet very young it is necessary to pare their hoofs frequently, and sometimes even to shoe them, in order to obviate serious deformity and mischief to the feet. Sollysel,\* more than two hundred years ago, observed that the horses of the German peasantry were not shod; though he remarked that it would be much to their advantage if they were, as the limbs and feet were in nearly every case he saw more or less deformed. And M. Bernard † quite recently confirms this observation of the old hippiatrist, by stating that in Lorraine, Alsace, and Bavaria, he saw many agricultural horses unshod, and that deformities of the hoofs were common.

Nevertheless, if we are to look for a favorable type, we must seek for it among horses that have not been shod, which have always lived in perfect liberty, have well-shaped limbs and healthy hoofs, and place the latter upon the ground in a proper manner.

If, then, we take such a type, we shall find that it is moderately large, and in just proportion to the size of the animal's body. Its antero-posterior diameter is parallel to the axis of the body, while the digital axis (found by drawing a line through the centre of the pastern and pedal bones), if the angle of the front of the hoof be  $55^{\circ}$ , is inclined about  $63^{\circ}$ . The wall being conical and not cylindrical, it follows that it must be more sloping than this axis.

\* 'Le Parfait Maréchal,' Paris, 1664.

† 'Journal de Méd. Vét. Militaire,' vol. iv, p. 111.

The figure of the hoof is generally conical, the wall smooth, regular, and rectilinear from above to below; if its under portion or base be examined, it will be found that its outline is more or less circular (not oval, as is frequently asserted), for a line which measures its length from toe to heel will be about equal to its width across the quarters; it may be even less. It is curious to note, as pointed out by Professor Brambilla,\* of Milan, that the half of this line is equal to the height of the hoof, and that the contour of the latter, viewed from the face of the wall, and seen in profile, are included in a semicircle, whose ray is also the height of the hoof. The plantar face of a well-formed, unshod hoof belonging to an unbroken horse, presents, then, a perfectly circular outline, the centre of which is to be found at the crossing of the two diameters — antero-posterior and transversal — a little behind the point of the frog. It is also somewhat remarkable that the unit of measurement which divides the contour of the wall into equal portions, and exactly defines its conventional divisions into toe, mammillæ, quarters, &c., is a thirteenth part of the circumference. The thirteenths are thus allotted:

1 for each branch of the frog	2
1 for each heel	2
3 for each quarter	6
1 for each mammilla	2
1 for the toe	1
Total	13

The unit of measurement is found in the thickness of the heels taken from the re-entering angle at the extremity of the sole, to the point of the heel—in reality, the width of one of the branches of the frog at its commencement. The length of each bar has also been found to correspond to one thirteenth of the contour of the wall, and therefore to the breadth of each branch of the frog at its base. So that if the frog was altogether removed, and the bars straightened out, they would replace it in completing the circumference of the parietal cone, leaving no interruption at the posterior part of the wall.

The whole of the circular border of the foot rests on the same plane, and consequently is everywhere in contact with the ground, to which it presents three qualities of horn, whose principal difference consists in their resistance. The first is the plantar border of the wall, hard, rigid, and narrow, composed, as it is, of the ends of the dense wall-fibres, which,

\* 'Théories Sur les Défauts du Pied.' Milan, 1870.

from their vertical disposition, endow it with a high degree of durability and retentiveness; it makes its imprint on ground less hard than itself, but does not suffer any alteration in shape from contact with harder soil. The second is the excentric margin of the sole, destined to sustain a portion of the animal's weight on moderately hard ground; this is less tenacious than the wall, but, perhaps, more retentive of the ground, from its softness; though it makes little or no imprint, and is a powerful support to the former, enabling it to retain its normal configuration, and aiding materially in increasing its durability. The third, the frog, is, on the contrary, very elastic, receives impressions from the surfaces to which it may be applied, and is moulded to ground harder than itself. It therefore follows, that, with the unshod horse, the foot and the soil on which it treads are adapted to each other and fit closely together, and this naturally contributes to ensure and maintain a firm foothold while the animal is standing or in motion—more particularly the latter—and in proportion to the rapidity of the pace.

The anterior hoof of the unbroken horse has, then, its two principal diameters about equal, or the transverse may even exceed the antero-posterior. Viewed from the front, the conical shape is at once observed; while examined in profile, it appears to be cylindrical, the toe being parallel to the heels, which latter, again, are parallel to each other; so that it may justly be asserted that it is the quarters which give the hoof its form. In this country it is rare to meet with the typical foot just described, for it may be said that this organ, like the whole body of the horse, is seldom perfectly developed before five years of age, and anterior to this period, the animal, in the great majority of cases, has been shod and worked, and its hoofs submitted to the deteriorating influences of an artificial régime. In those countries which are favoured with a better climate than our own, horses frequently labour during their whole lives without shoes, and consequently afford numerous examples of perfect feet. Professor Pellegrini, of Milan, had an opportunity of studying this subject during the five years he was with an Austrian cavalry regiment in Hungary. The horses living in perfect liberty in that country, having well-formed limbs and normal action, had circular hoofs; in movement, the toe first touched the ground, then the whole of its circumference to the heels; this manner of placing the foot caused the wall to be slightly rounded over at the toe. The horses that joined the regiment at four years of age, without ever having been shod, also had the toes of the hoofs gently rounded, and measuring a little more

across the quarters than from the toe to the heel. After a few months, either because of the stable management, or as a result of shoeing, the measurements became equal, or even reversed, the hoof measuring less across the quarters than in the other direction, to which circumstance was due the oval shape it acquired. This observer was able to note identical facts as occurring among the horses which came from the Tuscan Maremmas for the use of the regiment of Guides of the Italian army, to which he was afterwards attached. His experience permitted him to state that the foot of a horse in domesticity, and shod, can only serve as a type up to a certain point, when, in offering natural forms, proportions, and directions, it wears the shoe evenly, as the farriers say: that is, all the points of the two branches of the shoe shall be equally worn, and the normality of the animal's paces shall correspond to the anatomical normality of the foot.\*

The form and dimensions of the typical hoof are admirably calculated to aid the horse in developing those locomotive qualities for which he is so justly prized. The limbs—so many columns of support—have their bases made more secure by the wide hoofs which terminate them, and whose largest diameter rests upon the ground. This width at the base of the limb is proportioned to the nature of the soil and the physical features of the country in which the feral horse chances to exist, and, as before said, gives rise to different models of feet, each of which may nevertheless be perfectly healthy and natural. In all, the greater circumference or "spread" of the outer half, when compared with the inner, was evidently intended to maintain to the utmost the width and stability of the base without incurring the risk of injury to the opposite limb; but the development of width over the whole organ, together with flattening of the sole and increase in size of the frog met with in some countries, particularly northern regions, was given to meet certain requirements. The eastern horse, reared in a warm dry climate, accustomed to travel over burning sands or rocky mountains, has small feet, with the hoofs narrow, hard, and parched, and the sole very concave, the wall dense and strong, the frog small and indurated, and the heels high. A hoof of this description

\* Even the foot of the ass in a wild state would appear to be very different in external conformation to the small, deep, narrow, and almost unsightly organ we are accustomed to see in the poor ill-treated domestic drudge. Baker, for instance, in speaking of one he shot at the Atbara, and which was 13·3 or 14 hands high, says that it had a shoulder far more sloping than that of the domestic ass, and that the hoofs were remarkable for their size; they were wide, firm, and as broad as those of a horse of 15 hands.—'The Nile Tributaries of Abyssinia,' p. 56.

almost defies wear and external injury; it is light, and, being narrow and hollow, it can be solidly implanted on uneven, stony surfaces. The hoof shows the same adaptation to circumstances as the other parts of the animal.

But the horse reared in a low-lying marshy locality is the very opposite of the light, agile, wiry steed. Physically soft and unenduring, this animal is massive; it has a hoof wide and flat, the frog spongy and voluminous, and the horn generally pulpy and incapable of successfully resisting wear on any other soil but that on which it has been formed. And yet this organ is well fitted for locomotion in its particular region, and is a perfect agent of support for the large phlegmatic creature that inhabits these humid, marshy districts; the widely expanded base, with its flat sole, sinks but little in the yielding soil, and the frog, standing out so prominently from its surface, and in shape somewhat like a ploughshare, acts as a stay to prevent slipping. Wear and concussion being reduced to a minimum on such a surface, the horn is porous, slowly secreted, and soft. Had it been solid it would have been much heavier, and there was no need for its rapid growth or great hardness. The shape of the hoof and character of the horn is most wisely adapted to the situation and mode of life of the animal. Suddenly transport the dry, nervous, condensed horse, with its typical foot, to the marshy region, and what shall we behold? What will become of the light, thin limbs, with their narrow, hollow-based hoof? Or travel the large, heavy, œdematous creature from his damp, springy pasture-land or muddy flats, all at once to the rugged stony mountain paths and the hot arid atmosphere, and witness his attempts at locomotion! The one would flounder deeply in the treacherous ground, while the other would limp painfully along for but a short distance before he dropped down incapable of further journeying.\* But in time

\* We have numerous examples of this adaptability of the feet of other animals, besides the horse, to the ground over which they have to travel, though in the immediate progenitor of this animal himself, the tridactylous miocene hipparion, we have an excellent illustration. The hoofs of the reindeer are wonderfully adapted to the country it inhabits. Instead of being narrow and pointed, like those of the roebuck or the fallow-deer, they are remarkably broad, flat, and spreading; and when it sets down its foot it has the power of contracting or spreading its hoofs in a greater or less degree, according to the nature of the surface on which it moves. When snow is on the ground and in a soft state the broadness of the hoofs it then spreads out, so as almost to equal in size those of a horse, gives it a firmer support on the snow, and hinders it from sinking so deep as it would otherwise do.—*De Capell Brooke*, 'Travels in Lapland,' p. 84.

And the buffalo exhibits a similar fitness to traverse muddy regions. Sir J. E. Tennent says—"There is a peculiarity in the formation of its foot,

these types of feet will undergo changes in form and consistency, which would allow them to contend successfully with the altered conditions they should have to encounter. Transplanted from a congenial climate, with its warm, dry atmosphere, to a low, humid region, the narrow, hollow-soled hoof, under the influence of such physical agencies as moisture and soft soil, gradually assumes the shape of that belonging to the massive animal just referred to. The cause of this transformation may be justly ascribed to the aqueous character of the food, and the softness and want of cohesion which the horn composing the hoof acquires, and which renders it less able to support the weight; the muddy ground also plays an important part, for the foot, sinking deeply into it, rests on a plane that inclines outwards in every direction, and this acts powerfully in dilating the circumference of the hoof, this dilatation being again accelerated by the large amount of pressure the frog receives. This effect of the soil is, of course, all the more marked as the plantar surface is concave. The wide, clumsy-looking, flat foot, removed from the marsh to a dry

which, though it must have attracted attention, I have never seen mentioned by naturalists. It is equivalent to an arrangement that distinguishes the foot of the reindeer from that of the stag and the antelope. In them the hoofs, being constructed for lightness and flight, are compact and vertical; but in the reindeer the joints of the tarsal bones admit of lateral expansion, and the broad hoofs curve upwards in front, while the secondary ones behind, which are but slightly developed in the fallow-deer and others of the same family, are prolonged till, in certain positions, they are capable of being applied to the ground, thus adding to the circumference and sustaining power of the foot. It has been usually suggested, as the probable design of this structure, that it is to enable the reindeer to shovel under the snow in order to reach the lichens beneath it; but I apprehend that another use of it has been overlooked, that of facilitating its movements in search of food by increasing the difficulty of its sinking in the snow. A formation precisely analogous in the buffalo seems to point to a corresponding design. The ox, whose life is spent on firm ground, has the bones of the foot so constructed as to afford the most solid support to an animal of its great weight; but in the buffalo, which delights in the morasses or the margins of pools and rivers, the formation of the foot resembles that of the reindeer. The tarsi in front extend almost horizontally from the upright bones of the leg, and spread widely on touching the ground; the hoofs are flattened and broad, with the extremities turned upwards; and the false hoofs descend behind till, in walking, they make a clattering sound. In traversing the marshes this combination of abnormal incidents serves to give extraordinary breadth to the foot, and not only prevents the buffalo from sinking inconveniently in soft ground, but at the same time presents no obstacle to the withdrawal of his foot from the mud."—'Ceylon,' vol. i, p. 156.

Professor Owen has commented upon a similar conformation in the elk and bison. When these creatures inhabit swampy localities, the second and fifth digits become largely expanded; while in the camel and dromedary, which traverse arid deserts, they are nearly obliterated.—'Comparative Anatomy and Physiology of Vertebrates.'

mountainous country, likewise responds to its new requirements, but perhaps more slowly than the other type. It becomes concentrated on itself, loses a large portion of its humidity, and gains greatly in firmness and solidity. And not only is the hoof adapted by nature to different climates and soils, but it submits to variations according to the season; the dryness or dampness of the air are always in operation in modifying its form and consistency. In winter it softens and dilates, is little worn, and grows slower; in summer it contracts, hardens, is much worn, and grows in proportion. So that, in the words of M. Goyau, to hard ground there is opposed hard horn, to soft ground soft horn.

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## PAPILLARY GROWTHS FROM THE MUCOUS MEMBRANE OF THE ŒSOPHAGUS OF A COW.

By H. LEPPER, M.R.C.V.S., Aylesbury.

I HEREWITH forward for your inspection what I conceive to be a most unusual specimen of disease of the mucous membrane of the œsophagus of a cow. I had no opportunity of seeing the animal after death, and consequently I am unable to say whether any other portions of the digestive organs were similarly affected. The subject was a cow of the short-horn breed, about five years old. She had had two calves and was far advanced in pregnancy with the third.

In the summer of last year I attended her for an attack of pneumonia, from which she recovered; and with the exception of a slight cough, which in no way appeared to interfere with her general health, she retained her former condition, and gave an ordinary quantity of milk.

In the early part of January last she was noticed to be losing flesh, her coat was unhealthy in appearance, and there was a falling off of milk. On the 22nd of this month my attention was called to her in consequence of pellets of half-masticated food being dropped from her mouth, instead of being swallowed. Some of these had been but imperfectly broken down; indeed, fit only to be passed again into the rumen, but other portions were sufficiently masticated to be suited for the action of the omasum.

The diagnosis being that some derangement of the œsophagus and stomachs existed, especially the former, for which

partial relief only could be expected, a mild cathartic was administered, and instructions given that the animal be supplied with a liberal allowance of oil-cake gruel, but only with a moderate quantity of oil cake and hay, in a form which would permit of their being easily swallowed.

The case made no progress towards a cure, and on the 9th of the present month (February), the animal, having become so weak as to be unable to rise, was slaughtered, and the œsophagus and a portion of the lung sent for my inspection. On examining the œsophagus externally, I found it greatly increased in size, and to contain something which possessed a sponge-like feel. On laying it open I discovered that its lining membrane presented a most remarkable condition, being studded with abnormal growths—cauliflower-like in appearance—nearly throughout its entire course. The papillæ of the mucous membrane had indeed so much increased as to be as numerous and prominent as in some parts of the rumen. The dilatation of the œsophagus was also so great that when laid flat on the table it measured fully twelve inches in its short diameter.

The outer or muscular portion of the tube had a normal appearance, but was increased in thickness to be the better suited, as may be supposed, for the difficult office of overcoming the mechanical obstruction both to the descent and ascent of the ingesta in deglutition and rumination.

The portion of the lung sent was consolidated, and showed traces of remote inflammation, in the form of a variety of grey hepatization. Besides this, numerous tuberculous deposits existed in other parts of the structure.

It is somewhat remarkable that, taking into consideration the state of the œsophagus, no one about the animal should have observed the difficulty of swallowing which must have long existed, or detected any increase of size in the animal's neck. I am aware that a few cases of this kind have been recorded, and curiously enough little or no history has been given with any of them, whereby a correct diagnosis might have been formed. The growths are doubtless due to hypertrophy of the papillæ of the mucous membrane, but it is by no means clear on what this condition depends. Pathologically they are allied to warts, but even the origin of true warts is shrouded in mystery. Exposure to dirt and slight injuries are supposed by some persons to give rise to warts, but except in cases of choking it is difficult to see how causes like these would be in operation to produce these growths from the lining membrane of the œsophagus.

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## DERMITIS LEADING TO EXTENSIVE DESQUAMATION OF CUTICLE AND HAIR.

By HAYDON LEGGETT, M.R.C.V.S, Luton.

ON the 18th January I was sent for to see a chestnut cart-gelding, six years old, Suffolk breed. I found the horse had a slight swelling on the inner side of the thighs, and of the fore legs down to the knees. The pectoral muscles were also swollen, and the horse walked with a stiff and rigid gait.

It appeared from the account given me that the animal had been standing in the stable for some days on account of the frosty weather, and that on the day before I was sent for he had been to Dunstable, a distance of about three miles. The road was very slippery, and the animal, not being rough shod, slipped about very much, and could scarcely get along.

On his return home, and while in a state of profuse perspiration, he went to a pond and drank a quantity of cold water, which was probably the more immediate cause of his illness.

I ordered warm fomentations to the swollen parts, and gave a dose of purgative medicine. When I called on the 20th I found that both the hair and the cuticle on several parts of the body were quite loose; and that every time the horse shook himself, which he did vehemently and often, large quantities were detached. The hair was so loose that any one might have rubbed the whole of it off as from a scalded pig. The state of the skin showed that there could not be a doubt but in a few days there would not be a single hair left on the face, head, neck, or body, with the exception of the hair of the mane, tail, and legs, which was still firmly attached.

I have enclosed a portion of hair and cuticle, so that you may examine them under the microscope, should you think fit.

[A microscopic examination of the cuticle and hair sent by Mr. Leggett did not lead to the detection of fungi, or of anything otherwise abnormal, to account for the extensive depilation. The bulbs of the hair were split up in a remarkable manner, but in all other respects both the hair and the cuticle were apparently healthy.—Eds.]

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## CASE OF INFLAMMATORY ŒDEMA IN BOTH HIND LEGS OF A MARE.

By J. E. SCRIVEN, Aberford, Yorkshire.

IN perusing the *Veterinarian* of last month I saw, in the essay on "Inflammatory Œdema," read by Mr. W. A. Taylor at a meeting of the Lancashire Veterinary Medical Association, a statement to the effect that inflammatory œdema generally attacks one of the extremities, and that in the majority of instances it selects and *confines* itself to one of the hind legs. Allowing such to be a rule, I am desirous of recording a case which came under my notice last month, showing there are exceptions to the rule.

On the 14th of January, 1871, I was requested to visit a draught mare, five years old, the property of Mr. T. Knapton, farmer, Barwick. I accordingly attended, and found the patient very restless and shivering. Pulse slightly accelerated, respiration increased, swelling of the *right* hind leg, and pain on pressure on the inguinal region, accompanied with slight symptomatic fever.

I at once diagnosed the case to be one of lymphatic inflammation.

*Treatment.*—After placing the animal in a good ventilated stable, I administered a  $\zeta vj$  dose of physic, and ordered the swollen limb to be well fomented with hot water, the body clothed and the animal's diet to consist of bran mashes and hay-tea.

January 15th.—I found the mare much worse; pulse accelerated, hard, and oppressed; the *left* hind leg was now much swollen and painful to the touch. She refuses all food; is slightly purged, the fæces being slimy.

Administered Tinct. Aconite  $\mathfrak{m}x$  in water, to be followed with smaller doses every six hours. Ordered hot fomentations both hind legs. I also prescribed—

Aloes,  $\zeta xij$ ;  
Pot. Nit.,  $\zeta iij$ ;  
Lini Sem. Pulv.,  $\zeta iij$ ;  
Sapo Mollis, q. s. pro  $vj$  balls.

One to be given every night and morning.

16th.—Animal appears a little easier; has drunk a little hay-tea; pulse not so quick, and extremities less painful.

17th.—Animal continues to improve; eats a little bran

mash; fever greatly subsided; extremities less swollen and painful.

18th.—Animal appears a great deal better; begun to walk round her box; appetite better. Continue balls as before.

19th.—Ordered walking exercise; appetite improves; looks livelier; swelling of limbs considerably decreased.

20th.—Animal walks sound; instructed the owner not to give too much food until she gets stronger. Treatment discontinued.

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## SUCCESSFUL TREATMENT OF TETANUS WITH ACONITE.

By J. W. HILL, M.R.C.V.S., Wolverhampton.

ACONITE as a medicine in veterinary practice is with many of the profession no favorite agent, while, on the contrary, by others it has been, and, I think, justly so, strongly advocated, particularly in those diseases where spasmodic action of the muscles from a highly irritable condition of the nervous system exists, as well as in cases where inflammatory action runs high. Lately, I have had an opportunity of trying its effects in that generally fatal disease, tetanus, and I am happy to say with most successful results.

The chief property of aconite being to subdue nerve force, it is not surprising that it should allay that extreme nervous excitation which is one of the leading symptoms of tetanus.

On December 19th, 1870, I was requested to attend at F. Sparrow's, Esq., of Trysull, to examine a nearly thoroughbred grey mare. Upon my arrival I found the animal in question to be suffering from tetanus; the muscles of the head and neck, and, in fact, the whole of the muscles of the body, were more or less in a state of spasm. The head was held straight out and fixed, as it were, in a vice, and if attempted to be moved a protrusion of the membrana nictitans over the eyes was the result. The ears were erect, the tail quivering, pulse rapid and small; the mare could, however, open her jaws to the space of about an inch. Upon questioning the attendant I learnt that she had been in this state since the previous Wednesday, after having had a hard day with the hounds. Five days had thus elapsed before calling in professional aid, the owner being from home. I immediately had her removed to a loose box quite apart from the other

animals, she being then in company with two more horses in a three-stall stable.

My attention was now directed to a bruise upon the withers caused by the saddle. There was a scab on the injured part, with detached edges, having the appearance of a "sitfast." I removed this with the knife, and ordered a piece of flannel steeped in hot water to be placed over the part. I then administered a cathartic in the shape of six drachms of Barbadoes aloes in solution, and next applied a strong mustard plaster along the course of the spine, and left strict orders for the animal to be kept perfectly quiet until I saw her again, the diet in the mean time to be sloppy mashes and gruel.

20th.—The medicine had acted mildly; the bowels being only gently relaxed without purgation. If anything, the mare was a little calmer and the pulse firmer. Upon examining the wound I found a small sinus about an inch and a half in depth, running in a forward direction; this I dressed as before with nitrate of silver, and ordered the hot fomentation to be continued. I then administered ten minims of Flemming's Tinct. Aconite in half a pint of warm gruel, and left another dose for the evening; diet as before.

21st.—A slight improvement; jaws a little more relaxed; the animal had dunged and urinated, and partaken tolerably well of gruel and mash; the muscles of the head and neck were still very rigid, also those of the back. I renewed the mustard application, over which I placed a newly flayed sheepskin; left the same medicine as before, and dressed the wound as previously.

22nd.—Animal better; wound looking healthy and granulating fast; pulse stronger; the patient not so excitable, and able to open the jaws sufficiently wide to take in a little solid food. Ordered the sheepskin to be replaced by a fresh one on the following day. Diet as before, with the addition of a few carrots and a little steamed hay, which she readily partook of; in fact, her appetite was a marked symptom for good throughout. The aconite was administered as usual, viz. ten minims morning and evening in half a pint of thin gruel. Twice when the excitability seemed greater the dose was increased to twelve minims.

This treatment I pursued until January 4th, with the occasional administration of an aperient. By this time the wound had thoroughly healed, and the jaws, together with the muscles of the head, neck, and body, had almost assumed their natural state. The membrana nictitans still protruded slightly, and the patient was a little stiff in turning. I now put her under a course of tonic treatment, viz. Tinct. Ferri Sesqui-

chlor.  $\zeta$ iv, and Tinct. Gentian. co.  $\zeta$ ij, twice a day, in half a pint of linseed tea.

On the 13th there were no symptoms of tetanus remaining, but the mare was still a little stiff about the hind quarters. I ordered that the medicine should be given only once a day, and directed that she should be walked out for about ten minutes each morning.

On the 20th the medicine was ordered to be given every other day. I saw the animal for the last time, on the 31st, when all treatment was discontinued, as she had quite recovered.

It may be observed that the dose of aconite was small, and the time that elapsed between each dose considerable, but I may mention that I do not agree in giving doses of sedative medicine in tetanus every three or four hours, as I believe quietude has a vast deal to do with our success in such cases. If we get the excitement consequent upon being disturbed the first thing in the morning calmed by one dose of medicine, and the same again the last thing at night, we most assuredly obtain all that is desirable as far as the action of sedatives is concerned, for we cannot administer these or any medicine without creating some degree of excitement, and therefore care should be taken to avoid disturbing the animal oftener than we can possibly help.

I must apologise for trespassing at such length upon your valuable pages, but thought the case might not be uninteresting to some of your readers.

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## HERNIA OF UTERUS IN A BITCH, THE PROTRUDING PORTION CONTAINING A FŒTUS.

By T. CORBY, M.R.C.V.S., Hackney.

ABOUT the middle of February a small terrier bitch was brought to me, for the purpose of being destroyed, in consequence of the existence of a large tumour just posterior to the hindermost mammary gland, on the left side, the contents of which appeared to be irregularly solid and partly movable. The application of pressure caused considerable pain, besides which the bitch was constantly straining, as if apparently requiring to urinate; small quantities of urine however were only passed, mixed with some fetid and brown-coloured matter, from the vagina. She was an old animal, had lost all appetite, and was in an emaciated condition.

The history given me of the case was that, about nine months ago, the bitch had a litter of pups, soon after which a swelling, about the size of a walnut, was noticed at the site of the present tumour. The enlargement continued almost unaltered in size until about four months ago, at which time she was missed from her house for a few days. Soon after her return the tumour began to increase in size, and the other symptoms now present to slowly develope themselves.

By manipulation a round hard body could be felt, partly composing the tumour, which, considering the history of the case, the form of the enlargement, and the nature of the vaginal discharge, I came to the conclusion was the head of a fœtus.

It having been determined to operate, with a view if possible of still prolonging the animal's life, she was put under the influence of chloroform and the tumour opened. It was found to contain a considerable portion of the uterus, with one dead fœtus in it, having the head and fore parts entire. The hinder portion of the body was, however, broken up by decomposition, the parts remaining being very putrid and rotten. After removing the fœtus I endeavoured to return the uterus into the abdomen, but it was so swollen and thickened throughout that I could not do so, and as her owner did not wish her to suffer any further pain she was destroyed. On further examination the bladder was found not to be included in the hernia, but greatly distended by pressure of its neck between the brim of the pelvis and the anterior part of the vagina. Besides these lesions there was little else which requires special mention. Allied cases to this, in which hernia of the uterus exists at the base, as it were, of one of the mammary glands, are not uncommon, and are, I believe, usually met with in old bitches. This is the first case coming under my notice in which the protruded portion of the uterus contained a fœtus. You may not, perhaps, think this case of sufficient importance to find a place in the *Veterinarian*, but, if otherwise, it is at your disposal.

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## PYÆMIA AND EMBOLISM, AS A SEQUELÆ OF STRANGLES, IN A COLT.

By JOHN GERRARD, M.R.C.V.S., Market Deeping,  
Lincolnshire.

ON the 18th of January last an order was left in my absence, by a farmer's son, for me "to come over and see a young

horse that had since yesterday been unable to rise, and appeared as if he was going to die." Fulfilling the injunction of this problematic message, I rode over next morning, taking with me my dissecting-case, to ascertain the cause of death, deeming it useless to provide myself with any medicine for a horse which was "going to die," more especially as neither symptom nor history had been given whereby to indicate the nature of the affection.

On my arrival I found the animal still alive, but lying prostrate on its right side. The breathing was slow; pulse almost imperceptible; mucous membranes pale and blanched; extremities cold, more especially the left hind one, which was also slightly swollen, as was also the sheath. The skin was hard, having a great tendency for sticking to the bones and tissues underneath. It was swarming with insects of the genus *Trichodectes*, thus making the application of the ear to the side rather an unpleasant act.

The animal's head was outstretched, and he continued to mumble a bit of hay or carrot when put into his mouth, but was almost unable to swallow it. The breath very fetid. The fæces and urine were said to be normal. Auscultation indicated extensive disorganization of the inferior and posterior part of left lung. On placing my ear behind the shoulder, below the median line, a cavernous sound was audible. Percussion gave a dull sound in the postero-inferior part of the chest, while below the median line, and about from the ninth to the thirteenth rib the resonance was so considerable as to indicate the existence of a complete void, or the absence of any lung substance whatever. He did not cough while lying, but a slight pinch of the larynx produced a low, soft, sepulchral noise, accompanied with the ejection through the nostrils of a quantity of fetid, flaky pus and mucus.

Owing to his extreme leanness the beat of the heart was distinctly heard, weak, but irregular; the impulse against the side of the chest was considerable, and a blowing noise followed the second sound. The horse being lifted up manifested considerable dyspnœa, which soon, however, wore off, and the animal began to take food. He could only stand with difficulty, and had to be supported while I examined the right lung, which was also evidently diseased, but not to the same extent as the other.

*History.*—About four months ago the animal had an attack of strangles, the abscess matured slowly, and bursted in the usual place. No notice was taken of his illness. He continued to do very badly, but, nevertheless, was kept in the "crewe-yard," on little more than wheat-straw and water. As

his illness increased he was removed into a loose box, and fed on carrots, linseed gruel, and cut hay, but no improvement followed. A few days before I saw him he became lame.

*Diagnosis.*—Disease of heart and lungs, the result of strangles.

*Prognosis.*—Death.

Being an entire, three quarters bred colt, of good symmetry, the owner was anxious, notwithstanding my unfavorable opinion, to have him placed under medical treatment, alleging that "he could not surely die while he continued to eat." Remonstrance was in vain. I must give something, principally, I suppose, as a solatium to his own conscience for having neglected him so long. I therefore prescribed a diffusible stimulant and tonic draught.

He died in about thirty hours after my first seeing him.

SECTIO CADAVERIS ten hours after death. Rigor mortis very feeble.

On removing the integument a fistulous opening, about the size of half a crown, was observable between the jaws, from which a quantity of ichorous pus exuded. The pus had also insinuated itself between the muscles of the larynx and skin, extending down to the axilla, the glands of which were enlarged and suppurating. It was singular that the purulent matter seemed to have a tendency to extend in the line of the blood-vessels, and to attach itself to them, similar to crystals on a glass rod in a saturated solution of alum.

The cellular tissue surrounding the sheath in the left groin and down the left leg was infiltrated with serum, while the right leg seemed blanched and white. This peculiarity attracted my attention, and led me to examine the condition of the blood-vessels. The glands in the groin were large, but not in a suppurative condition. The kidneys were enlarged, and on section they presented a whitish mottled appearance. Their pelvises were dilated, and contained a quantity of pus-like fluid. The liver was large, of an olive-green colour, and soft in texture. On section it was found to contain a number of yellowish-white masses, varying in size from a small pea to a walnut. In the substance of the right lobe a cavity about the size of a large cocoa-nut existed; it was filled with blood and partially disintegrated hepatic substance. The peritoneum covering the diaphragm showed fungus-like projections or nodules of irregular form, flattened on their surfaces, of a yellowish-white colour. They had a cheesy consistence, and were streaked with vessels externally. The spleen was large, but not of unnatural consistence or colour. All the rest of the abdominal organs were healthy,

with the exception of the mesenteric glands. These were enlarged, but did not contain any pus.

On cutting through the aorta and vena cava fluid blood rushed out; but on opening the iliacs I found that the right external one contained several fibrinous clots, and that at the bifurcation of the arteria profunda and femoral arteries a firm clot completely blocked up the passage through these vessels. These clots were of various sizes and shapes; they had a fibrillated structure, and presented an appearance of having been detached from some point of formation. The vessels were to all appearance healthy, and the clots had no attachment to their walls.

The arteries on the left side were pervious. The blood in the abdominal aorta and its branches was fluid. In the left iliac veins it was firmly coagulated, even down to the femoral and popliteal and smaller veins leading into them. Throughout the entire body the blood seemed to have a tendency to separate into two portions—a brick-red and a yellow portion. In some parts of the veins the clot was formed of one colour, principally the red; in others red and yellow, the yellow being always superficially placed.

*Thorax.*—A quantity of straw-coloured fluid was contained in the pleural sacs, and the surface of the lungs presented, in some places, an indurated, and in others an emphysematous condition. In the infero-posterior part of left lung a cavity, communicating with a large bronchus and lined by a smooth membrane, and containing a quantity of muco-purulent fluid similar to what was in the trachea, was found. Throughout the substance, also, of the lung a number of smaller cavities, communicating more or less directly with each other, existed. The infero-posterior part of right lung was indurated and hepatized. On section it presented a number of tubercular spots, composed of cheesy-like matter. In its antero-superior part masses, varying in size from a hazel-nut to that of a chestnut, of a dirty-red colour, existed. In no part of the chest was the pleura found to be adherent to the walls of the cavity, nor did it show any signs of inflammation.

The heart was much enlarged, the pericardium was thickened, and contained an unusual quantity of fluid. The hypertrophy of the heart was most marked towards the base of the left ventricle; at the apex it was normal; the *carneæ columnæ* and *chordæ tendineæ* were thickened and studded with a number of fibrinous clots. The aortic valves were thickened, hard, and inelastic, especially at their free borders, on which were also a few aggregations of fibrinous granulations. The mitral valves were roughened by deposits of

similar matter; the walls of the right ventricle more uniformly thickened and firmer than natural. The cavity contained a coagulum which extended through the auricle into the vena cava; it was of a similar colour and consistence to that found in the iliac veins. The lining membrane of the trachea and larynx was healthy. The brain and spinal cord were not examined.

Whether I am right or wrong in the designation of this condition of body I shall leave more enlightened correspondents to say. The case, however, is one of great interest to the pathologist, and would form a fitter subject of speculation for a Virchow than a country veterinary practitioner. Unfortunately for our science, we have to look at it too much in a commercial aspect; and our limited opportunities often render us unable to take advantage of such cases as this, and deduce from them the lessons which they are capable of teaching.

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## THE PRINCIPLES OF BOTANY.

By Professor JAMES BUCKMAN, F.G.S., F.L.S., &c. &c.

(Continued from p. 177.)

THE next *Order* of the *Glumal Alliance* which will come under our notice, is that of *Cyperaceæ* or *Sedges*; and as many of these at first sight have so much the appearance of grasses, and yet are so distinctive, both in their feeding properties and agricultural indications, it will perhaps be as well to distinguish them at once, as a means to which the following may be sufficient for practical every-day purposes:—

### GRASSES.

The stem—*culm*—of grasses is cylindrical and fistular, and divided into lengths by the intervention of *nodes*—knobs.

The leaves fold over the stem by a sheath. Thus the leaves are split-sheathed.

Some few species have creeping scions—rhizomata.

### SEDGES.

The stem never hollow—very generally angular—in sedges triangular, not partitioned by nodes.

The leaves have tubular or whole-leaf sheaths, by which the stem is surrounded.

Creeping scions—rhizomata common.

It has already been remarked, that many species of grasses affect poor wet and unsound pastures, and are hence indica-

tive of the quality of the meadow, These are mostly of the rougher kinds; and it is in this way that the sedges are approached by poor grasses, the herbage of which is usually of a glaucous colour, in this respect simulating the sedge. They have much the same habits as the poorer grasses: which are usually accompanied in a meadow by different species of sedges.

Sedges, like grasses, seem to be capable of accommodating themselves to very varied physical conditions being, as expressed by Professor Lindley, "Found in marshes, ditches, and running streams, in meadows and on heaths, in groves and forests, on the blowing sands of the sea-shore, on the tops of mountains, from the arctic to the antarctic circle, wherever Phænogamous vegetation can exist." Humbolt remarks that, in Lapland, sedges are equal to grasses; but that thence from the temperate zone to the equator, in the northern hemisphere the proportion of sedges to grasses very much diminishes.

The better kinds of pasture grasses are remarkable for the quantity of sugar which they contain, while the poorer forms have in the place of sweetness a bitter extractive principle, rendering them unpalatable to cattle. This quality, which is exceptional in grasses, is an abiding characteristic of the Cyperaceæ. To this bitter in some species is added demulcent and diaphoretic properties, on which account the rhizomata of *Carex arenaria*, *disticha*, and *hirta* are used in medicine under the name of German Sarsaparilla. It is doubtless often sold and used for this drug, the incautious pharmacist not recognising the difference between the rhizomata of *Smilax Sarsaparilla* and *Carex arenaria*; and it is not improbable that after all there may not be much difference in their active principles, whatever these may be, as we conclude them both to be remarkable for the absence of activity.

This rhizomatous habit has caused some species of sedge to be highly valued for their property of keeping together banks of rivers, and preventing the incursions of the sea.

Thus the banks of the Ganges are protected by *Carex inundatus*; whilst in Holland, the *Carex arenaria*, according to Royle, "is carefully planted on the dikes, where its far-extending roots, by mutually interlacing with each other, fix the sand and give strength to the embankment."

The fitness of these so-called roots for their purpose may be judged from the fact that we have traced them, and indeed carefully abstracted them, as much as thirty-six feet in length.

Some of the family are extensively used for various manufacturing and domestic purposes; hence the genus *Papyrus*

will be well-known for the floor-cloths, baskets, mats, paper, &c., that are made from its species in different parts of the world; and of our home forms, rushes of various kinds are not without their uses.

Of the genus *Scirpus*, to which the different species of rush belongs, it may be well to remark that its agricultural indications are equally well marked with those of the *Carex*; they are, however, more partial to wet clays, while the latter for the most part affect wet sands.

If, then, we see rushes growing by the road-side, or in the meadow, they afford evidence of sub-stratum of clay, and thus they often aid the geologist in making out the boundaries of clay formations; whilst as long as the meadow contains a single tuft of rush, it is not only an evidence of a stiff soil, but that it requires draining; and so certain is the action of a drain beneath a bed of rushes, that its perfection may be judged by the rapidity with which all such objectionable herbage dies out.

Even irrigated meadows will not contain rushes unless the water stagnates in any part, when rushes very soon appear; in which case the intelligent overseer of these, the "drowner," will at once know what is the matter, and use his best efforts to prevent the stagnation.

*Carices* are not common to water-meadows, as these seem best adapted for poor positions; they however occur in the water courses, and sometimes do mischief in preventing the equable and ready flow of the water. So, also, a whole system of drainage may be vitiated by the water of an exit being kept up by the thickly growing and interlacing sedges. When this is the case they should be removed; and indeed at the present moment we are, in many parts of England, as much in want of legislative enactments to enforce the destruction of these riparian weeds, as they in Holland have for their preservation.

Seeing, then, that sedges and rushes are so valueless in pastures, it may not be improbable that they have something to do with the injuries to stock, which not uncommonly occur where they abound. Thus, in a Report made by us on the herbage of some fields in Somerset, which were, and are still, celebrated for producing splenic apoplexy, we could not resist the following conclusion:—

"As regards the pastures producing splenic apoplexy—these are for the most part in low positions, and subject to floodings from the river Yeo and its tributaries. They are more or less marshy and stagnant. They contain a mass of weeds (*e.g.* the *Ranunculus acris*, *Carices*, *Rushes*, &c.) of

no use, and of grasses so rough and so poor as to be little better than these weeds."

On our own farm we have a pasture on Fuller's earth clay, which, though not very damp, forms a poor pasture, white with daisies in spring, and having a tendency to rushes and sedges. This grows a quantity of herbage in the month of May, but it is nearly all the *Bromus mollis*—lop grass. Here we have lost some two or three sheep from splenic apoplexy, which we never did upon sainfoin clovers and "seeds" of the arable.

These remarks, then, should show those who have to do with animals, that the native herbage of a pasture may have specific effects for good or evil upon the animals partaking of it. It should also show the farmer that he should distinguish not only grasses themselves, but grass allies; for however green a field may look with rough grasses and sedges, or however golden with buttercups, all its colour may be due to plants which affect stagnant conditions, and which are therefore either poor, useless, or positively injurious.

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## SYNOPTICAL OBSERVATIONS ON INJURIES, ETC., OCCURRING AMONGST ARMY HORSES.

By "HIPPOGRIFF," Royal Horse Artillery, India.

(Continued from p. 166.)

No. 4 fell in a slippery stall on the tuberosity of the right ischium, and the trochanterian eminences of the right femur. For the cause refer to "Horse No. 2," under "Heel-ropes." Being unable to rise, he was lifted up. Diagnosis was exceedingly difficult; but it was conjectured the haunch bones were fractured. Examination per rectum afforded no clue, even when the limb was moved in various directions. Weight could be borne on the leg of the affected quarter, and the patient could move about if required, and did so at pleasure, being little inconvenienced, apparently, by the movements of a slow walk. External manipulation gave the slightest crepitation, so slight that we sometimes doubted our opinion, and this was the main symptom from which to diagnose. In this case, as in all similar ones which we have seen, the foot was planted flat on the ground, and the limb was a little advanced. If the horse be suddenly approached, the leg will be snatched up bodily and held there for a time. A difference in

the contour of the injured quarter cannot always be noticed at first. We allowed time for the development of corroborative evidence, and prescribed rest with a curative view. Had we been able to prescribe slings, we should doubt their being of benefit in these cases. (But it is a notable fact that we cannot get slings in India; no one will supply them to the Veterinary Department, though a General Order of some years' standing directs the officer commanding each battery of artillery and each troop of cavalry to provide "one set of slings and two sets of sling-ropes." Whenever they are required, of course a fuss is made, the order *re* and *re-re*-promulgated; the horse dies, or is shot, without his having the chance of being benefited by slings; the order is kept in abeyance till another casualty occurs, and then there's another fuss. It is perhaps as well to remark that these slings are to be paid for out of the captain's troop allowance, and this is where the shoe pinches).

Reverting to our case; three weeks elapsed, during which time the patient became much emaciated though he fed well. Subsequently he gained in condition, suffering less, and moving with greater freedom. The crepitation was now more audible, which, together with the general condition and appearance of the horse, suggested that the chances of his ever being serviceable were nil; he was shot, and the *post-mortem* appearances disclosed a comminuted fracture of the right os innominata. The fractures were not so minute as in the preceding case, and false joints were in process of formation. A large piece of the ilium had protruded into the acetabulum, and by its influence on the head of the femur, the cartilage of incrustation and subjacent osseous tissue had been removed; the rough point of the bone having now become round and blunt. Another part of the head of the femur was also worn away by its attrition on another piece of bone, and it was in this joint, no doubt, that crepitation was more audible than could at first be detected. Ossification of softer tissues was going on round the neck of the femur, along the margin of the cotyloid cavity and in other parts. Several pieces of bone were detached and imbedded in the structures about the obturator foramen. Most of the ligaments of the joint were partially or totally destroyed, and massed together with the products of inflammation.

N.B. When a horse is shot, for the same reason as the above one was, he will, as a matter of course, fall more or less heavily on the affected parts and render matters worse. In noting *post-mortem* appearances it is well to keep this fact in view, and relate accordingly.

No. 5 was a comminuted fracture of the right radius, two and a half inches above the radio-carpal articulation, the main break running in a slightly oblique direction. The horse fell at evening watering parade; under what circumstances no one knew; other particulars were not forthcoming.

No. 6, whilst being trained, took fright and broke away with the limber, in the direction of his stable. On the road the limber wheel came in contact with the parapet of a small bridge and capsized, falling, together with the horse, down a small embankment. In the fall, or when the animal was struggling, the right metatarsal bones were fractured. The fracture was comminuted, its main direction being oblique.

No. 7 was a compound and comminuted fracture of the left tibia, extending obliquely upwards from the inner part of its lower third into the femoro-tibial articulation. This was the result of a kick, received on the inside of the leg when the horses were returning from the water troughs.

No. 8 was a compound and comminuted fracture of the right metacarpus at the upper part of the lower third, where on its inner side it received a kick from the horse in front, an officer's charger, and an animal addicted to kicking. The direction of the fracture was transverse.

The last four cases have nothing very interesting about them, excepting that fractures were sustained by different bones, which, however, does not prove that one bone is more liable to this lesion than another. The tibia is perhaps the most liable to fracture, though we have not found it so.

No. 9 received a severe kick on the upper and outer part of the right metatarsal bones, by which the small outer one was fractured and the large one contused, about three inches below the tarsal joint.

By the frequent discharge of small pieces of bone, it was known that the outer metatarsal was fractured, but to what extent we were unable to say, owing to its anatomical disposition; the wound was very small, and had to be enlarged; fomentations were constantly applied, and the patient was kept as quiet as possible. Slings would have been useful in this case, but we had none, neither had we anything suitable for a substitute. For some days the patient bore weight on the limb tolerably well, after which he suffered much pain that caused considerable constitutional derangement and fever. The three sound legs were now giving way, and we dared no longer to keep his head tied up. He injured the prominent parts of his body by lying down and getting up, often falling in the latter attempt. During thirteen days he wasted rapidly, became very weak, refused to eat, and ceased to

bear any weight on the affected limb, which was excessively swollen by the fifteenth day. The wound had a very unhealthy appearance.

Altogether the horse was a most miserable-looking object, and was destroyed on our recommendation. The metatarsus externus, at its upper third, had sustained a compound and comminuted fracture, the smaller fragments had been discharged by the wound, but the main lesion existed and extended into the tarso-metatarsal articulation, implicating the corresponding facet on the cuboid bone. The metatarsus magnus was slightly indented near the anterior edge of the small bone, and had evidently only received a trifling share of the blow, which must have been delivered from before backwards. Had this case recovered so far as the reunion of the bone is concerned, we are of opinion that lameness would have always rendered the animal unserviceable, as the inner surfaces of the tarsal joint would have been materially involved. The rarity of fracture of the small metatarsal bones renders this case very interesting.

No. 10 was an interesting case of fracture of the right tibia, at its lower part, inasmuch as it exemplifies the existence of a fracture without displacement. The horse was under treatment for a wound on the inner side of the lower part of the right tibia. He had been kicked, and the bone was severely injured. On the night of the fourth day after his admission, though very lame, he attempted to gallop about, having broken from his picket. At the first turn he came to, which was a sharp one, he fell and sustained a compound and comminuted fracture of the tibia, the old wound being enlarged by the protrusion of the broken end of bone.

The appearances after death gave satisfactory proof that the bone had been so far injured by the kick as to incapacitate it for withstanding the concussive force communicated to the limb in galloping and turning, in fact a fracture without displacement had previously existed.

No. 11 is referred to as "Horse No. 3," and was a comminuted fracture of the right os innominata, and differs in no particular to the other two cases we have described.

No. 12. Just as our paper is closed and ready for the mail, another case of fracture of the left os innominata occurs. The native groom who was on sentry this night, Oct. 16th, says he saw the accident happen, and gives the following evidence:—"Horse No. 60 seized the hempen eye fringe (which is about ten inches long) of horse No. 28, standing on his right. No. 28 ran back, broke his head stall, and set himself at liberty, after which he contrived to get his left

fore leg over the neck of No. 60. Though No. 60 was fastened by two head chains, he was forced to his left, and by the successive efforts which he made to dislodge No. 28, he partly drew the right head chain peg. No. 28 was secured by the left hind leg only by a heel chain, and was extended as far as his chain would admit of; as he scrambled off the neck of No. 60, his left hind foot slipped backwards, on which account he fell over on his left hip. He rose immediately after falling, and stood resting his toe on the ground with the leg flexed." All this may be true, but we are of opinion that the horse did not slip backwards. In all probability he was standing on the off hind leg only, his fore parts being supported on the neck of the other horse, whilst the near hind leg was elevated and stretched to its utmost. In this position he was unprepared to assist himself when he became disengaged from No. 60, and thus it occurred that he twisted himself down and over by the left hind leg, which acted from the heel-chain as the fixed point. Had there been no heel-chain, the fracture would not have happened. This is the fourth case of fracture of the hip-bones, caused by heel-ropes, in a period under three years. This horse is a handsome studbred, five years old, and is a loss to Government of something over £120.

From the excessive lameness, disinclination to move, the method of standing with the injured leg advanced, and foot planted flat on the ground, the flattened condition of the left quarters, and the history of the case, we suspected that fracture of the *os innominata* existed. A careful examination by manipulation, externally and per rectum, gave no conclusive evidence until the fourth day, when a very distinct crepitus could be heard under the head of the femur, that is, in the acetabulum, from which the fractures extend in various directions. This is the eighth day after the accident, and, as the case is now very clear, we have recommended that he should be destroyed, being incurable. We may remark that the horse can bear slight pressure on the left leg, but only for a second, when he wishes to move in the box. There are no constitutional disturbances at present; his appetite is as usual. His mode of standing now is with the leg advanced, and the toe only resting on the ground.

The mail closes in a couple of hours, so we cannot wait to give the *post-mortem* appearances, which we shall not be able to get till to-morrow, when a committee will condemn the animal. A special report to Government on heel-ropes and chains would seem to be the next suggestion to carry out. We wonder if it would be appreciated?

The few observations, cursory and commonplace as they are, that we have been led to make, include the daily experiences of three years only. Our tone throughout may be tinged with complaint, and our complaints probably suggest a position of helplessness. It is so natural to growl, that nobody will feel surprised, though our serenity is not ruffled without cause. So much of our profession is in our own hands, and no more; the remainder is dealt out, handed over, or allowed, but we claim no right to the reserve. Things are, however, changing for the better in this country. A professional head has had a good effect. There was a time when we saw fit to shoe two horses in a special manner, but we erred because we had provided for the demands of special cases; the next morning the shoes were removed, and the horses shod according to custom, and not to common sense. Now "veterinary surgeons will exercise their own judgment as to the proper mode of shoeing to be used in exceptional cases." This had to be enforced by a General Order.

Our representations are often unavailing in removing *removable* causes that operate periodically somewhere or other, yet the Queen's Regulations say, "A very important point of duty is to *prevent disease* by reference to predisposing causes, and by the adoption of preventive measures."

*Duty* does endeavour to carry this into effect, but its influence is neither ubiquitous nor omnipotent. We are often without the immediate means to render assistance to our suffering patients. Slings we do not possess, and there are no substitutes, because if Government supplies articles for one thing, they are not supposed to be used for anything else. If we required trephining instruments, we must send to the depôt of medicine, &c., for them, 150 miles away; the same process has to be gone through for getting other instruments, saying nothing about time wasted in sending other hundreds of miles for a countersignature.

A civil veterinary surgeon would feel ashamed were he to operate with a gimlet or a brace-bit, in lieu of so cheap an instrument as a trephine.

In performing tracheotomy a day or two ago, we did not mind employing a simple scalpel; but we think it rather absurd to insert a tube into a horse's trachea that is only fit for the human trachea. There was nothing to keep in the tube excepting the tapes, therefore every time the horse stretched his neck or extended his head, out came the tube.

Suppose we tried to eradicate an evil which time and custom has established, we should be in danger of trespassing on a preserve known as "interior economy," which seems to us

to mean somebody's ideas or convenience, routine or red tape. Where there is a charge of about 700 horses, it will be imagined that the veterinary department connected therewith should possess everything requisite for any kind of emergency; however, it does not. We are not conservative enough on this point, but we are leading our lives amongst the grievances which our civil brethren know nothing of, and as a review of the imperfections in the Veterinary Department of the army may not interest them, we beg to retire.

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## Pathological Contributions.

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### CATTLE PLAGUE.

THE liveliest interest has been felt during the past month in the spread of the cattle plague, especially in France, and in neighbouring kingdom of Belgium. So great has been the risk of the introduction of the disease here that the lords of the Council have seen fit to prohibit the importation of cattle and also of "fresh meat, fresh hides, unmelted fat, hoofs, horns, manure, or hay," from these countries. The Order also provides that "cattle, sheep, and goats being, or having been on board any vessel at the same time, with any cattle brought from any such place as aforesaid, shall not be landed at any port or place in Great Britain." Cattle plague has manifested itself not only at numerous places in the northern and western departments of France, and along the vallies of the Sarthe, the Marne, and the Seine, but also in several places in the eastern departments of the country. From the latter the malady was carried to Switzerland, the disease having been detected at the beginning of March at Verrieres in Canton Neuchatel, in sixteen stables containing fifty-two animals. Of these forty-seven were killed diseased and five died. In consequence of this outbreak the importation of cattle, fresh hides, and meat, into Italy from Switzerland, was promptly prohibited by the Italian Government.

Normandy and Brittany are also suffering severely, which has led to preventive measures being adopted by the Channel Islands against the introduction of the disease. An idea of the extent of the plague near to Brest may be realised by the fact that at Morlaix 300 beasts died out of 700, the remaining 400 being killed; and that at Landernau from 2300 to 2500 died or were slaughtered. By order of the Minister

of Agriculture all fairs and markets are prohibited throughout the infected departments, but under existing circumstances it is much to be feared that the disease will continue to spread.

The information from Eastern Prussia is to the effect that the importation from the contiguous Russian provinces of cattle and all articles of commerce, likely to bring in the infection, is still prevented in consequence of the existence of the disease in some Russo-Polish villages near to the frontier. From Warsaw we also learn that the cattle plague has broken out afresh in several places in the southern districts of the Governmental Department of Lublin, besides being prevalent in other parts of Poland. In Galicia the plague is on the increase, and no diminution of it has taken place in Transylvania or Buckowina.

From Trebizond, Asia Minor, we have further information that the disease exists to a greater or less extent over a distance of 150 to 200 miles west of Trebizond along the shores of the Black Sea.

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### FOOT AND MOUTH DISEASE.

FROM the beginning of March down to the end of the fourth week, the time at which we write, only six cargoes of animals, out of the large number which have arrived from the Continent, have been found to have on board a small proportion of diseased cattle. Four of these cargoes came into the port of London, and two into Middlesborough. In each instance the diseased cattle were killed directly on debarkation, and those which had been brought over with them prevented from leaving the confines of the port.

Our information from England and Scotland is to the effect that the malady continues to decline, especially with regard to the number of fresh attacks. Fifty-six counties still contain centres of the disease, but the number of them is now reduced to below 500.

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### BLOOD DISEASES.

THE maladies commonly known as "Black Quarter"—*Hæmatosepsis*—and Splenic Apoplexy still continue very prevalent in some parts of the country. Several of our correspondents attribute this to the too free use of cake, a much larger quantity having been used for feeding purposes than has

been the case in former years, arising from the almost total loss of the hay and turnip crops.

Again our attention has been called to attacks of Splenic Apoplexy being associated with the use of "compound cattle-cake," but we have been unable to satisfy ourselves that this has been anything more than an effect of the injudicious use of it. Dr. Voelker and other chemists have, we are informed, been unable to detect any positively injurious material in the compound alluded to.

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### SCAB IN SHEEP.

SINCE the commencement of the year scab would seem to have been steadily on the increase in Great Britain, and also in North Germany in particular. A few infected animals have been detected in imported cargoes, which have been dealt with in manner to prevent any mischief resulting therefrom. No less than thirty-eight counties are known to be seat of scab, while the infected flocks number upwards of 1500.

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### SABULOUS DEPOSIT IN BLADDER OF A HORSE.

WE are indebted to Mr. J. Reynolds, of Eye, for an interesting and very remarkable specimen of sabulous deposit in the bladder of a horse, weighing no less than 36 lbs.

The organ, as can be easily understood, was much increased in size and its coats thickend. The ureters, the neck of the bladder, as well as the membranous part of the urethra and openings of the vesiculæ seminales, were greatly dilated, having evidently acted as incomplete receptacles for the urine. The animal was a cart-horse, nineteen years old, and although long affected with incontinence of urine and consequent emaciation, it does not appear that any medical attention was given to his case until a short time before death. The deposit differed in no respect from that observed in allied cases, being composed of crystals of carbonate of lime, closely compressed together. No lime salt is more easily dissolved than the carbonate, and had proper attention been given to this case, and injections of dilute mineral acid used at the commencement, there is no reason why a complete cure might not have been effected. Unfortunately, many owners of horses pay little attention to a "thick state of the urine;" but it should be remembered that this is one of the early and more prominent symptoms of sabulous deposit in the bladder of the horse.

## THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

“RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of February, 1871, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	NUMBER OF ANIMALS AFFECTED.					DISPOSAL.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered at place of landing.
Antwerp .	London	Foot-and-Mouth	...	...	...	6	6	6
„	Harwich	„	...	...	...	11	11	11
Bremen .	London	„	27	...	...	...	27	27
Total . .			27	...	...	17	44	44

“ALEXANDER WILLIAMS,

Secretary.

“Privy Council Office,  
“Veterinary Department, 13th March, 1871.”

## AN ANIDIAN MONSTROSITY.

WE have received from Mr. E. Creswell, M.R.C.V.S., Bromsgrove, an interesting specimen of a so-called Anidian Monstrosity, which was given birth to by a white, short-horn cow, two hours after delivery of a healthy and well-developed bull-calf of a roan colour. The monstrosity is round in form and about the size of the crown of a hat. It weighed 1 lb. 2 oz. when coming to hand, but is said to have been of much greater weight and size when expelled from the uterus. It is thickly covered with long and fine *white* hair. The hair is longest and thickest on one side. On the side where the hair is thinnest a nude spot exists at the point of attachment of the vessels of the placental membrane; and in addition to this, not far from the external border of the monstrosity, two other nude spots are found nearly opposite to each other. Both these spots are deeply concave, and of a red

colour; one of them, however, has a slight eminence rising from the centre of the concavity, and is less florid in colour than the other. The whole mass is soft and pulpy, imparting a feel of a fluid being contained in a cell-like structure. There are no external indications of bone entering into the composition of the anidian, nor is sufficient hardness imparted to the feel to lead to the conclusion that osseous tissue exists in its interior. This point, however, must be left undecided, as it has been determined to preserve the specimen entire. Anidian monsters are not common, and their interest is added to when they are found to coexist with a healthy and fully developed fœtus.

### Facts and Observations.

**ESSAYS ON HORSE-SHOEING.**—The readers of the *Veterinarian* will perchance remember that, as announced in several advertisements in this Journal for 1869 and 1870, and as we intimated in a leading article for September of the former year, the Scottish Society for the Prevention of Cruelty to Animals offered three prizes of £50, £30, and £20, for the best practical essays on horse-shoeing.

The adjudicators appointed to examine the essays and pronounce upon their merits were four members of the veterinary profession and four non-professional gentlemen of well-known ability.

These have at length given their decision, and out of more than forty essays, all more or less of considerable merit, have made the following award:

**First Prize (£50).**—George Fleming, Veterinary Surgeon, Royal Engineers.

**Second Prize (£30).**—T. D. Broad, M.R.C.V.S., Bath.

**Third Prize (£20).**—George Armatage, M.R.C.V.S.

We understand that Mr. Fleming's essay, which is copiously illustrated, will be published at an early date; but we believe it is not yet settled whether the other essays will be printed.

**IRON AS A DEODORIZER.**—Dr. Voelcker calls attention to the use of spongy iron as a deodorising material of greater potency than animal charcoal. Sewage water passed through a filter of this substance is completely purified, and this filtered water, after having been kept six months protected from the air, was perfectly sweet, and free from any fungus growth. The spongy iron is obtained by calcining a finely

divided iron ore with charcoal. Mr. Spencer, whose name is connected with the discovery of the electrotype, has for some time been advocating the use of a filter of this description. Its power of rendering water beautifully transparent, and apparently free from all organic matter, is its strong recommendation.—*Journal of the Society of Arts.*

PRIVY COUNCIL INSPECTORS.—We understand that Dr. Thorne, who has been very successfully engaged for several years as an occasional inspector under the Privy Council, and who more especially led to the exposure of the causes of the Terling epidemic, has been appointed to a permanent position under the Privy Council.—*British Medical Journal.*

ENTOZOA AND SEWAGE.—A second paper on this subject has been communicated by Dr. Cobbold to a meeting of the Association of Officers of Health. After the reading of the paper the discussion on the general question was resumed by Dr. Letheby, Dr. Stallard, Dr. Hawksley, Mr. Hawksley, C.E., Mr. Holland, and others, with great warmth. Dr. Cobbold recorded a number of entirely new experiences in reference to the development of *Bilharzia*, showing that the larvæ of this remarkable entozoon could neither develop itself in urine nor live for any length of time in water tainted with the slightest impurity. Condry's fluid, carmine solution, small quantities of sherry or alcohol, and even decaying vegetable and animal matters, quickly poisoned the larvæ. This experience, however, was altogether exceptional; for the larvæ of ascarides and their allied forms of entozoa appeared to be most vigorous when reared in solutions containing mud, decaying matters, and excremental filth obtained from the higher animals.—*Ibid.*

[We give Dr. Cobbold's original paper in our present number, and hope in our next to publish his second communication on this important subject.]

SMALLPOX AND ITS PREVENTION.—At the meeting of the Medical Society of London on February 27th, Dr. Edwards Crisp read a paper on this subject. The subjoined are some of the conclusions arrived at by the author. No deleterious effect is produced on the human constitution by the introduction of cow-pox matter—an inference greatly strengthened by the fact that, since the introduction of vaccination, the population of the United Kingdom has nearly doubled. Government hospitals should be established in the metropolis, in suitable localities, and provided with proper vehicles for the conveyance of patients, and with proper heat-chambers for

disinfection. Looking to the important fact that in the ten years 1851 to 1860, 42,071 deaths occurred in England and Wales from smallpox, and that 37,007 of these deaths were in children under fifteen years of age, the recommendation given by the Privy Council and the London College of Physicians should not be followed; but, where there is danger of infection, children of all ages should be revaccinated. There is no sufficient reason why lymph during the time of an epidemic, when it is often difficult to procure it, should not be taken from adult persons, provided they are free from disease, and the vesicle presents a normal appearance. More extended observation is needed before we come to the conclusion that the amount of exemption from smallpox depends upon the number of marks upon the arm from primary vaccination.—*Ibid.*

DISINFECTION OF BATTLE-FIELDS.—*Brussels.*—In the Belgian Parliament to-day, March 8th, the Government stated, in answer to a question put, that three persons had been appointed to communicate with the municipal authorities at Sedan in order to take measures to disinfect the battle-fields. The municipality had promised the gratuitous help of workmen, and the measures have already begun to be put into execution. Steps will also be taken to recover from the bottom of the Meuse the carcasses of horses, and it is hoped the district will be protected against an epidemic.—*Echo.*

WOOL PRODUCT OF CALIFORNIA.—The production of wool in California, in 1870, exceeded 20,000,000 lb. The average price was about twenty cents, the whole clip being worth 4,000,000 dollars. It is estimated that 1871 will see an increase of 25 per cent. in the quantity produced.—*Journal of the Society of Arts.*

A NEW MACHINE for taking off the hides of dead cattle will shortly be tried at Buenos Ayres. The operation is short, sharp, and decisive, requiring only a minute for each hide. Cold air is forced by a pump between the flesh and the hide, and the thing is done. The process ought to be an improvement on the old hacking and scraping system.—*Brazil and River Plate Mail.*

## THE VETERINARIAN, APRIL 1, 1871.

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Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

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THE REPORTED OUTBREAK OF PNEUMONIA AMONG  
DUTCH CATTLE.

IN the last number of the *Veterinarian* we referred to a reported outbreak of pleuro-pneumonia among some cattle which were landed in the latter part of January from Holland, and taken to the layers of the Metropolitan Cattle Market, where, "on careful inspection," so the report ran, several of the animals were found to be affected with the contagious malady known as "lung disease." A statement so positive in terms naturally attracted attention, and even led to a question being put to the Vice-President of the Council in the House. The answer which was given accurately expressed the results of the inquiry which was instituted immediately upon the publication of the letter containing the statement referred to from the Secretary of the Home Cattle Defence Association. "So far as could be ascertained, the statement was entirely without foundation."

The originator of the report, in his reply, explained that the information had been given to a member of his Association by Mr. Alexander, a salesman, who was interested in the cattle. Mr. Alexander has stated to us, verbally and by letter, that he gave no such information to any persons, for the reason that he was ignorant of the event having occurred; but assuming, as we did, that Mr. Alexander had told some one, who afterwards told the Secretary of the Association, that certain Dutch cattle had been killed in the lairs, or adjacent thereto, on account of being the subjects of pleuro-pneumonia, the question arises, is this kind of unmeaning gossip all that the Association requires for the foundation of its alarming reports? Does the Secretary of the Home Cattle Defence Association recollect that a few weeks ago there was a report of the detention of a cargo of *Dutch cattle*, on account of cattle plague at Harwich? *A port where no*

*cattle of any kind are landed.* If his memory fails him in this particular, he will find the editorial statement of the circumstance in the Journal for February 20th, 1871. Was this information obtained from a *very reliable source*, and do the authors of the hoax even now make merry over the success of their trick?

With the explanation which attributed the report of slaughter of diseased cattle in the Islington lairs to one of the salesman, the matter might well have ended; but the Secretary to the Home Cattle Defence Association followed his account of the origin of the report by a letter to the *Agricultural Gazette*, in which he put the following query:—  
“Is it a fact that on or about the 22nd of last month three cattle from Holland belonging to Mr. Kerdell were, by order of Mr. Rayment, Inspector at the Metropolitan Cattle Market, taken to a slaughter-house adjoining the lairs and there killed? And if so, on what ground did Mr. Rayment order them to be slaughtered?”

It would seem that the question might consistently have been addressed to Mr. Rayment, who could have readily answered a question of so simple a kind; however, with a desire to gain the required information, we applied to Mr. Rayment, and also to Mr. Kerdell, the owner of the cattle, and we have before us their replies.

Mr. Rayment states that none of Mr. Kerdell's cattle were condemned by him on any account; that they were neither slaughtered nor removed from the lairs by his order. On the contrary, they were removed with the usual market passes by the butchers who bought them.

Mr. Kerdell asserts that his cattle were inspected by Mr. Rayment while they were in the lairs, and that none of them were condemned by him, but all were sold in the usual manner.

Further, in support of these statements we may add that we have seen the list of the names of the butchers who bought the animals.

The editor of the *Chamber of Agriculture Journal*, in alluding to the possibility of Mr. Rayment and Mr. Kerdell denying the truth of the report of cattle having been killed

in consequence of pleuro-pneumonia, remarks that a certain amount of mystery will be attached to the case; we must confess that we fail to perceive the mystery.

After the story of the cattle detained at Harwich we shall not be surprised to hear of an outbreak of the Siberian pest among foreign cattle landed at Battersea; in fact, it is a subject of wonder that no one has yet pointed out the obviously close connection between the importation of foreign cattle and the potato disease; but with all this we must submit that a little mixture of fact, in reports which are calculated to excite apprehension, is always to be desired.

There is no wish on our part to keep the public in ignorance of outbreaks of disease at home or abroad; indeed, our pages every month contain accounts of such outbreaks; but we protest against the publication of astonishing statements upon insufficient evidence. If we are receiving animals affected with lung disease from Holland or elsewhere, by all means let us know it. If the inspection at any of the ports is so inefficient that animals in a diseased condition are allowed to pass, to be detected a few hours afterwards by a more competent person, the remedy is simple; but broad assertions, which reflect upon professional reputations and raise a question of the propriety of continuing importations of cattle from an important country, should be based upon something more reliable than the unmeaning talk of persons to whom the temptation to tell a "good story" to a confiding listener is often too strong for their love of truth.

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#### THE CORPORATION OF LONDON AND THE PRACTICAL EXAMINATION.

WE are requested to state that the Council of the Royal College of Veterinary Surgeons has made satisfactory arrangements for carrying out the practical examinations. Having failed to obtain the consent of the Governors of the Royal Veterinary College to conduct the examinations within the walls of that Institution, the Council applied to the Corporation of London, which has, through its Markets Committee,

gratuitously placed the extensive cattle lairs and market area at Islington at the disposal of the Council. This boon is rightly considered by the Council as one of which it may well be proud, exemplifying, as it does, that the authorities of the first city in the world are resolved to do their utmost to advance the progress of the profession. The accommodation is far greater in every respect than can possibly be required; an unlimited number of cattle and sheep will be at all times at the command of the examiners, and besides this, the nearness of three of the largest horse-slaughterers' premises in the metropolis offers great advantages; and we learn that arrangements have also been completed with regard to a supply of horses for the use of the Examiners which are most satisfactory.

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### Extracts from British and Foreign Journals.

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#### PROFESSOR FLOWER'S HUNTERIAN LECTURES ON THE TEETH AND ALLIED ORGANS IN THE MAMMALIA.

*Delivered at the Royal College of Surgeons of England.*

THE formation of the permanent teeth commences at a very early period, almost at the same time with that of the milk-tooth. The process has been chiefly observed in man. A small bottle-shaped mass of cells is cut off from the enamel organ of the milk-tooth, and gradually becomes lower and lower in position until it is placed below the sac of the milk-tooth, to the upper part of which it is connected by a pedicle or neck conveying blood-vessels. It was formerly believed that the permanent tooth was formed in a depression at the side of the dental groove; but this appearance of depression was produced by the removal of the epithelium in the process of preparation.

The process of formation of the permanent tooth is the same as that of the milk-tooth. The former is, when fully calcified, separated from the latter by a thin bony septum. When the second dentition is about to take place, the root of the milk-tooth assumes a worm-eaten appearance, the depressions being filled by a highly vascular material derived from

the alveolar periosteum. Absorption is effected by means of a large number of cells developed on the surface of the root; and this goes on till the whole root is removed. At the same time, the bony septum between the temporary and permanent teeth is absorbed, and the milk-tooth drops out. In some instances, the milk-teeth remain with their roots scarcely diminished, while the permanent teeth are taking their place.

The permanent teeth are connected with the milk-teeth only, as described, through the enamel-organ: in all other respects, they are quite independent. A milk-tooth may be entirely wanting; and yet the permanent tooth which should replace it will appear at the proper time.

With regard to the precise relations of the temporary to the permanent tooth, opinions are not as yet settled. Owen holds that the permanent true molars are a continuation backwards of the milk-series. Mr. Flower, however, dissents from this. In animals which have the milk-teeth functionally developed, these are an epitome of the permanent set; the last milk-tooth being a copy of the last permanent tooth; and, in placing the two sets side by side, we see a break in the temporary molar series. Again, where the milk-teeth are only rudimentary, it is difficult to believe the last molars to belong to that series. The Marsupials have only one small temporary tooth on each side of the jaw; in a young Thylacine, this has been found about to be shed when all the other (permanent) teeth were developed. It is difficult, then, to avoid the conclusion that the last true molars belong to the permanent set.

While there are several instances in which the milk-teeth are merely rudimentary, the permanent teeth being well developed, there is not one known example of the converse. The milk-teeth are—if the expression may be used—super-added to the permanent set, and belong to a high grade of development.

Nearly all Mammalia have teeth. In Monotremata, they are not calcified; and even in Edentata they are not entirely wanting. Cetacea can scarcely be said to have no teeth, inasmuch as even the Whalebone-Whales possess rudimentary teeth at some period.

The number of teeth varies much among the Homodonts. The Great Anteater has 98; and there is a species of Dolphin which has 220—the largest number that is known. In Diphyodonts or Heterodonts, the typical number is 44; and this is rarely exceeded. There is a fox-like animal which has 48; and there are a few instances of excess among Marsupials, some

having 54. Some Cetacea (Homodonts) have the smallest known number; the number in the Narwhal being apparently reduced to two in the lower jaw, there being none in the upper. Among the Heterodonts, the Elephant has only two incisors in the upper jaw, and never more than 28 teeth in all; the common rat has 20 teeth; and in an Australian Rat there are only 12, there being one incisor and two molars on each side of the jaw.

It is not possible to arrange the teeth of Homodonts in series and give them names. In a genus of Edentata (*Dasypus*), a special tooth is implanted in the præmaxillary bone, and may be called an incisor; and the Two-toed Sloth has on each side a greatly developed tooth, which, however, it is difficult to identify with the canine tooth of Heterodonts.

The names given to the groups into which the teeth of Heterodonts are divided must be regarded as arbitrary. The term incisors is applied to the front teeth, whatever may be their shape and function, which are, in the upper jaw, implanted in the præmaxilla. It must be remembered, however, that this connexion with the bone is only a secondary matter, the teeth originally belonging to the gums. Some teeth, indeed, are implanted in the suture between the præmaxilla and maxilla. In nearly all placental Mammals, there are not more than three incisors above and three below on each side; and the number is frequently even less. Excess over the typical number is very rare till we come to Marsupialia, where they may be four or five on each side.

It has been supposed that, when the number of incisor teeth is reduced, the missing tooth is that on the outer side. The Pig has three incisors, the Babyroussa two, on each side; and there is no doubt that it is the outer tooth which is wanting in the latter. In the Camel and Llama, however, there is a single permanent incisor placed far back, which must correspond to the third. In Bears, there are ordinarily three incisors on each side; but there is a genus in which the first in the upper jaw has disappeared. In the Sea-otter, also, the first incisor is wanting. The rule which has been referred to is, then, not absolute.

No satisfactory definition of a canine tooth can be given, except that it is that which lies behind the intermaxillary suture, and that the lower tooth passes behind the upper one.

The remaining teeth—molars—are divided into false and true, according to Owen. The false molars, or præmolars, replace the milk-molars; the true molars have no predecessors. This definition must, however, be modified, as

some of the præmolars do not actually replace temporary teeth. The typical number of molar teeth is 7; viz. in placental Mammals, præmolars 4, true molars 3; in Marsupials, præmolars 3, true molars 4. When the number falls short of this, the deficiency seems to be in the front præmolars and the posterior molars. But there are, no doubt, many exceptions, as has been pointed out by Owen himself. The four præmolars are rarely all present in Bears; and the missing tooth is the second or third. In some Bats, also, one of the middle præmolars is very small, and entirely disappears in some animals of the group.—*British Medical Journal*.

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### PAROXYSMAL HÆMATINURIA.

At a recent meeting of the Clinical Society of London, Mr. Paget, President, in the Chair, *Dr. Pavy* read notes of a case of paroxysmal hæmatinuria, and exhibited specimens of the urine. The patient, previously in good health, was seized, after exposure to cold, with nausea, and passed urine porter-like in colour. He was sent to bed, and the urine gradually became natural. Eleven days after he was again exposed to cold, and a relapse occurred. The urine in these paroxysms contained coloured granules and oxalate-of-lime crystals, but no blood-corpuscles and no casts of tubes. *Dr. Pavy* spoke of the affection as one characterised by well-defined symptoms quite distinct from ordinary hæmaturia, and said that the attacks always followed exposure to cold. He had a characteristic case just then under his care in Guy's Hospital (Philip ward, No. 43), who could be visited by members interested in the subject.

*Dr. Broadbent* described a case of the kind. He had not found oxalates, and did not attach importance to their presence.

*Mr. Gant* related an instance which illustrated the effect of emotional causes in sometimes giving rise to these symptoms.

*Mr. T. Smith* spoke of a patient who gets hæmatinuria after eating rhubarb-tart, and in whom it would seem to arise from the passage of oxalate-of-lime crystals through the kidney.

*Dr. Greenhow* remarked that cases are often entitled paroxysmal hæmatinuria which have no right to that appellation. He had always found oxaluria in cases of this disease. It should be noted that it is the colouring matter of blood, and not corpuscles, which is met with in true cases,

and that the albumen is usually soluble in an excess of nitric acid.

*Dr. Down* referred to an instance of intermittent albuminuria characterised by rigors, and followed by the presence of albumen and oxalate of lime in the urine, but no renal casts.

*Dr. Wiltshire* thought the disease was allied to one affecting cattle much exposed to cold in pastures, and called "red water." He added some personal explanations in reference to a paper read by him at the Society a short time since.

*Dr. Pavy*, in replying, did not think that Mr. Smith's case could be properly considered one of paroxysmal hæmaturia. He had usually, but not always, found oxalate-of-lime crystals.—*The Lancet*.

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#### ENTOZOA IN RELATION TO PUBLIC HEALTH AND THE SEWAGE QUESTION.\*

By T. SPENCER COBBOLD, M.D., F.R.S., F.L.S.,

Correspondent of the Academy of Sciences of Philadelphia.

MR. CHAIRMAN AND GENTLEMEN,—On taking part in the discussions at this Association following Dr. Letheby's valuable papers, communicated during the last and present sessions, one could not help observing how divergent were the opinions entertained on the subject of parasitism, more particularly in relation to the sewage irrigation question.

That the causes of such diametrically opposed conclusions as were then put forth should remain unexplained seemed to some of us highly objectionable; and, therefore, in the hope of clearing up a few of the difficulties then expressed, and in response to the officers of the Association, who did me the honour to suggest a communication, I have drawn up the following brief remarks:—

Since the Secretaries of this Association delivered their report for the year 1869-70, an extended 'Digest of Facts relating to the Treatment and Utilisation of Sewage' has been prepared and published, under Prof. W. H. Corfield's name, for the Committee of the "British Association for the Advancement of Science." This work is of great value; and if thus, at the outset, I allude to Dr. Corfield's labours, it is not with the view of criticising the general accuracy of the volume, but rather with the intention of taking excep-

\* Read before the Metropolitan Association of Officers of Health, January 21, 1871.

tion to certain remarks made in the final chapter, wherein the writer deals with the "influence of sewage-farming on the public health." In this place particular allusion is made to the discussion which followed Dr. Letheby's paper, read on May 21, 1870, the author likewise referring to the *brochure* written by myself in 1864.

Professor Corfield demands, and is entitled to demand, facts in support of the general conclusions which Dr. Letheby and myself have arrived at respecting the probable spread of entozootic disease by sewage irrigation; and because the data which I have at various times advanced in this connection do not happen to be of the very palpable kind that any ordinary observer may detect, he, somewhat imprudently, perhaps, gives prominence to the statements of Mr. Holland, who, on the occasion of the discussion alluded to, expressed his belief "that the danger of spreading disease by the irrigation system was purely imaginary."

In order to estimate rightly the importance of this sort of criticism, it is necessary to consider the question from Mr. Holland's point of view. For example, he finds that there is no evidence of entozoal disease at Carlisle because, on "asking whether the sheep had the rot," he received a negative reply. Now, if Mr. Holland had possessed any acquaintance with helminthology, he would have known that "rot" cannot be propagated by the sewage distribution of towns, for the simple reason that the inhabitants of our cities are not infested with the entozoon whose eggs indirectly give rise to that particular malady. Only in some seventeen or eighteen cases has the sheep-fluke been found in the human body; nevertheless, other species and genera of the same family of entozoa are fatally endemic to their "bearers," amongst mankind, in certain countries.

In the next place we are referred to Edinburgh, where, it is said, the cows, though fed with grass from the Craigen-tinny meadows for sixty or seventy years past, afford "no evidence of the prevalence of disease among them." That seems conclusive; but in reply to this style of reasoning from negative data, let me tell Dr. Corfield, Mr. Holland, and others whose opinions have been so prominently put forward in this decision, that there is not, in my judgment, a single butcher or flesher in the United Kingdom who has ever either seen or, indeed, acknowledged the existence of measles in the cow, calf, or ox. I have asked butchers and other persons thus concerned whether they have ever witnessed parasites of this description in beef or veal, and they have not only protested that they never saw such things,

but they had never previously heard that such entozoa existed in cattle, to say nothing of the existence of similar larval parasites which I have recently shown to occur in the muscles of the sheep. It may, therefore, astonish some persons when I add the expression of my deliberate conviction that at this present moment hundreds, not to say thousands, of the cattle now living in this country are thoroughly well measles, and therefore, also, more or less diseased in the ordinary, but, as I think, unfortunate acceptance of that term. In the face of such recorded experiences as these, I naturally ask—"How it is that any gentlemen, like Mr. Holland, can have the immodesty to adjudge themselves competent to deal with the sewage question, in so far as it is concerned with the probable spread of parasitic disorders?"

I am scarcely yet persuaded, indeed, that no disease has followed in consequence of the utilisation of sewage at Edinburgh, as alleged; for I find that Mr. James Alexander Manning, in his reply to Baron Liebig's letter to Lord Robert Montague, makes the following statement:—"A large dairyman, of Edinburgh, reduced to the humble position of a carter, lost ninety-two cows in three years, from feeding them on the grass produced from the sewage-irrigated meadows of Portobello; another cowkeeper lost his whole stock in one year; and I was informed," he adds, "that the largest cowkeeper in Scotland, who feeds his cows on the grass obtained from sewage-irrigated meadows, never keeps a cow for more than three months, for the moment his keen perception and long practical experience detect any tendency to incipient symptoms of pleuro-pneumonia, he sells the cows to his neighbours, and purchases others." I quote these few recorded facts (if they are facts), however, not so much with the intention of supporting the particular views taken by Mr. Manning, as for the purpose of expressing my doubts concerning the reality of pleuro-pneumonia as being the true cause of the asserted mortality. The vagueness with which that term is employed by cattle-dealers and others is well known. On the other hand, a correspondent of mine, Dr. T. S. Ralph, in Australia, has gone so far as to assert the essentially parasitic nature of all pleuro-pneumonia—from evidence, nevertheless, which, though truly entozooic, is of a character altogether distinct from that which I suspect to have obtained in not a few of the above-mentioned diseased animals. Surely Mr. Manning could not have committed himself to such statements as the above, if there were no grounds for believing their truth!

But I have further to observe in connection with this measles

malady, "or cestode tuberculosis," that, until lately, the only specimens of beef-measle ever seen, or at least recognised, in England, were those which were removed from cattle subjected to "feeding experiments" by myself at the Royal Veterinary College. Neither Professors Simonds and Pritchard, nor any other persons who assisted me in the investigations there conducted, had ever seen anything of the sort previously. The "measles" were artificially reared in the animals by the introduction of the eggs of tapeworms, selected and obtained by myself and friends from the human body; so that it may be said, without hesitation, that these experimental animals, instead of becoming diseased from parasitic germs by means of sewage-grown grass in an indirect or roundabout manner, were infected by certain of the ordinary organic constituents of sewage, or fæcal discharge, itself, in the most direct manner possible. Of course, in such cases we produce a more virulent form of the measles malady than can ever obtain under the ordinary circumstances by which the disorder is propagated, and, therefore, it is also desirable to remind Mr. Holland and those who support his notions that the presence of measles in cattle does not necessarily give rise to any conspicuous symptoms of suffering. It is true that the calf we experimented on nearly succumbed to the disorder, whilst the health of the older animals was only slightly affected; but in these cases the numbers of six-hooked embryos actually traversing their bodies were collectively enormous—that is to say, many thousands. It needs but little reflection, therefore, to perceive that cattle fed upon sewage-grown fodder can never infest themselves to such an extent as to cause conspicuous suffering on their part. Yet at the same time it is perfectly clear that the likelihood of their becoming "intermediary bearers" of the larvæ of human tapeworms, is a thousand-fold increased by the fact of their being fed on grass reared under the conditions referred to.

I may here remark, in regard to the invasion of parasites generally, that the question of suffering frequently, though not invariably, depends, firstly, upon the number introduced, secondly, upon the age of the "bearer," and thirdly, upon his sensitivity. Even in the case where a single entozoon takes up its residence in the brain or other important organ, the constitutional power of the host for resisting irritation may alone determine the degree of suffering or of fatality involved. My investigations with trichinæ give similar results to those afforded by the measles experiments. It is astonishing what an amount of infection old animals will bear from

this source. Thus, a sow in which I reared some fifteen or sixteen millions of trichinæ never displayed any symptoms of pain, nor did the animal lose its appetite for a single day. When slaughtered, the flesh appeared so healthy to the naked eye, that bystanders refused to believe that the animal was diseased, one assistant, even after microscopic evidence, desiring to remove portions, as a perquisite, for home consumption. In point of fact, he succeeded in carrying off the heart; and I understood that he ate part of it. As I have said, young animals do not bear infection so well as old ones; and thus, in the case of the three pigs infected by Dr. Thudichum, two became ill, whilst the third died. These "hosts," respectively, were "less than three months old." Rats and rabbits appear to resist the action of the flesh-worm migrations very successfully, and the same may be said of cats and dogs. In the case of one full-grown cat, however, I had great difficulty in restoring the animal, the acuteness of trichiniasis depending upon an extreme degree of infection.

The style in which some unscientific opponents write is scarcely creditable to them. Thus, Mr. C. F. Gower, in criticising Dr. Letheby's paper (as it appeared in the *Ipswich Journal* of August 27, 1870), accuses Dr. Letheby of talking "a little at random about measly meat," and asks if the parasitic ova might not be "discoverable adhering to the blades" of grass, in cases where irrigation has been employed. Mr. Gower evidently thinks that the ova of entozoa measuring less than the  $\frac{1}{650}$ " in diameter ought (if our views be true) to be picked up by those who visit "sewage-irrigated grounds" with as little difficulty as the country folks experience when they hunt up plovers' eggs at the proper season. In short, Mr. Gower's long and vigorous letter in the *Ipswich Journal* betrays a want of knowledge of the rudiments of entozoological science.

I may in the next place observe that it is not very surprising that the general public should disregard any warnings uttered respecting the probable increase of parasitic disorders from sewage irrigation, since, as obtains in the case of many other evils, no one thinks of demanding an investigation until a readily recognised calamity occurs. It will be said, in reply, that the absence of any palpable evil is a proof that there is no need of inquiry. This is the very point I am disputing. Take the case of trichina. Is it not perfectly clear that, but for Dr. Zenker's discovery that fleshworms "were capable of giving rise to a violent disease in the human body," we might have remained ignorant of the disorder, as such, to the present day? It is extremely improbable that the entozoal character

of recent epidemics would have been recognised, but for that discovery. Not a doubt exists in my mind that virulent and even endemic forms of the same trichinal disorder occurred from time to time during former years; and yet no one so much as hinted at their parasitic origin. Persons have even recalled past outbreaks, which were at the time attributable to some other disease; and at least one individual allowed himself to be harpooned in the interests of science. The extraction in this way of calcified trichina capsules proved that he had suffered from trichiniasis some ten years previously. It may further be safely urged that but for these trichina revelations neither the Lords of Her Majesty's Council nor their energetic Medical Officer would ever have thought of demanding a 'Report on the Parasitic Diseases of Quadrupeds used as Food.' If that Report, written in 1864 and published in 1865, cannot be said to meet all the requirements of the case before us, it constitutes, nevertheless, a most valuable contribution to our knowledge of the trichina disease; and almost as much may be said of Dr. Thudichum's shorter paper, "On the Diseases of Meat as affecting the Health of the People," subsequently communicated to the Society of Arts.

(*To be continued.*)

## Analysis of Continental Journals.

By G. FLEMING, M.R.C.V.S., Royal Engineers.

*Annales de Médecine Vétérinaire de Bruxelles*, January, February and March, 1871.

### HORSE TYPHUS.—AN EQUINE ENZOÖTY AT BRUGES.

THIS is a history and *résumé* of an outbreak of a serious character among horses in the neighbourhood of Bruges, drawn up from various reports, by Professor J. B. Dérache, of the Veterinary School at Cureghem.

The malady occurred towards the end of 1867, and continued into January of the following year; and its general and fatal tendencies caused so much alarm that the governor of the province requested the assistance of the Government veterinary surgeons in investigating its nature, symptoms, and the causes which gave rise to it.

The reports furnished displayed a complete divergence of

opinion, particularly with regard to the contagiousness of the malady, its nature, and the immediate cause of death. Consequently, two veterinary professors, MM. Gérard and Dérache, were summoned by the Minister of the Interior to undertake the task of investigating the disease, and the circumstances attending its advent and progress. From their inquiries and *post-mortem* examinations they came to the conclusion that the disease was abdominal typhus, and that, in principle, the cause was to be attributed to the bad food the animals had been receiving, and the facts related tended to prove that it was not contagious; inoculation and injection into the veins was even resorted to without result.

The symptoms may be fairly described by referring to one case which they observed. A mare, attacked by the malady, when these gentlemen visited her was stretched at full length on her right side; her respiration was accelerated and plaintive, and the pulse full, but slow; the temperature was almost normal. Sensibility was less acute than usual in the posterior extremities, which scarcely contracted when their muscles were pricked by a bistoury; there had been an abundant defecation of hard, dry pellets of dung, covered with tenacious false membranes; the right orbital arch was much swollen and contused by the blows received during the vertiginous period of the disease, when there were violent disordered movements and heavy falls; the ocular mucous membrane was of a reddish-saffron colour, and was covered with mucus; the buccal membrane was a pale yellow, and the tongue, white at its borders and dry, hung out of the mouth; the jaws were incapable of movement, and could not masticate the food which the animal yet endeavoured to seize; the head, when raised and let go, fell heavily and helplessly, and the muscles of the neck, feeble, relaxed, and enervated, were impotent to move it in any direction. This was the malady in its last stage. Blood extracted from a vein was of a chocolate colour, or like that of lees of wine. The animal died next day, and the necroscopic appearances were the same as in the other cases:—discoloration of all the red tissues, arboriform engorgement of the blood-vessels in the intestines, cellular proliferation, hypertrophy of the mucous follicles, the duodenal glands of Peyer, &c., eschars and ulcerations, and other lesions of typhus. The blood, when examined by the microscope, showed bacteria (or the *bâtonnets of Brauell*, as they have been sometimes named), and numerous crystals of cholesterine.

## SCHOOL OF WAR.

Adopting the system pursued by the great military powers on the Continent, Belgium, by a royal decree, dated 14th March, 1870, has instituted what is designated a School of War (*Ecole de Guerre*).

At this important establishment there is to be a professor of hippology, and M. Van Exem, deputy veterinary surgeon to the king, has been appointed to that honorable post. For a long period, France has had veterinary professors—army veterinary surgeons, specially selected—at the cavalry schools, and lately one at the infantry school of St. Cyr. A knowledge of horses and their management is now recognised by enlightened governments as a most essential feature in the training of all officers for the active duties of their profession, and this recognition of the value of our science is not the least satisfactory result of the experience of modern events.

## BELGIAN ROYAL ACADEMY OF MEDICINE.

At the meeting held on the 25th February, Professor Defays, of the Brussels Veterinary School, was unanimously elected a titular member, and M. Pétry, Government Veterinary Surgeon of Liége, an honorary member.

## DOGS' FLESH AS FOOD.

In the *Art Médical*, M. Defays refers to the public journals having asserted that dogs' flesh does not deserve the evil things that have been reported of it, and that, when properly seasoned, it constitutes, according to all reports, an aliment that may be consumed without repugnance. This assertion, he says, is not absolutely true. The flesh of the dog can only possess these properties when the animal has been fed almost exclusively on a vegetable diet, or, in fact, when it has been submitted to a régime different to that for which it was organized, as the dog which lives upon meat exhales a strong odour, and this is communicated to its muscular tissue. Therefore it is that the people who eat dogs—such as the South Sea Islanders, the Tunguses, Chinese, Greenlanders, and the Esquimaux—take the precaution to submit to a particular diet, for a certain time, the dogs they intend to eat. Consequently, when the population of a besieged town is compelled to resort to the canine species to procure a nitrogenous aliment, it is not a matter of indifference that dogs should be sacrificed just as they present themselves, for those should first be chosen which live in houses and are fed in a particu-

lar manner, and street dogs ought not to be killed to be eaten until after they have been submitted to a feculent régime.

#### THERMOMETRY IN VETERINARY MEDICINE.

At a reunion of veterinary surgeons at Mecklenburg, in 1869, Mr. Peters, army veterinary surgeon, delivered a discourse on the variations of internal temperature in the domesticated animals, and on the mode of appreciating these variations. As the value of the thermometer in veterinary medicine has been recognised in this country, and the results of its employment have been chronicled in the *Veterinarian*\* and elsewhere, it may be interesting to reproduce some portions of this discourse for the benefit of those who employ this useful instrument.

In order properly to appreciate the variations of internal temperature, says Herr Peters, it is well to have a thermometer exactly graduated, though this is not a condition *sine quâ non*, as it is sufficient to know exactly the deviations of the instrument, and to make the necessary corrections in summing up the observations. It is indispensable to use the same thermometer for the same animal. The smallness of the mercurial bulb allows the modifications of temperature to be rapidly noted, but at the expense of the distinctness of the graduated scale, as when the reservoir is of small dimensions the divisions on the scale into fifths and tenths of a degree are so faintly marked that near-sighted persons can scarcely see them. It is, therefore, preferable for aged people to use a thermometer with a voluminous bulb. It is also important to remember that the instrument should always be inserted to the same depth in the rectum, for if it is deeply introduced it will indicate a higher temperature than when it is only projected a short distance; the difference of temperature is more marked in cold stables and during the winter. If the bulb of the thermometer is not large, the column of mercury will have arrived at its maximum in about four minutes; but, after allowing it to remain in the rectum for only a minute, we may, by observing the rapid displacement of the mercury, judge whether we have to deal with a disease accompanied by strong febrile reaction or not. The normal temperature manifested in the horse by introducing a thermometer to a depth of two inches into the rectum, varies between  $37.5^{\circ}$  and  $38.2^{\circ}$  (Centigrade); most frequently it is  $37.8^{\circ}$ . In a state of health the internal temperature does not appear to be subject to great oscillations, but during violent movements it may

\* See *Veterinarian* for 1868, p. 76.

increase a degree. The presence of faecal matter does not modify the temperature of the rectum. It would be important to establish the influence exercised on the temperature by sex, period of the day, food, &c. ; but this could only be arrived at by regular and frequent observations on a large number of horses.

In observing the variations of temperature in simple pneumonia, it is found that, at the commencement of the malady, this often attains  $41.5^{\circ}$ , rarely less than  $40^{\circ}$ , while the pulse at this period may already be considerably accelerated, or differ but little from its normal standard. The following days the temperature remains about the same height; occasionally, however, it is remarked that it slightly diminishes towards the morning and evening. After four, five, six, or seven days, it evidently decreases, and in from twenty-four to thirty-six hours subsequently it becomes normal. If this decrease is interrupted by slight augmentations towards the evening, it does not return to its healthy standard until after forty-eight hours. This very evident and critical diminution of temperature most commonly occurs during the night; the decrease of the pulse accompanies, precedes, or follows it by twenty-four hours, and the patient becomes convalescent.

The modifications of temperature are not so regular in simple pleurisy, for when, at the commencement of the disease, the thermometer shows a high degree, there is frequently observed, after two or three days' illness, a more or less considerable decrease, without any of the other symptoms diminishing in intensity. The diminution of the internal temperature during the progress of pleurisy does not imply an amelioration in the condition of the sick animal, neither does it authorise a favorable prognosis. In several cases it has been observed that the elevated temperature due to pneumonia arrived at its intensity, is maintained at the same degree for five to seven days, then diminishes rapidly, but only to rise again in a notable manner from the following day. The pneumonia, having reached the critical period, was then complicated with pleurisy.

In certain cases of simple pneumonia Peters has seen the augmentation of temperature increase with the acceleration of the pulse; in other instances the former was maintained about the same height until the crisis was reached, while the number of pulsations diminished somewhat rapidly from the beginning of the observations, or was already very low, and remained so during the disease. Notwithstanding this difference in the great outlines of the curves of internal temperature and the pulsations, there was noted a constant harmony

between the daily oscillations. Never did one of these curves ascend or descend in a constant manner, but the other followed an opposite movement; the modification of one of the curves preceded that of the other, but the movement has always taken place in the same sense for both.

When there existed considerable pleural effusion, the curve of pulsations frequently only attained its culminating point towards the ninth or tenth day of the disease, when the temperature had already become almost normal.

According to the result of his researches, Peters was inclined to think that the relations between the curve of the number of respirations and that of the number of pulsations are not the same in pneumonia and pleurisy. In the first-named disease the number of respiratory movements observed during the time necessary for the production of a determinate number of pulsations is more considerable than that of the respiratory movements corresponding to the same number of arterial pulsations in pleurisy. Neither does the progress of the curve of temperature correspond as exactly to the different degrees of gravity of inflammations of the pleura as that of the curve of pulsations. The latter curve has, therefore, in these cases, a greater prognostic value than the first.

In the inflammations of the pulmonary parenchyma, the elevation of internal temperature more certainly revealed the seriousness of the affection than the inconsiderable number of pulsations. The curve of temperatures accords much better with a determinate type than that of the pulsations.

The determinations of the internal temperature present a real value as a means of diagnosis in cases where the thermometer indicates, in the course of pneumonia, an augmentation of combustion during or after the appearance of the critical phenomena. This increase of temperature demonstrates, in these circumstances, the development of pleurisy. In addition, the thermometer testifies to the existence of serious disturbance when no other morbid symptom is present.

It was impossible to determine a maximum of temperature which could not be exceeded without being followed by death. In febrile diseases, when the thermometer betrays the existence of an elevated temperature, the principal indication to be followed is to induce a diminution of the internal combustion. Thermometry affords an indication as to the moment when recourse should be had to antiphlogistic treatment; in proportion as the internal temperature exceeds  $40^{\circ}$ ,

so it ought to be considered as a grave manifestation which must be promptly combated.

Thermometry also enables the veterinary surgeon to estimate the effects produced by the medicaments employed; in pleurisy with thoracic effusion, he can direct his choice between saline and irritant diuretics.

These different results and combinations were based on the facts observed by Peters during the progress of an epizooty of "influenza."

In studying the thermometrical variations in catarrhal pneumonia, it was found that there were regular exacerbations towards the evening. The difference between the mean and minimum temperature for the day was greater during the period of resolution than at the height of the malady. The daily increase of temperature towards the evening appears to be a fact common to all the catarrhal inflammations of the respiratory organs, which are distinguished from pneumonia and pleurisy by these regular nocturnal exacerbations; for though in the latter maladies there are fluctuations of temperature, yet there are not the steady augmentations towards evening.

Thermometry is of great utility in the hydropathic treatment of disease, as it permits the effects produced by the action of the water to be registered, and so replaces in a complete manner the indications that the subjective symptoms furnish to the healer of mankind in the employment of hydrotherapy. It is to be observed that enemas of cold water considerably modify the teachings afforded by rectal thermometry.

The thermometrical observations collected by Peters among sheep affected with smallpox were variable; but the lowest temperature was noticed in those animals in which the pustules had reached their most advanced degree of development, and which, when they were incised, yielded an abundance of transparent serosity and but little blood. It also appeared that in this disease the mean temperature is elevated at the commencement, and moderate during the eruption, and that it increases again when the contents of the pustules becomes purulent, but falls considerably when death is about to take place.—*Wochenschrift für Thierheilkunde*, 1870.

(*To be continued.*)

## CENTRAL VETERINARY MEDICAL SOCIETY.

THE monthly meeting of this Society was held on March 9th; George Fleming, Esq., F.G.S., M.R.C.V.S., &c., the President, in the chair.

*The Secretary* laid on the table a number of specimens of tapeworm, together with a work on 'The Nomenclature of Diseases,' presented by a Fellow of the Society. An account of the kidney brought before the last meeting, and referred to the Secretary for dissection and report, was also read. It showed the organ was provided with necessary connections with the arterial and venous systems, ureters, and appropriate coverings, &c.; that the internal structure throughout was perfect, and at the anterior portion homogeneous, and without a line of separation, from which point the kidney of each side arises, extending backwards, with slight variation of position, constituting one organ, but in every other respect dual.

## INFLUENZA.

*The Secretary* next read a paper on the so-called "Influenza of Horses," after which the President, calling attention to the vast importance of the subject, said it had been keenly debated by the most eminent men of this and the preceding century. All points have received the most searching investigation, yet certain differences of opinion still prevail with reference to the pathology of the disease.

*Mr. W. Hunting* said he thought, when hearing the first portion of the paper, he should be inclined to differ from the essayist. A copious history of "Influenza" had been given, embodying an account of earthquakes, peculiar seasons, extraordinary planetary phenomena, volcanic disturbances, inundations, &c., with collateral plagues or pestilences among mankind and animals also, and his impression was that it was intended to prove that *all* diseases arose from some atmospheric aberration. In his opinion the liability to disease—its intensity, progress, duration, and termination—are due to a peculiar weakness of organs. Whatever the form or nature of the tissue affected may be, disease is always the same in each. In one part it may be termed rheumatism, in another inflammation, and in special organs as pneumonia, hepatitis, nephritis, cystitis, &c., yet in all disease is the same, and always proves to be simple fever, aggravated or intensified by external conditions. He believed that "influenza" is but simple fever, and non-contagious. There is no specific condition of the blood; it contains only such matters as, from the interruption caused in certain organs, are not eliminated. In the treatment he relied entirely upon strong stimulants, followed by a gentle purgative after the crisis of the fever had passed.

*Mr. J. R. Cox* agreed with the essayist as to the character of the

affection. A great number of cases had recently fallen under his observation, and when death took place he referred the cause to syncope. The accompanying depression being extreme, many animals, after having been caused to work too long before assistance is given, drop from exhaustion, and, unless raised as soon as possible, expend their remaining strength in vain struggles, which end in death. One sign, usually given as pathognomonic in this disease—the yellow colour of the membranes—he had found to be absent in the present outbreak, but most cases exhibited severe catarrhal symptoms. He had also noticed, whenever a wound or injury had previously been inflicted on one of the limbs, although perfectly recovered, in almost every instance extensive swelling occurred at this part before other signs were visible. Rheumatic complications are very common, and affections of the skin likewise frequently accompany the disease. His experience leads to the belief that influenza is infectious; segregation limits the number of attacks.

The volatile and alkaline carbonates are [the most appropriate medicines, and may be judiciously combined at the decline of fever with vegetable tonics. The chlorate of potass answers admirably in associated pleurisy with distressing cough.

*Mr. J. Rowe, jun.*, said his attention had been directed to numerous attacks, and his experience agreed mainly with that stated by Mr. Cox. He had, however, found the catarrhal form to prevail most in his district, accompanied by hard breathing; and although many of the symptoms were readily mitigated, those of hurried respiration, irritating cough, and nasal discharge were the most intractable. To control the excited respiration and circulation, the aid of aconite, bryonia, and belladonna, has been called in, after which the exhibition of stimulants is attended with success. The liver has been the seat of attack in many cases, accompanied by the usual indication—yellow membranes, and considerable effusion sometimes occurred in the subcellular spaces beneath loose or thin skin. The segregation of affected animals appears to have had a highly beneficial effect. He approved of the early exhibition of the sulphate of magnesia, followed by Spt. Æth. Nit., with vegetable tonics given regularly in warm ale, and for diet cooked hay, the tubers, and corn, as the patient could take it.

*Mr. Gowing, sen.*, said he had little to offer, as his principles of treatment are nearly the same as those already stated. Indications of the liver being affected were present in most of the cases treated under his care, for which he had prescribed calomel.

*Mr. J. Woodger, jun.*, advanced a series of instances where, by removal of affected animals, other attacks have been prevented, from which he considered the argument in favour of influenza being infectious gathers strength.

*Mr. W. F. Wragg* also supported this statement, and mentioned the frequency with which fatal purpura hæmorrhagica had been associated with influenza in the recent outbreak.

*Mr. Hunting*, in referring to the suppression of influenza after the

institution of sanitary regulations, expressed his belief that its truly infectious nature is not thereby made out. The sudden disappearance of the affection from a large stud, after only a few have been attacked, is quite common. A wide-spread cause exists, but some animals have the power to resist its operation; hence their immunity.

*Mr. F. Jarvis* said the major portion of his cases exhibited evidences of associated bronchitis and congestion of the lungs. Sub-cellular effusion, on the other hand, was very rare. He was inclined to believe in the infectious and contagious nature of influenza, having found that, after the introduction of an affected animal to a stable containing fifteen others, the whole afterwards fell ill; when hay on which the saliva of a diseased animal has fallen is given to another, influenza has always followed.

*The President* said his views of the nature of the disease were not in harmony with those of Mr. Hunting. If only simple fever were present, the peculiar and severe depression characteristic of influenza could not arise. This sign alone pointed out a specific condition of the blood. The existence of the cause in the atmosphere is held with great firmness by Professor Röhl, of Vienna, who believes it to be miasm. It is remarkable that influenza appears in hot weather as well as cold, and many of those animals well cared for at home suffer the most when taken abroad, while those continually exposed suffer less, yet they are not always exempt from severe outbreaks, as was shown when the Austrian army was encamped during the last war; the horses, although their coats were left on, as they were picketed out of doors, suffered severely. Neither are clipped horses exempt. Much depends on the season and mode of management.

*The Secretary* said, in reply to Mr. Hunting's statement, taking exception to the specific condition of the blood, the fact that purification having been suspended from extrinsic causes would induce that state, the nature of which is modified by the peculiar character of the causes. Morbid conditions of the blood are produced in accordance with prevailing conditions; although, in a cursory view, the same cause may appear to exist in each, there are, nevertheless, modified results which correspond to meteorological or hygrometric states of the atmosphere. As far as the instances of alleged infection and contagion had been adduced, he thought that they had not definitely settled the point. Notwithstanding the number of cases arising after the introduction of an affected animal, or the disappearance of the disease after removal of the one first attacked, the proof is as far off as ever. The alleged communicability of influenza to man is not proved, and its spread among animals only goes to demonstrate the existence of a wide-spread cause, exerting its influence upon constitutions rendered susceptible by previous alternations of temperature in conjunction with undue exposure, hard work, loss of rest, as well as certain hygrometric states of the atmosphere, inimical to the functions of the skin and mucous membranes generally.

A vote of thanks was unanimously awarded to the President and essayist respectively, and the proceedings terminated.

[The essay alluded to as having been read by Mr. Armatage was too lengthy for publication in our present number.]

## SCOTTISH METROPOLITAN VETERINARY ASSOCIATION.

THE Annual General Meeting of the above Association was held at Mrs. Cumming's Hotel, Lothian Road, Edinburgh, on Wednesday, 13th February, at 2 o'clock, p.m., Mr. Borthwick, Kirkliston, presiding.

There was a large attendance of members present. The Secretary read the minutes of last meeting, which were approved of; after which the Treasurer submitted his financial statement, which showed the funds of the Society to be in a satisfactory condition. The Secretary handed in the accounts for the past year.

*Mr. Robertson* proposed that the accounts be paid, which was seconded by *Professor Williams*, and carried.

*Professor Williams* next proposed that the Secretary be instructed to print 300 circulars for the Society, which was also approved of. Some discussion followed on the day and hour of the meeting, when *Professor Williams* proposed, and *Mr. Waugh* seconded, that the annual meeting be convened at 1 o'clock p.m., instead of 2, as at present, and that the quarterly meeting be held on the same day as hitherto and at the same hour.

The Treasurer received the subscriptions for the current year, which concluded the preliminary business of the meeting. Mr. Borthwick, President of the Society, then proceeded to read the following inaugural address:

GENTLEMEN,—I can assure you it is with the greatest diffidence that I appear before you to-day. The position to which you have so kindly promoted me I most reluctantly occupy, although I would rather have yielded the honour in favour of gentlemen around me, much more worthy than I am and far better qualified, who could fill the office with greater efficiency and with greater satisfaction than can be expected from me.

But I cannot refrain from shrinking at the duty now devolving upon me, more especially when I consider the abilities of the gentleman whom I now succeed, and the zealous and efficient way he has conducted the meetings of our Society. We all know him to be a gentleman of the highest qualifications, eminent in his profession, and an ornament to the association to which we belong. To follow such a worthy President is no easy matter. Nevertheless, for the

honour you have conferred upon me I thank you, and will, therefore, solicit your kind indulgence in any remarks I may make, assuring you that, at any rate, I will not detain you long.

In the outset I simply remark that such an association as this must be of paramount importance to all its members. As an individual, I have had great pleasure in attending the meetings; the subjects brought before us have been very interesting and instructive; and while they are the means of diffusing useful knowledge, they at the same time serve to foster that unanimity which is so becoming and so desirable among professional brethren.

We require help and counsel from each other, and here we enjoy it, at the same time learning the meaning of the double blessing. "We give—we receive," and both are enriched by the exchange. Let such a spirit animate our meetings, and we shall have no cause to regret the few hours we spend in our associated capacity.

I shall now very shortly refer, first to the profession itself, and then to the preliminary education thought necessary for entering upon it. For long the state of the veterinary profession was so stereotyped that it made little progress. Of late years, however, signs of new life are discernible, and we are now beginning to move in an upward direction. Rome, we know, was not built in a day, and we can scarcely expect to rise rapidly or to come to maturity at once. Hitherto, amidst great difficulties, we have been feeling our way, but still progressing, with so much success that in many localities the veterinary surgeon is respected, and his services valued equally with those of his neighbour in the medical profession.

And why not? The profession is an honorable one, and its members are qualified to move in a higher position than they generally do. To obtain such a position, however, the veterinary surgeon would require to be endowed with three important qualities. He must be possessed of stern integrity, and of tact and talent. In order for him to have confidence placed in him by his employers he must have such qualifications. In disputed cases it is expected that he can be relied upon, and he must be beyond suspicion in giving his opinion. It requires no ordinary degree of tact and talent to diagnose and treat the diseases of our domestic animals. The study of our patients is often most difficult, and the information gained from the attendants often tends more to bewilder than to guide us. We must turn to the animals themselves, and, as they are not given to feign or dissemble, by a minute discrimination we are enabled to form as correct a diagnosis as our medical brethren can, who have all the advantages of ascertaining by information from the patient himself his feelings, his pain, and the seat of it. Gentlemen, I think the want of uniformity of opinion, so common amongst the members of our profession, especially in the vexed question as to the soundness of horses, is much to be deplored. Cases occur every day which must have a very damaging effect to the profession in the minds of the public. I may cite one instance in illustration occurring in my own practice the other day. A horse

had been pronounced unsound before I saw it, and on the ground of his being a "very bad roarer;" I examined him, and was of opinion he was sound in wind and limb. I was followed by another professional man, who discovered that the horse had spavin on both hocks, and was, therefore, unsound.

I will now shortly allude to the course of education thought necessary before entering upon the profession. And while I express my opinion, you will not for a moment suppose that I would lead you to believe that my preliminary training was such as I could now wish it to have been. No one present is more sensible of his deficiency than I am. And my only wish arising from my own experience is to see those who follow us surpass those who have gone before. And to gain this desired end, there is not in my opinion a better means than an early and thorough education, equal, at least, to that required for the medical profession.

Preliminary examinations are a step in the right direction. At present the test is not a severe one, and, like every other system, would admit of improvement. Let that improvement be continued until the test reaches a higher standard, so that every aspirant should be able to stand an examination equivalent to those of students entering the medical colleges. And let those examinations be conducted independently of the teaching schools.

Again, the prescribed period of attendance at the Veterinary College is far too limited. Two sessions are short enough for the acquirement of theoretical knowledge, and it would require two more to enable the student to learn the details of his practical duties. Now, it seems to me that, were an examination made at the close of the second session as to the student's knowledge of the theory, and a final examination at the end of the fourth session, embracing both theory and practice, the diploma would be more worthily gained than it is at present. In no case, however, would I propose that a candidate for the second examination should be compelled to wait until he has passed a satisfactory examination at the close of the second session. I would also suggest that students be engaged in practice during the summer months, either at college or with some member of the profession. I believe that this system, if adopted, would alter the position of the veterinary surgeon, and raise the profession generally to a more honorable place than it now occupies.

Before closing I would direct your attention to one or two matters of interest to all of us; first, the Contagious Diseases (Animals) Act, 1869.

If carried out, as I have no doubt the framers of it intended, the Act would reduce the prevalence of contagious and infectious diseases which have destroyed so many of our valuable cattle. But being placed, as it is, in the hands of local authorities, who in some counties lay on and remove restrictions at will, I think it has failed as yet in a great measure to accomplish the end in view. In this county, as some of you are aware, the police are appointed inspectors, while the veterinary inspectors are required to report to the

Privy Council all cases of foot-and-mouth disease from reports handed to them by the police, without having visited the animals.

Now, gentlemen, I am of opinion that in thus acting they are evading the law. Last summer the authorities removed the restrictions altogether in reference to foot-and-mouth disease, and this led to the extension of the disease to stock in the adjacent county of Linlithgow, by parties purchasing calves out of places that were suffering from the disease. You will thus see the great necessity there is for the Act being strictly adhered to in all counties alike, so that it may accomplish the end in view.

A new style of horse-shoeing has been brought up and discussed at meetings of the Highland Society and elsewhere. "The Charlier" system is said to possess the advantage of preventing contraction and all the other evils of which the present system is the cause. One or two other sorts of shoes have been patented, and some of them, I fear, have not come up to the expectation of their inventors. I am of opinion that the present method, if properly worked out, is better than any of those which have been brought before the public lately.

In concluding, Gentlemen, as I stated in the outset, signs of new life are discernible in the profession, but there is still much to do. An early and a better education is evidently the grand spring to touch to cause the machinery to move with greater speed, and to make progress more visible. And to attain the great object in view, both the teachers of our schools and our associations must work together in harmony. Let all the schools have similar regulations and laws by mutual consent. Acting in this way great things may be done.

The members then adjourned to dinner, which was served by Mrs. Cumming; Mr. Borthwick, President of the Society, in the chair, Professor Williams acting as croupier. After spending a most agreeable evening, the members separated highly satisfied with the day's proceedings.

Mr. Aitkin, Dalkeith, will introduce a paper at next meeting.

JAMES MITCHELL,  
*Secretary.*

## LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE Twenty-seventh Quarterly Meeting of the Liverpool Veterinary Medical Association was held at the Medical Hall, Hope Street, Liverpool, on Friday evening, 10th February, 1871, at 6 p.m. After tea had been discussed by the members and visitors,

The Chair was taken by the President: J. Storrar, Esq. (of Chester).

Present: Messrs. Storrar (Chester), Reynolds, Morgan, Kenny, Parks, Elam, Wilson, Leather, Hayes, Ackroyd (Liverpool), W. Wilson, Ed. Nuttall (Preston), T. Roberts (Oswestry), D. Maclean (Royal Artillery), P. Taylor, W. A. Taylor, T. Greaves, and Tom Taylor (Manchester), Barnes (Tarpurley), Dobie (Birkenhead), Woods (Wigan), Whittle (Worsley), and the Secretary.

Letters of apology were read from Messrs. Litt, T. D. Broad, A. Lawson, E. C. Dray, Jas. Taylor, C. Dayles, Jas. Howell, Carless, and W. Lewis.

Mr. Morgan proposed, and Mr. Reynolds seconded, Mr. Barnes, of Tarpurley, as a member of the Association, which was carried unanimously.

Mr. Morgan nominated Messrs. Kenny and Parks, of Liverpool, as members of the Association.

Mr. Reynolds gave notice that at next meeting he will propose Messrs. Flemming and T. D. Broad as honorary associates of the Association.

The President then read his introductory address—

GENTLEMEN,—In entering upon the office of Chairman, to which you have elected me, I must first of all express the pleasure with which I accept the honor you have done me. The office I know to be purely honorary—no tact or talent is necessary to keep up the spirit and interest of our meetings, neither it is necessary at any time to be authoritative or decisive.

Bear with me, gentlemen, while I say that, ever since I came among you, I have enjoyed our meetings most heartily, and I look forward to the quarterly *réunion* as a red-letter day in my professional existence.

Not only is there at every meeting a very considerable amount of practical information to be got, but our own opinions and experience are compared with those of others; and being thus tested, are disproved or confirmed.

I look upon these societies as most valuable to all who have the privilege of attending them. This conviction is so generally entertained, that I express it in this place more as a matter of course, than from any idea that it is necessary to say a word in favour of veterinary medical associations.

Let us look now at the prospects of the profession generally, at the present day, as compared with the past. Ever since I began to think of the profession as such, I saw the necessity for a preliminary educational test; but it is only now that the universal voice of the profession has found a channel of expression through these societies, that this most important step has been taken. I am not here to condemn the men who, being in positions of influence and power, did not do long ago what has now been done. Selfishness is an inherent principle in all men, and requires a powerful restraining and corrective influence to keep it within bounds. This influence has been applied principally through local societies, like this, acting on and through the council of the Royal College of Veterinary Surgeons; and, I dare say, we are glad to be able to discover some good thing that it has been able to do after so many years' existence. I am glad that the Royal College of Veterinary Surgeons has no legal power, or so little that it is not worth exercising; and that the members of the profession are left to act upon each other through the medium of public discussions, rather than by the enactment of statutes. We are more likely thus to retain a lasting interest in every arrangement of our licensing and teaching institutions; and these institutions are more likely to yield to moral than legal pressure.

I think we may fairly assume that, whatever is right, we can now get at our colleges: it remains for us to keep up our interest in, and freely give our views upon those matters which require amendment, and the change which we desire will come.

I now come to a very delicate part of my subject, namely, the position of the private practitioner, as a teacher of pupils. "Our hope is in the young"—the man is through life very much what he has been made when a boy. His habits of thought and the general current of his whole character are often formed, almost imperceptibly, by the individual to whom he is only expected to look for mere professional teaching. No fact is more firmly established by biography than this, that the young are highly imitative—far more influenced by example than by precept; the hand-writing of the apprentice, his language, his accent and his learning, his general habits and methods of observation, closely resemble those of his master. I do not think that anything very definite can be said in favour of the present mode of apprenticeship as a preparation for college. Many practical students, as they are called, have been found quite incapable of understanding a theory; and appear as if, during their apprenticeship, they had exercised themselves merely in the mechanical departments of the science.

This deficiency in the pupil I attribute, in a great degree, to the present system of apprenticeship. The master, as a rule, is a busy man; his time is almost entirely taken up in *doing*; he sends his assistant to *do* also; this is very pleasing to the young man, and not unprofitable to his master, who, of course, is also pleased. Time moves on, and the young man gradually learns to distinguish ordinary diseases, and recollects what is usually done in certain cases,

and can do it; that is all he learns during his apprenticeship. I do not wish to say that what he has acquired is not useful and necessary; but, farther than a little exercise of memory, he has not gained any real knowledge of his profession: his intelligence, his reasoning powers, have been left dormant, and, probably, will ever remain so. Is it not a fact that our most successful men in business, men who require assistants to help them to get through their work, do not send the most successful students to college? If this is a fact, then there must be something wrong; either the system is wrong or the pupil is deficient in capacity, or he has not been treated properly when under his master's care. The instructor has not succeeded in giving his pupil a thirst for knowledge; nor has he helped to strengthen his reasoning powers by teaching him to trace effects to their causes. If I am to any extent right in these surmises, then I would suggest, as probable means of overcoming the difficulty, that the period of apprenticeship, and the college teaching, should be alternate. The pupil, being selected, should serve for six, nine, or twelve months in ordinary practice—doing what he can with his hands, keeping his eyes and ears open to pick up what may be called the technicalities of the profession—then he should go to college. No time would be lost, for the pupil would have been learning something every day; he would not yet, however, have learned to think himself as good as his master, but would still be teachable. Arrived at college, he would enter heartily into his studies. He would daily hear explanations and reasons given for the facts that he had seen, and would be delighted to find that he could appreciate and understand the why and the wherefore of the whole matter.

At the end of the first session he would return home in a very anxious, and, to him, unsatisfactory state of mind: the detailed symptoms, as he finds them in his note book, are no doubt correct enough—but it needs the practised eye satisfactorily to distinguish them from others somewhat alike, and which must not be confounded with them. He thus, painfully it may be, acquires a careful habit of diagnosis. He has been warned against mistakes, and he cannot now innocently and thoughtlessly fall into them. He may, and he no doubt will, make mistakes; but if he does so, he will at least be able to urge some reason or excuse for his error. The fresh interest which will be excited by every case of disease will have scarcely begun to flag before his return to college, where he will be induced to pay more attention than ever to the subjects that have troubled or delighted him during his summer's practice; he will then be able to compare notes with the lecturer, and to take a most intelligent interest in every thing which comes under his notice.

I have thus very briefly sketched out a plan that I have good reason to believe would prove most satisfactory to the student of veterinary medicine.

A young man entirely educated at college, however talented, is placed in a very painful and really false position, when he receives the certificate which asserts that he is qualified to practice. The

individual who has only served his apprenticeship before he commenced to practice, has lost the opportunity of learning much that would be useful to him, or he must have acquired the knowledge at a great cost of time and labour, besides being still outside the charmed circle of the R. C. V. S.

We are upon the whole, I believe, too exclusively business men—merely veterinary surgeons—and have not taken our proper position as ordinary members of society. There are, no doubt, many reasons for this, some of them more and some less commendable; but I believe this to be an error to be guarded against.

I know we are placed in a very difficult position; we have business relations with all classes of society, and with every variety of character: it is our duty, and ought to be our pleasure, to do well for all, to be agreeable to all, and suit ourselves to circumstances as best we can; at the same time never condescending to meet any class by joining in their follies, by associating with them in their sports or pastimes, however innocent they may be in themselves, if we cannot afford to so, if our enjoyments are really of a higher nature, or if we for any reason scarcely approve of them.

The veterinary surgeon is not always alike busy; the unoccupied time is decidedly the dangerous time; it is then that the tastes find their opportunity of development. If the taste is in the direction of scientific research, this spare time may be usefully and honourably employed; if there exists a fondness for the pursuits of literature, it may be indulged at home, and the student will be ready for business when it comes. But if the idle man has to go to the nearest idle man to kill time—or run to all *sales*, racing, coursing, or other sporting meetings within reasonable distance, in order to find enjoyment—he will be often out of the way when wanted, and will not do very much for the advancement of himself or of his profession; perhaps he will get worse in position as he gets advanced in years. This loose rambling sort of conduct, I am sorry to say, is somewhat characteristic of our profession in small country towns. I do, however, look forward with much hope to the good moral and intellectual effect likely to be accomplished by the superior education that will for the future be required of students; but the senior members of the profession must see to it that they do not encourage the apeing at fast life, that young veterinary surgeons are so prone to: fast life and professional duties are not compatible.

I think much is also in the power of the veterinary surgeon in selecting his pupil. If a lad has tried two or three trades and left them all, because of some difficulty—that ninety-nine lads out of a hundred get over with tolerable ease—and, at last, thinks of being a veterinary surgeon, that he may ride a fast horse and be a gentleman at once, he is not likely to prove a very apt scholar; and the veterinary surgeon who takes such a pupil neither does himself, the lad, nor the profession justice.

I have placed these few remarks before you to night with considerable diffidence, knowing that many of you have thought over

the subjects on which I have spoken, with much care; and having had considerable opportunities of forming sound opinions, I shall be very glad to have a free expression of opinion from you all, and shall not be at all offended should your views differ very widely from mine.

In the discussion which followed,

*Mr. Greaves* says that he agreed with *Mr. Storrar* in giving the student a good education until he arrives at the age of seventeen; he must then be apprenticed to a veterinary surgeon, and remain with him for twelve months, go one session to college, see two more years' practice, and then again to college to finish.

*Mr. P. Taylor* considers it a *sine quâ non* that veterinary surgeons in selecting pupils should have them of good education and gentlemanly manners, but disagrees with his friend *Mr. Greaves* that the pupil should fulfil his three years' term of apprenticeship before going to college at all.

*Mr. MacLean* thinks it unnecessary for the pupil to remain three years making up physic; but if all veterinary surgeons took the pains *Mr. Greaves* did, the time would be well spent: the contrary is most frequently the case.

*Mr. Morgan* proposes a mixture of study and practice; a long apprenticeship, and three or four sessions at college, or a year for each branch of study.

*Mr. T. Taylor* had seen an "Ornamental," or college-trained veterinary surgeon sit down to examine a horse's hocks.

*Mr. Hayes* has no doubt that a man who has not previously served an apprenticeship can neither obtain distinction nor gain in his profession, never afterwards being able to acquire the art of making or giving a ball, or being able to bleed, blister or bandage with celerity and precision.

After remarks from Messrs. Reynolds, Woods, Wilson, Roberts, &c., who all agreed as to the advisability, and indeed necessity, of a sound scholastic and practical education, the discussion closed with a vote of thanks, proposed by *Mr. Morgan*, to the President, and seconded by *Mr. Greaves*, which was carried, for his interesting address.

*The President* then called on *Mr. Greaves* to read his Paper on Paralysis in the Horse.

MR. PRESIDENT AND GENTLEMEN,—The subject to which I propose to call your attention to-night, is a very important one. I have no fresh discovery to disclose, nor have I been fortunate enough to hit upon a mode of treatment by which the disease may be more successfully dealt with than it has been hitherto; but by inviting you to express the results of your experience I may help to give the subject new life and a fresh impetus.

*Percivall* defines paralysis to be "a loss or diminution of the

sensibility or mobility of some part of the body, commonly of both faculties."

Youatt says, "palsy means a diminution or a suspension of the influence of the nervous system, whether sensitive or motor."

Before entering into the pathology of the disease, it will, perhaps, be advantageous to glance at the structure and functions of some of the organs that are affected: the cerebrum, cerebellum, medulla oblongata, medulla spinalis and nerves.\*

*The Pathology of Paralysis.*—The comparative anatomist and physiologist sees everything in health; the comparative pathologist studies structures in disease, and traces the influence of a thousand agencies in producing and modifying disease. Who does not see the vast importance of understanding the nervous system? Who of us has studied this subject, or had the opportunity of studying it as it ought to be studied, and as the subject deserves? If we find our patient with hanging pendulous lips, and only with the greatest difficulty able to gather his food, we say that there is a diminution or suspension of nervous influence in a branch of the portio dura of the seventh nerve for motion, and a division of the fifth nerve for sensation; we may stimulate and give doses of nux vomica or strychnine for a long time, but without avail. Again, we are sent for to a case, and find the horse making a great noise in his breathing; or it may be that as he stands still he makes no noise, his breathing and his pulse are quite tranquil; but only approach him, or walk him out, and immediately he begins to make an alarming noise in his breathing which seems to threaten immediate suffocation. We say this state is dependent on a morbid condition of the crico-arytenoideus posticus, crico-arytenoideus lateralis and arytenoideus transversus. The one muscle is unable to open the glottis, and the others press together the arytenoid cartilages and close the glottis. We say further, this state of the muscles is the consequence of a diminution or suspension of nervous influence in the recurrent branch and the lachrymal branch of the parvagus nerve. We may bring to bear on this case our most improved treatment with little avail, and the mechanical relief of tracheotomy is the only help we can give. I have employed a seton on each side and another under the larynx, another eighteen inches long in front of the trachea, all at one time; and also blistered six or eight times, given nux vomica, and enjoined total rest for a month, and on taking the horse out I have found him not one jot better. The disease is involved in much obscurity, and we ought to make an effort to get clearer views of its nature in order to arrive at a more successful method of treatment.

The above examples are cases of partial paralysis, but we also find the disease affecting the system generally. Not many months ago, I was consulted as to a number of horses apparently in good

<sup>1</sup> We are compelled to omit the anatomical description of the brain and nerves, in order not to curtail the more important portion relating to pathology.

condition; the animals did not show any indications of acute disease, but when they were down they were unable to rise; of these horses three died, one was killed, and three recovered after a long course of treatment. Six horses out of twenty had to stand in slings. It was my opinion this state was caused by the horses eating some over-grown, almost colourless hay; the use of this hay was discontinued, and no further cases occurred. Paralysis is occasionally caused by some injury to the brain, spine or nerves. Cold combined with moisture, or an injury to the medulla spinalis, has been known to produce it. Percivall says: "Reflected irritation caused by a disease or derangement of organs unconnected with, or remote from, the seat of palsy, must be ranked amongst its causes. The cause of irritation whatever or whenever it may be is first developed in the nervous centres, whence by reflex action it is transmitted to and along the nerves of voluntary motion producing similar effects upon them and the parts to which they are distributed, as though the nervous centre itself had actually been the subject of lesion or compression."

There are diseases, such as megrims, tetanus, fits, syncope, milk fever, string-halt and others, the phenomena of which are attributable to a diminution or suspension of nervous influence in one division or another of the nervous system.

I will next call your attention to—

*Paraplegia.*—The pathology of paraplegia is very imperfectly understood, and for want or neglect of opportunities of dissection we have added but little recently to the slight knowledge of the subject. Mr. Bouley says: "The paraplegia is awfully sudden in its attack; no warning or sign of its approach is observable; it comes on during or immediately after work, draught work in particular. The horse evinces, on a sudden, extreme lameness in one hind leg, for which no cause is apparent, and so great is the pain that he cannot for two minutes together put the limb in the same position. Soon afterwards the corresponding limb is attacked, and now the suffering of the animal reaches its highest pitch, he crouches behind, throws his weight forward, becomes more and more unstable on his legs, until at length his hind quarters sink down and he falls altogether. When down, he ineffectually struggles to rise again with his fore limbs, they alone retaining the power of motion." Mr. Bouley's opinion is, that these cases are dependent on spinal lesion. I will now describe a few cases of my own: they are five in number, though, as I believe, one and the same in their nature. They are rather rare cases; were accompanied with an immense amount of suffering, and terminated fatally in three or four days: such cases must always be deeply interesting to the veterinary surgeon. I have taxed my memory, and at present can only bring to mind five cases during about thirty-seven years practise, though it is possible others have occurred.

*Case First.*—About twenty-eight or thirty years ago, I was called late one night to a farmer's house, about seven or eight miles from Manchester. The animal was said to be suffering from lameness,

which had come on suddenly after he had done his work ; he had been doing his ordinary work all day, and appeared in his usual health ; he was eight or nine years old, and in good working condition. I found him suffering acutely in the near hind leg, which appeared perfectly unable to sustain the slightest weight. The horse was constantly trying to put weight upon the limb, but it was as utterly unable to bear weight as if the femur was broken ; we had the greatest possible difficulty in preventing him from going down ; the horse was blowing very much indeed ; the perspiration was running down his face, and down all his legs ; on examining him there was nothing whatever to be seen or felt to indicate the exact seat of lameness. The conclusion I came to was, that the horse had sustained a most violent sprain about the hip joint ; this, the attendant contended was impossible. I bled the animal freely in the thigh ; gave tincture of opium, two ounces at a dose several times during the night ; had hot cloths applied to the hip and loins. I also gave eight or ten drachms of aloes, repeated enemata, and stayed with him all night. On the following morning he was a little easier ; the day after still better ; and in a week quite well and at work.

*Case Second.*—A nice gig horse, about twelve years old, fell lame suddenly in his ordinary work ; when seen he was suffering intensely in near hind leg ; in less than two hours both legs were affected, and the horse could not stand ; he fought dreadfully, and it took several men to keep him from injuring himself severely. He was put in slings, and treated by bleeding and anodynes, physic, and continual fomentations to the loins and hips, and applications of mustard and turpentine to his spine. All proved utterly unavailing : he died on the third or fourth day. The post-mortem examination showed a remarkably pale colour of the longissimus dorsi muscles ; they were soft, almost pulpy, and for twelve or fourteen inches they were evidently completely separated from the other muscles by the effusion which had taken place.

*Case Third.*—About eight years ago, a cart horse belonging to a carrier in this town, became suddenly affected with lameness in the off hind leg ; the symptoms were the same as those before described ; his sufferings were terrible indeed. I thought at first that the patella was out. I tried all manner of means to reduce what I thought to be the dislocation. I called to my aid another veterinary surgeon ; we tried, but to no purpose ; we at last dismissed the idea. This horse, after everything had been done to relieve his suffering, died on the fourth day. I had no chance of making a post-mortem examination.

*Case Fourth.*—A lorry horse, in November, 1869, was in his usual health, took a load into town, not a heavy one, came back all right, had not been slipping or drawing hard. After the lorry had been drawn up to unload, and the horse had stood a minute or two, he was observed to be a little lame on the near hind leg ; in a few minutes he became much worse, and it was with very great difficulty indeed that he was got into his stable, only a few yards off.

I was called to him in a few minutes, and found him in extreme suffering, with the perspiration running down his face and legs. I at once bled him in the thigh; but while bleeding, the other leg failed him. Had tons of weight been placed upon his hips, he could not have been forced to make greater or more desperate, though ineffectual, efforts to stand. We made many attempts to get him on his feet again, and succeeded in getting him on to his fore feet once a day for three days, but he could not stand. He died on the fourth or fifth day.

*The Fifth Case.*—In January or February last year, a brewer's horse was brought to my place. The carter said something was the matter with the animal, but he could not tell what. The horse was put into a loose box, and in a few minutes he was observed to show a little lameness in the near hind leg; the lameness increased very rapidly; the limb failing him entirely as shown by his continually crouching down, his sufferings were of a most dreadful character; within half an hour he became utterly unable to stand; the other hind leg had now failed him equally, but he bore up against the disease with a mad desperation. We got the slings under him and supported him, but this afforded him no relief. No treatment was of use: he died within four or five days. The animal was never quiet or free from suffering during the whole of that time. In this case I did not bleed; the vital powers seemed as if they had no power to rally. Although I neglected to attend to the post-mortem examination of these two cases myself, I sent my assistant, who brought me word there were no morbid changes observed; but it is my opinion, that in every case in which there is a loss of power, we may depend upon finding a clot of blood pressing upon the inferior column of the spinal marrow; or a softening of that division; and that whenever we have a loss of sensation, we shall find a clot of blood pressing upon the superior column of spinal marrow, or a softening of that division. I have seen in cases of tetanus, some very marked instances of softening of both columns for eight or ten inches in that portion of the spinal marrow which passes through the lumbar region. In confirmation of these views, I will conclude my paper by transcribing three cases reported by Mr. Bouley, who is, as you know, the most eminent and most accurate observer in France.

The first case is—

*Loss of Motion, Sensation remaining perfect.*—An entire draught horse manifested total want of power of motion of the hind legs, but the feeling remained perfect. These symptoms continued three days, and then the animal died. All the inferior part of the spinal marrow was softened and semifluid, while the superior part had undergone no change. The inferior motor columns were diseased, decomposed, and then their function ceased; the superior sensitive columns exhibited no lesion, and perfectly discharged their function.

*Loss of Feeling, the Power of motion being retained.*—On the other hand, a cow that fell the day after calving was able to move

her hind limbs, and that with considerable violence, but they had lost all feeling; remedial measures appearing to have no effect, the cow was destroyed. The lumbar portion of the spinal cord was very red on its superior part, and the fasciculi were injured for the space of two inches; the lower fasciculi presented no other alteration than a yellow tint, which was perceived through the whole course of the spinal marrow. Can anything be more decisive?

*Loss of Feeling and Motion.*—The hind limbs of a seven-year old horse were entirely deprived of feeling and the power of motion; the animal lingered five days; he seemed to suffer little, and he was anxious to eat. The whole of the spinal marrow was softened and semifluid, from the tenth dorsal vertebra to the lumbar enlargement inclusive.

Take an example from Professor Renault. A horse injured in casting was kept during a month; the power of motion in the hind extremities was gone from the beginning; that of feeling gradually ceased, but the horse continued in good spirits and fed well. He was at length destroyed. The spinal marrow at the bending of the neck was softened and changed to a pultaceous and red matter for about two inches in extent!

*Mr. Morgan* congratulated *Mr. Greaves* on his scientific paper; but was sorry he had not brought before the Association some new and more effectual mode of treating these cases, believing it no satisfaction to the owner to take him a piece of the spinal cord, asking him to look what a beautiful specimen had been got from his horse.

*Mr. Greaves* replied to his friend *Mr. Morgan* critically yet amicably, in the same strain, and said he would be very glad to hear if *Mr. Morgan* had been more successful, and by what means.

The discussion was carried on by all present for a considerable time, and until our Manchester friends were compelled to leave, all agreeing that it was necessary to remove the pressure from the nerve-tissue, whether that pressure be caused by extravasated blood, serum, a tumour, or, as is frequently the case in black horses used for funeral work and wearing heavy bridles, by external agents. The treatment would include antiphlogistics, viz., blood letting, cathartics, and counter-irritation, to be followed by strychnia.

Belladonna is believed to be of great service by *Mr. P. Taylor* in arresting inflammation in the medulla spinalis.

*Mr. T. Taylor* related a most interesting case of a 'bus horse which fell in the street, and was at first considered to have broken the back, the tail and legs being quite pendulous. He applied the catheter, from which flowed a large quantity of bloody urine; had the animal slung, and gave a dose of aloes. The animal was on her legs walking about and well the following day, proving to *Mr. Taylor* how careful a practitioner ought to be in diagnosing a case to be broken back.

Cases were related by most of the members present, after which *Mr. Storrar* proposed, and *Mr. G. Hayes* seconded, a vote of thanks

to Mr. Greaves for his able and interesting paper, which was carried with acclamation.

Mr. Storrar having also to leave at 9.30 p.m., vacated the chair, which was ably filled by Mr. R. Reynolds, Vice-President. Before leaving, *Mr. T. Taylor* proposed and *Mr. Hayes* seconded a vote of thanks to Mr. Storrar, which was also carried.

A most successful meeting was carried on until 10 p.m., when it broke up.

The next meeting will be held in the same place and at the same hour, on Friday, May 12th, when all members of the profession, who are able to attend, are hereby invited to do so.

W. C. LAWSON.

*Hon. Secretary,*

### MATRICULATION EXAMINATION.

THE following gentlemen, having passed the examination conducted by the College of Preceptors, have been admitted pupils at the Royal Veterinary College:

Mr. Isaac Woolcott	.	.	Woodford, Salisbury.
„ T. Du Bedat	.	.	Dublin.

### ARMY APPOINTMENT.

LONDON GAZETTE, *Tuesday, March 21.*

*Control Department.—Supply and Transport Sub-Department.*

Thomas Jonathan Symonds, gent., to be Acting Veterinary Surgeon, *vice* Glover, promoted.

### MISCELLANEA.

#### FARRIERS' COMPANY.

WE learn from the 'City of London Directory' the following particulars respecting this Company:

The Company meets at Radley's Hotel, Bridge Street, Blackfriars, E.C. Their hall was burnt in the Fire of London, 1666.

*Charters.*—First established by the Court of Mayor and Aldermen, 1356. Incorporated by 25th of Charles II, January 17th, 1674.

*ARMS.*—*Argent*: three horse-shoes *sable*, pierced of the field.

*Crest*: on a wreath, an arm embowed, issuing from clouds on the sinister side, all proper, holding in the hand a hammer *azure*, handled and ducally crowned *or*. *Supporters*: two horses *argent*.  
*Motto*: "Vi et Virtute."

*Fees Payable*.—Upon taking up the freedom: by patrimony, 3*l.* 8*s.* 4*d.*; by servitude, 3*l.* 8*s.* 4*d.*; by purchase, 5*l.* 8*s.* 4*d.*.—Upon admission to the livery, 5*l.* 15*s.*.—Upon election to the Court of Assistants, 10*l.* 15*s.*

CHARITIES.—*Soule's* bequest, dated 28th March, 1572, leaving property to the Parish Church of St. Sepulchre, London, on condition that the Churchwardens should pay annually to this Company 13*s.* 4*d.* to be by them given to the poor of that Corporation. It is distributed on the first Thursday in January, together with other money voluntarily subscribed by the Court of Assistants.

## OBITUARY.

WE much regret to have to record the death of Mr. W. E. Duns, Professor of Cattle Pathology, Edinburgh Veterinary College. Mr. Duns' appointment only dates back to the commencement of the session 1869-70.

Shortly after his appointment to the professor's chair his health gave way, and he was finally compelled to relinquish his duties in January of the present year. Mr. Duns stood deservedly high in the estimation of his colleagues, and his instructions were much appreciated by the pupils. He was only thirty years of age, and leaves a widow and three children, besides a long list of relatives and friends, to mourn his loss.

We have also to record the death of Mr. James Bennett, M.R.C.V.S., Havering-atte-Bower, Essex. Mr. Bennett's diploma bears date February 27th, 1839.

## ERRATUM.

In our last number Mr. LITTLE'S name was erroneously printed "LITTLE." See p. 182.

THE  
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Communications and Cases.

OBSERVATIONS ON THE ANATOMY AND  
PHYSIOLOGY OF THE HORSE'S FOOT.

By GEORGE FLEMING, M.R.C.V.S., Royal Engineers.

(Continued from p. 252.)

*Physical and Chemical Properties and Minute Structure  
of the Hoof.*

WE have now surveyed the external covering of the horse's foot, and examined the different parts which enter into its composition. The hoof has been shown to be made up of fibres generally lying parallel to each other, and in a direction best suited to support weight and sustain the effects of strain in movement, in addition to resisting attrition. These fibres are composed of horny matter, and vary in density not only in the different divisions we have enumerated as making up this protecting envelope, but even in each of these divisions—variations depending upon the remoteness from, or proximity of the fibres to, the vital textures within. So that, in regard to its physical properties, we might state that the horn of the hoof is a solid, tenacious, fibrous material, dense and rigid in some parts, less so in others, and soft and elastic in particular situations.

Taking the density of water at 1000, that of this horn has been estimated as equal to about 1.190; this estimate, however, will vary according to circumstances. The faculty of the horn for absorbing water, or its hygrometricity, is somewhat great, though this again varies in different parts of the hoof; some, as the frog and periople, taking up more than the sole and becoming soft and swollen, while the wall is less hygrometric

than the sole. The whole, nevertheless, is absorbent, and becomes softened by the imbibition of moisture. This faculty appears to be increased when the hoof has been removed from the foot; though this is only apparent, for the vascular parts it contains during life keep its inner layers moist, and then of course it does not take up so much fluid. A hoof containing the bones and soft parts, and which had been immersed for four days in water, was only increased in weight by eight tenths of a drachm. When exposed to heat it loses its humidity, contracts on itself, decreases in volume, becomes hard and dry, and its porosity is diminished.

Like all other horny substances, this of the hoof is a bad or slow conductor of heat; but this quality again differs in different parts, the wall transmitting heat less slowly than the sole. Experiments made in 1845 showed that it took from four to five minutes' burning of the wall and sole, possessed of their natural thickness, with a red-hot iron, before a thermometer applied to the opposite face testified to the transmission of the heat. Horn is readily combustible; a high temperature first softens, then fuses it, and its continuation causes it to burn, in doing which it emits a dense smoke having an empyreumatic odour. By roasting, it yields carbon and the hydrosulphate of ammonia.

It is softened by alkaline substances, as caustic, potash, soda, or ammonia, and prolonged action of these reduces it to a gelatinous mass. The parts first attacked are the commissures, then the frog, and afterwards the sole and wall; the latter withstanding the solvent action longest at the toe or centre. Strong acids, such as sulphuric and nitric acid, also dissolve it. The sulphuric is less potent than the nitric acid. The latter rapidly acts upon it, changing it into a yellow earthy powder. Hydrochloric acid has the same effect as the caustic alkalies.

The chemical composition of hoof shows that it is a modification of albumen, its analysis yielding water, a large per centage of animal matter, and matters soluble and insoluble in water.

The proportions of these are not the same in the wall, sole, and frog, and their relations have been given by Professor Clement, of Alfort, as follows:

	<i>Wall.</i>	<i>Sole.</i>	<i>Frog.</i>
Water . . . . .	16.12	36.00	42.00
Fatty matter . . . . .	0.95	0.25	0.50
Matters soluble in water . . . . .	1.04	1.50	1.50
Insoluble salts . . . . .	0.26	0.25	0.22
Animal matter . . . . .	81.63	62.00	55.78

In its chemical characteristics, horn appears to be identical with epidermis, hair, wool, feathers, and whalebone, in yielding "keratin," a substance intermediate between albumen and gelatine, and containing from 60 to 80 per cent. of sulphur. Keratin is insoluble in water, alcohol, and ether, but dissolves readily in caustic alkalies, sulphuric acid, and concentrated acetic acid.

The minute structure of the hoof has been a fertile source of conjecture and discussion for the last hundred years; and it is but recently that microscopic research has been able to settle many of the problems connected not only with its histological anatomy, but its origin and growth.

By some it has been looked upon as a mass of hairs agglutinated into a dense envelope; others have compared it to a flexible bone; while others, again, have seen nothing in it but an exaggerated and somewhat modified continuation of the epidermis. The settlement of this question is of much moment in a pathological point of view, as many diseases of the foot, now obscure in their nature, and therefore liable to be treated empirically, cannot be properly understood until the structure and organisation of the hoof are ascertained.

In the first place, it will be admitted that the hoof, being hard, insensible, destitute—it may be said—of blood-vessels, and intended for the most part only as a defence or protection to the highly organised structures lodged within it, cannot be included among the vital textures, and, from its situation, chemical composition, and constitution, must be classed with the epidermic tissues.

We have shown that the different parts of the hoof are all composed of an aggregation of fibres disposed parallel to each other, and running in the same direction as the axis of the foot. This fibrous texture is shown in various ways in every day experience; certain diseases, for instance, make it particularly manifest, and irregular wear of the lower margin of the wall disunites these fibres to a certain extent, and they become tufty and hair-like.

But we have also noticed that one aspect of the hoof—that next the living surface—is perforated by innumerable circular apertures in the wall, periople, sole, and frog; that each of these apertures receives a villus or papilla, multitudes of which stud the tegumentary surfaces corresponding to this aspect; that every one of these canals, with its filamentous tuft of blood-vessels, is the commencement of a fibre; and that therefore the hoof is composed of tubular fibres. In this respect, then, it differs from the epidermis or cuticle, which is simply, as we have seen, an aggregation or stratifica-

tion of cells. In other respects, nevertheless, there is the closest identity; the cuticle also protects the parts within or beneath it, is composed of the same elementary tissues, has neither vessels or nerves, is destined to sustain external wear, and is a slow conductor of heat and cold. We even behold the epidermis, in various places exposed to external contact, assume different thicknesses, and consequently variations of density and resistance. The foot of the ostrich, for instance, is covered by an epidermis almost equal in thickness to the horse's hoof, but it does not manifest the tubular arrangement of the hoof; and so with the foot-pads of other animals. Even the human nail—which is the analogue of the hoof—is nothing more than a collection of superposed cells, and remains a thick, hard, but unmodified epidermis showing no fibrous arrangement.

The fibres of the hoof are constituted by concentric layers of compressed cells, named, from their identity with those of the cuticle, "epithelial;" these surround, and indeed form, the walls of every tubular fibre, and this arrangement is specially conferred upon this particular epidermic envelope in order to endow it with the exceptional strength and tenacity required in the performance of its extraordinary functions.

Those who maintain that the hoof is only a collection of agglutinated hairs, offer what at first seems a plausible argument, in asserting that the hair bulb is simply transferred to the surface of the podal integument, and that instead of being imbedded for a part of its length in the substance of the epidermis, as in other parts of the body, the hair grows from its root on the face of the coronary cushion and elsewhere in the region of the foot; and the bulbs being in contact, the hairs grow together and form the hoof; the periople, acting as a protection to these hairs while as yet they are immature, playing the part of a follicle. When, however, we examine more closely these so-called hairs and the parts from which they are supposed to grow, we find that they differ very materially from the capillary formation on other parts of the body. Hairs have not the simple irregular texture of the horn-tubes, but are complex bodies, comparatively speaking, and offer but few points of resemblance to the hoof fibres. Besides, horses that are naturally entirely deficient of their pilous covering have hoofs as strong as those which are well clothed with hair; this would not be the case if the hair and horn were identical, as a deficiency over the body generally must affect the feet if there was any relationship between the two.

There is no more resemblance between the hoof and a bone

than is found in their histological structure; and even this is slight, consisting merely in both possessing canals containing vessels, and surrounded by concentric zones formed of very dissimilar materials. Here the resemblance ceases; there are no lacunæ or canaliculi in the horn, nor cellular or fibrous arrangements in the bone, and the chemical composition of both are notably different.

From its situation, its structure, its composition, and its analogies, then, we are justified, I think, in concluding that the horse's hoof is identical with the cuticle or epidermis, the modifications observed in it being destined to meet the altered requirements of the covering at the extremity of the limb. The horny carapace of the horse's foot is peculiar, therefore—though this peculiarity extends to all the hoofed quadrupeds—in being fibrous, a character it owes to the disposition of the minute epithelial cells of which it is composed, these being so arranged that when condensed by the animal's weight and other influences, they constitute visible fibres, which are generally perpendicular to the plane by which the superincumbent pressure is transferred to the ground.

In order to perfectly understand this interesting disposition of cells in the hoof, I have carefully and patiently examined it with the aid of the microscope, and have noted the following results of this examination. Before referring to them, however, I would beg to impress upon the members of the veterinary profession the great importance of familiarising themselves to the use of this wonderful instrument, which so marvellously extends the range of vision, intellectually and physically. By it and chemical reagents can we alone hope to unravel many of the mysteries of vitality, and no anatomist, physiologist, or pathologist deserves the designation who is unacquainted with its employment, or the discoveries to which its introduction into these branches of science are mainly due.

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## SPLENIC DISEASE.

By JOHN GERRARD, M.R.C.V.S., Market Deeping.

WITH the great and increasing demand for animal food has arisen the question how best to secure it. It will be found, on inquiry, that this demand, by leading owners of stock to hasten the processes of nature, inducing thereby precocious development, has in no small degree contributed to the production

of peculiarities of system and diseases which, among animals in a state more in accordance with nature, are not observed.

Within the last ten years great advances have been made in veterinary as well as medical science and art. It is questionable, however, whether, with all our progress, we have been able to keep pace with the times in the treatment and prevention of the diseases thus artificially produced.

As instances of disease in the vegetable kingdom, we may mention the vine, potato, and turnip diseases. According to Schleiden, "plants in a high state of cultivation are more or less in a condition predisposed to disease. There is an unnatural and excessive development of particular structures or particular substances, and thus, the equilibrium being destroyed, the plants are liable to suffer from injurious external influences. The general morbid condition produced by cultivation is heightened into specific predisposition to disease when the conditions of cultivation are opposed too strongly or too suddenly to those of nature.

The same may be said of animals that are placed under conditions far different from those destined by nature for their healthy development and propagation. And account for the fact how we may, it forces itself painfully upon our notice, that diseases, the effects of domestication, such as black-quarter in cattle and sheep, parturient and splenic apoplexy, are conditions of body arising out of the manner of feeding, and which induces peculiar and ill-understood blood-changes which are inimical to the continuance of life.

The reciprocal influence of the diseases of plants and animals has not received the attention it demands. We know that some of the diseases of man and animals are intimately related with famines and unwholesome food, and that famines are due more to diseases of vegetable and animal life than to destruction or loss of food. The records of history furnish numerous examples of periods of blights in the vegetable kingdom, associated with epizootics and epidemics; but, as we are not likely to suffer from blights involving famine, we need not allude to them.

The attention of pathologists has not been sufficiently directed to opposite conditions than those entailed by famine or deficiency of food, which seem to obtain so much at present, and to be yearly increasing—diseases induced by manner of feeding, system of culture, quantity and quality of food.

The enzootic diseases of various districts—to say nothing of epizootics of various countries—are not sufficiently known or studied according to their importance and prevalence. The

influence exerted in the production of such by the geological properties of a district, such as nature of the soil, indigenous vegetation, exposure, water, air, and elevation, have hitherto scarcely been taken into account. It is to be hoped, however, now that the "Brown bequest" negotiations are practically completed, that the Committee will soon be in working order, and be enabled to render good service in this direction, and that we may fairly expect to confer, not only immediate and material benefits on the great agricultural interests of the country by the elucidation of the causes and relations of epizootic diseases, but probably greater, if more remote advantages in the research after the intimate causes and origin of disease, in animals in which they can be most advantageously studied by methods calculated to shed light on the mysteries of disease in man.

Foremost among the enzootic diseases stands splenic apoplexy, so called—a disease not known some ten or twelve years ago, and generally regarded as the result of overfeeding, plethora, or some occult influences operating in certain conditions of system, induced by food or drink of certain kinds or spurious quality; while others consider it to be of the zymotic class, depending on a blood-poison, anthrax, of the *miasmatic order*, but not contagious. It is much easier, however, to say what it is *not* than what it *is*.

A number of cases occurring in this district, under circumstances not usually considered favorable to its development, induces me to trouble you with a few particulars, with a view of furnishing, perhaps, some assistance towards a solution of its nature, cause, or prevention, or as a stimulus to further inquiry.

The principal sufferer was a tenant farmer, occupying about 700 acres of fen land, in two farms of about 350 each, about one mile apart, stretching north and south from the main drain that runs east to Spalding, to the road leading from that place to Market Deeping. The soil is a black, spongy peat, containing roots and trunks of trees, consisting principally of vegetable carbonaceous matter, unless where it has undergone the operation of claying. It is the débris of some primeval forest, and its surrounding vegetation, bog-plants and mosses, which had then flourished on the surface of the clay, a subsidence of the surface being the only explanation of this catastrophe. The surface is at present lower than the sea, the level varying from fourteen to sixteen feet below high-water mark in the German Ocean. Subsoil, clay or silt; geological formation, the great oolite, in the middle oolite, the underlying substratum being the Oxford

clay. Mangolds, kohlrabi, and cole-seed are the principal root crops, wheat being the chief cereal cultivated.

The stock consists of ninety head of cattle, of various breeds and ages, from six to thirty-six months, mostly all bought in last November. They are kept in four open crewe-yards on different parts of the farms, supplied with wheat straw *ad libitum*, and from three to six pounds of cake daily, according to age, more as manure-machines than for fattening purposes. The water supplied to two yards is from the open ditches surrounding the fields on the farm, which empty themselves into the main drain already mentioned; the other two are supplied from pumps in the yards. It is of spurious quality, largely impregnated with iron, in the form of the *red hydrated sesquioxide*; that from the ditches containing a quantity of organic impurities the result of decaying vegetable matter, which grows largely in it in summer. The first case occurred in January last, a two-year-old, one of a lot of ten, brought in in November previous, and who brought the foot-and-mouth complaint along with them, affecting all the cattle in the yard. He was observed early in the morning, much excited, breathing hard; there was a bloody spume about the nostrils, and the fæces were tinged with blood. Nothing had been seen amiss on the previous evening; they all seemed very much improved in condition. This fact, together with the symptoms presented, aroused my suspicions, and I ordered the destruction of the affected beast.

Little blood flowed from the veins and arteries in the neck which were cut; the carcass was carted to the neighbouring village, dressed, and sold for food. Nothing particular was observed on examination. Under the skin in the scapular, lumbar, and abdominal regions were a number of ecchymosed spots. Stomachs healthy, mucous membranes very easily peeled off in the fourth, and along the course of the small intestines were extravasations of blood; in the colon and rectum it was less observable, and mixed with the fæces. Bladder empty, but healthy; kidneys healthy; liver large and soft, particularly in the centre; gall-bladder distended with thickened bile; spleen weighed twelve pounds, was very soft, and was with difficulty removed entire from the abdomen; lungs congested; bronchi filled with blood-spume; heart healthy.

By way of prevention the rest were bled and had a saline purge, and rock-salt put in their mangers. They were removed to another yard, and about three weeks after another was attacked, and was just expiring when I reached the place. He was bled in the yard, taken to the butcher's,

dressed, and sold. Nothing different was to be seen in this one from the former; the spleen was rather larger and darker in colour, a greater quantity of blood was in the intestines, and the liver was very large and soft.

To the question, Is the flesh of animals affected with splenic apoplexy injurious to those who eat it? I think I may reply in the negative. These animals, along with others that fell victims to it, were all consumed in the villages, and no bad results have been heard of; moreover, the spleens and other offal were consumed by the butcher's pigs without the animals being in the least affected; but, strange to relate, four pigs, of about four months old, that were in the yard where the second one was bled, and had lapped up the blood, suffered severely for a few days with sore throats; one was very bad; nothing was done to them, and all recovered. In a third yard another two-year-old was found dead one morning, and examination revealed the same cause.

It was evident that some mysterious and fatal influences were at work, and which needed immediate measures to counteract them. The owner had kept cattle for a number of years, in the same yards, on similar food, and never had any similar occurrences. Could it be poison? Was the cake of bad quality, or the water at fault? The cake was said to be the best, the water had been the same for years, and when looked at by an outsider no cause could be found but poison. It is difficult to persuade ignorant people that such occurrences are the results of natural causes. Ignorance always exacts of its victims a blind belief in the *supernatural*, and any reason presented to them that they cannot comprehend is uniformly rejected in its favour. The question, therefore, arises, what are the causes which give rise to this condition of system, and what is its nature? Before attempting to answer these questions it may be as well to mention that, by way of prevention, the whole stock were setoned in the dewlap, and had each a saline purge composed as follows:

℞. Magnesia Sulph.,  
Sodium Chloride, aa. ʒviii.  
Pot. Nit., ʒij.  
Pot. Chlorate, ʒij. M.

The quantity of cake was lessened, a few mangolds allowed, the Sodium and Pot. Chlorate repeated after two days, and no cases have occurred since, some two months ago.

I find, however, that this affection is not confined to the bovine and ovine species, but that solipedes are also its victims. I have had occasion this season to make examina-

tions of two horses which died rather suddenly, and found all the symptoms of a blood disease, with the special characteristics of splenic apoplexy; and I doubt not but that it will be found associated with deaths from enteritis and other abdominal diseases terminating suddenly fatal; more especially in young plethoric subjects, oftener than has hitherto been suspected.

In stating my opinion of its nature and causes, I would first direct attention to its occurrence at all seasons, under very various circumstances as regards food and water, soil, temperature or climate; while neither age, sex, nor species form any exception to its ravages. A disease so widely spread, so rapidly fatal, and presenting lesions so uniform and characteristic, must depend on some very special causes, and owe its origin to something as yet not properly determined. I believe it does not arise from the use of any particular kind or quality of food or water, so much as from some special elements pervading, more or less, all kinds of food, and the special circumstances under which they are given, the excessive development of these elements and unnatural conditions by cultivation. There is no specific *entity* in the disease; it does not fall from the skies, nor spring out of the ground *per se*, it is entirely a disease of improved cultivation, artificial manures, and artificial food.

Although it has been designated splenic apoplexy, I believe it is more a disease of the liver, or disorder of its functions, than disease of the spleen, the latter being, in the first place, merely a passive agent in its production; whilst the former is active, and always bears traces of diseased action, but from its structural peculiarities does not exhibit such manifest lesions.

The intimate connection between these organs; their relation to the organic constituents of the blood, always in superabundance in these cases; their structural differences and functional peculiarities; have not been sufficiently considered in treating of its nature or accounting for its production.

The relation between the liver and spleen—as well as the purpose served by the latter in regard to the portal circulation—is intimate and important. In man we know that structural diseases of the liver are frequently associated with enlargement of the spleen, as in cirrhosis and leucocythemia; while it has been regarded as a kind of reservoir or diverticulum to the portal circulation. This is rendered probable by the enlargement which it undergoes in affections of the heart and liver attended with obstruction to the passage of

blood, through the latter organ, and its diminution when the portal system is relieved, by discharges from the bowels or effusion of blood into the stomach.

The structural differences and functional peculiarities of the liver and spleen are no less important, and call for our careful consideration. In the one we have a non-distensible, highly organized, and extremely vascular gland; composed of a number of cells—unique in their kind—formed into lobules by the minute branches of the portal and hepatic veins, hepatic artery and ducts, surrounded by an areolar investment, which, in the pig especially, isolates the lobules from one another, giving them a polyhedral form, and is continuous with the fibrous investment on the external surfaces of the organ, elaborating a highly complex fluid out of materials which do not pre-exist in the same condition in the blood, serving important purposes in the economy.

In the other we have an easily distensible, highly vascular, and very complex organ, containing a peculiar pulp lodged in the interstices of a trabecular stroma, also capsules filled with nucleated cells, nuclei, and intercellular fluid, traversed by blood capillaries, attached to the vessels and surrounded by the pulp; which, while containing collections of red blood corpuscles in various conditions, resembles generally in nature the matter within the capsules, and which is likewise traversed by fine blood-vessels, performing functions ill understood, or at least not definitely agreed on or determined.

The investing membrane or capsule is peculiar, and worthy of notice in this connection; as upon its nature depends, more or less, the frequent and fatal occurrence of this disease in ruminants. This in the spleen of the ox is a thick, whitish, and opaque membrane, composed to a great extent of elastic tissue, and possesses accordingly the physical property of elasticity, may be widely stretched without laceration, returning readily to its original size as soon as the tension is relieved; but contains few, if any, muscular fibres, which are found abundantly in the spleen of the pig, dog, and cat, so that it is not endowed with contractility, as in the latter. Marrant Baker says: "In respect to its office, recent investigations seem to have furnished us with more definite information. In the first place, the large size which it gradually acquires towards the termination of the digestive process, and the great increase observed about this period in the amount of the finely-granular albuminous plasma within its parenchyma, and the subsequent gradual decrease of this material, seem to indicate that this organ is concerned in elaborating the albuminous or formative materials of food,

and for a time storing them up, to be gradually introduced into the blood, according to the demands of the general system.

“Then, again, it seems probable that, as Hewson originally suggested, the spleen, and perhaps to some extent the other vascular glands, are, like the lymphatic glands, engaged in the formation of the germs of subsequent blood-corpuscles. For it seems quite certain that the blood of the splenic vein contains an unusually large amount of white corpuscles. There is reason to believe, too, that at the spleen many of the red corpuscles, those probably which have discharged their office and are worn out, undergo disintegration; for in the coloured portion of the spleen-pulp an abundance of such corpuscles, in various stages of degeneration, are found, while the red corpuscles in the splenic venous blood are said to be relatively diminished.”

The functions of the liver may be briefly stated as an excretor of hydro carbons, purification of the blood of the portal system, converting the saccharine and amylaceous principles of the food into glucose, or its glucogenic function, fitting it for the process of respiration and the production of animal heat; but the function with which we are at present most concerned is its action on the albuminous matters, *albuminose* conveyed from the alimentary canal by the blood of the portal vein, and which requires to be submitted to its influence before it can be assimilated by the blood.\* Judging from the condition of the animals which fall victims, the tendency to plethora so generally manifested, and the nitrogenous nature of the food supplied, it is fair to assume that the *organic* elements are in excess in the blood, in consequence of which the organ gets overworked, the cells enlarge and seem to contain oil-globules, varying in amount from a few granules to a large mass, hence its largeness and softness, the blood is retarded in its passage through it, the spleen becomes overgorged, its functions interfered with, and the capsule gets unnaturally distended, without the power of contraction.

We can readily understand why, if the functions of the liver be inactive or overdone, the spleen will become distended and its function suspended, the blood will suffer by being retarded in these organs; the changes so essential to its proper elaboration and renewal will be arrested, endosmotic changes will take place from the cells into the surrounding medium, decomposition of the organic elements takes place in the spleen, the circulating blood becomes loaded with effete matter, and is no longer able to nourish the tissues; in short, the blood

\* M. Bernard.

becomes diseased, an attempt is made to eliminate it by the bowels and kidneys, their secretions are interfered with, and by the excitement and overwork a diseased condition of the intestinal surface is established; a reflex action through the sympathetic takes place on the brain and spinal cord, cerebral excitement is at first manifest, hurried breathing, twitching of the muscles, and involuntary passage of fæces and urine tinged with blood, nervous prostration succeeds, and the animal falls to the ground a lifeless trunk, or if down expires without a struggle.

This condition of liver, which I believe to be the primary cause of the disease, cannot be regarded as new, as almost all animals put up to feed, that do not labour, and are largely supplied with a nitrogenous diet, possess a large amount of fat in their hepatic cells; it is only when the organ becomes enlarged, the cells invaded by fat so as to unfit them to perform the extra labour required of them from the nature of the food supplied, that it may be said to interfere with the vital processes. The organ, although it may appear healthy enough to the naked eye, may still be demonstrated under the microscope to contain an unusual number of fat-granules, and even considerable variations may exist, in this respect, quite compatible with a state of health.

It is only when taken in connection with all the circumstances here detailed, and facts furnished by previous writers, that it can be regarded as a cause of the disease, but looked at in these circumstances it will account for its nature as here set forth. One universally admitted and very important fact, favours, indeed corroborates, my conclusions. I allude to the action of active muscular movement in retarding or even preventing a fatal termination in this disease. This seems to act by determining the blood to the superficial veins, favouring the excretion of effete matter by the skin, and relieving the internal congestions.

I shall briefly relate a case which occurred a few days ago, which seems to substantiate my theory. A three-year-old ox, belonging to George Vergette, Esq., of this place, on his farm adjoining those formerly referred to, was observed one morning very much excited, rushing about through the yard, burrowing his head among the litter, looked swollen about the mouth and eyes, with water trickling down from them, there was also a peculiar twitching of the muscles all over the body.

He had lain down when I saw him, was seemingly suffering no pain, looked wild when put up, with bloodshot eyes, and trembled violently; passed small quantities of high-coloured urine frequently, and exhibited all the symptoms of the dis-

ease. The owner had previously lost some out of the same yard in similar circumstances, and the attendant thought "he had better be killed than doctored." As there were no symptoms of immediate dissolution, I had him secured, and took away about three quarts of blood from the neck, gave a saline purge combined with a stimulant. A good deal of effusion had taken place below the skin, about the neck and dewlap and down the forelegs, which I rubbed with a stimulating liniment. He continued to shake even worse than before; I ordered him to be driven about the yard for three hours until a waggon could be procured for his removal to the home farm, where the services of a butcher would be more accessible should they be required. Six hours after my leaving him he arrived all safe, and hardly a trace of the disease remained. He still looked wild, and did not eat; he was watched through the night, and in the morning seemed to have nothing amiss.

Here was a case which, to all external appearances, exhibited all the symptoms usually observed during life in well-marked cases, and, taken in connection with the previous outbreaks in the same yard, leaves no doubt on my mind as to its nature. The sudden depletion of the system, together with the active exercise enjoined, seemed to act beneficially by unloading the vascular system, favouring the absorption of effused products, and allowing the nervous system to rally; thus proving that the disease is more of the nature of vascular engorgement of the blood glands, associated with functionary derangement of the liver, producing *necræmia*, or death of blood, than any specific blood-poison introduced from without, either in the shape of malaria, protozoa, fungus, food, or water, although all these may modify (within certain limits) particular cases; certainly they never of themselves produce it.

In conclusion, while believing that I have shown the true nature of splenic disease, there are many points, I am aware, which require further elucidation and verification from the chemist and microscopist before they can be accepted by all; but the statements herein set forth will I think stand their test and scrutiny. They are the result of practical observation of the disease under varying circumstances, and are offered, as an humble contribution to veterinary pathology, for your consideration, and (if worthy) the candid criticism of your readers.

[We altogether object to the conclusion, that, because certain persons in a village ate with impunity the flesh of animals which were affected with splenic apoplexy, the flesh is fit for human consumption.—EDS.]

## CASE OF HYPERTROPHIED HEART IN A WAGGON GELDING.

By J. W. HILL, M.R.C.V.S., Wolverhampton.

I HAVE forwarded for your inspection, per train to-day, a specimen of diseased heart of a horse, in which you will see there is considerable hypertrophy, especially of the left ventricle, together with an abnormal condition of the valves at the auricular ventricular opening, which are somewhat thickened and imperfect in their closure; there was no effusion in the pericardium. The heart, prior to being emptied of its blood, weighed a little over 21 lbs., and is now 15 lbs. I may say that I have made but a casual examination of it, in order that you might see it as much as possible in its entirety.

The history of the case, which I will briefly give, is as follows :

On Wednesday, March 15th, I was requested to attend at Sedgley, to examine a bay waggon gelding, six years old. Upon my arrival, I was informed by the owner that the animal had been ill a week, and for the last three or four days had been noticed to stagger occasionally, and if hurried in turning, fell down, and was unable to rise again for some time, and that he had been the subject of these attacks twice or three times a day.

The patient, when I saw him, exhibited the following symptoms :—Pulse 30, oppressed; visible mucous membranes vascular; loss of appetite; laboured respiration. A short dry cough (which he had had for some time), and inability to move without danger of falling.

I immediately applied blisters to sides and chest, administered a diffusible stimulant, and ordered for diet gruel, mashes, scalded hay, and a few carrots.

The following day, though he appeared stronger on his legs, and could move round if carefully turned; the pulse was lower and more oppressed than previously, intermittent, and varied each minute in its pulsations, sometimes only numbering 18. I felt now convinced, from these symptoms, together with the history given me, that the heart was affected, and told the owner to that effect; the blisters, which had scarcely acted, were repeated with good effect. The treatment throughout the case was diffusible stimulants and tonics, a rowel in the meantime being inserted in the chest.

At times the horse appeared considerably better, while at others he would seem to be at death's door. He would take food when given by hand, but otherwise took no notice of the contents of the manger.

On Tuesday, April 4th, he was down, and quite unable to rise, and having fallen away to almost a shadow, I advised the owner to have him destroyed, which was done yesterday, and the heart I have sent for your inspection and comments, if you think it worthy; I thought it would also be interesting to the members of the Veterinary Medical Association.

I may mention that the waggoner informed us the horse had not been really well for three or four months, appeared not to have his usual animation, or to feed as well as he had previously done.

[The specimen to which Mr. Hill refers was a remarkably interesting one of disease of the heart, principally of the septum, between the ventricles, which was in a condition of hypertrophy, as were also the walls of the left ventricle.

The mitral valves, as Mr. Hill remarks, were considerably thickened. There was no deposit of fatty tissue externally; in fact, the fat round the base of the heart was deficient in quantity. The organ was normal in colour, and tolerably firm in texture. Eds.]

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## PRACTICAL THOUGHTS ON PLENALVUS.

By THOMAS JAMES POULTON, M.R.C.V.S., Wrotham.

It is not my intention in the present instance to attempt to exhaust this subject, but to confine the few brief, hurried, and imperfect observations I propose to make to their more practical and yet, at the same time, conjointly scientific bearings.

We must, in this affection, as in all others, thoroughly diagnose the disease, which to the practical student will not be very difficult, and we must, at the same time, which is even of more vital import, make ourselves as thoroughly acquainted as we can with the nature of the accumulations in the rumen. Again, we shall have to modify our treatment, if any considerable amount of gaseous eliminations coexists, and we shall find that the greater the amount of gas that is present the more speedy must be the employment

of the means of relief. Again, we ought never to have recourse to rumenotomy unless every other means has failed, and the case will, it is feared, resolve itself into alvitis, or when a sufficient time has elapsed, and there is no diminution of the contents of the rumen.

In this disease we must have patience, and as the result of that patience cases which at first presented alarming appearances will often recover.

The contents of the rumen may consist of almost anything of which the animal partakes; but if there is an accumulation of wheat, oats, or barley, chaff or straw, there will be little or no gaseous eliminations. In such cases it will be good practice to give good bold cathartic doses, to withhold all food of any description, and to place cold or tepid water for the animal to drink. Afterwards, providing no inflammatory symptoms are present, we may give stimulants and vegetable and mineral tonics.

In most cases this treatment will be eminently successful. In other cases a considerable amount of gas is present with the ingesta; the practitioner will have to base his treatment upon his diagnosis; he will now give with the saline aperient some ammoniacal compound.

Distension of the rumen may be due to acorns, as in the following case:—On the 4th of December last, at 4 p.m., I was requested to attend a cow, the property of a dairyman, in the immediate vicinity, which was reported as very unwell. The visible mucous membranes were slightly blanched; there was not much distension of the rumen; no desire to lie down, which was very unusual in her. There was frequent grunting, especially when I manipulated the right side; pulse wiry (about 65); extremities cold; back arched; coat dry and sticking to the ribs; and suppression of the secretion of the milk; diminished secretion of the urine; alvine excreta normal in consistency, but black. I was informed that, as the cow had proved barren, she was on the point of being fattened, and an allowance of two gallons of acorns, about the same of meal, with some oilcake, cut chaff, and oat straw, constituted the daily provender. Prior to my arrival she had shown symptoms of indisposition for the last twenty-four hours, but was rapidly getting worse.

The treatment consisted of a saline aperient with Tr. Ferri Mur. ℥j; Spts. Ammon. Aromat. ℥ij, in about a quart of warm ale; friction to the extremities. All food was withheld.

7 p.m.—Some gas expelled. The cow grunts still, but not so often; she still keeps looking to the right side.

5th December, 5 a.m.—Does not grunt half as much; looks better; bowels have responded freely to the action of the physic. Attendant points out three acorns, which he says were expelled with the fæcal matter. Ordered all food to be withheld. Repeat medicine.

Suffice it to say in about a couple of days the cow recovered convalescence, during which period all food was withheld. At the expiration of the time the contents of the rumen were sensibly reduced. As would naturally be supposed, the stools were of an inky hue. In this instance I was fully prepared, had she at any period been found not so well, to have recourse instantly to an operation.

*Remarks.*—According to this case there seem to be, as stated by Professors Simonds and Brown, two distinct forms of acorn-poisoning—one in which there is no impaction, in which death results long after every acorn has been expelled the system, and which is not due to any astringent property in the acorn; while in the other form the impaction of the rumen is a prominent symptom, where the omasum and abomasum are clearly affected through the peculiar action of the acorns on those organs.

Wheat may be said, under some circumstances, to produce the affection, as the following case points out:

1st January, 1869, I was hastily summoned to attend some animals, the property of a farmer in this parish. Six heifers and two old cart horses had been turned into the farm-yard as usual during the night. The next morning the boy, as usual, drove them to the pond to water, he having to drive them from thence, as he thought they would never have left off drinking. The horses then went to work, and one worked till two p.m., the other till half-past four p.m. All the morning the first was noticed to be dull, to hang at the collar, and to take no notice of the whip, and the other presented slight symptoms similar to the above. At two p.m. water was given to both horses, of which they readily partook; and about the same time the heifers, by some means or other, got the yard gate open, and were found in the pond partaking freely, with part of their faces thrust into the water. At three p.m. I was summoned to attend the horse, and one heifer was reported very unwell. On going into the yard I observed, under the barn doors, a rat's hole, which had previously been stuffed from the outside with straw; the straw was removed, and about a bushel of wheat was upon the ground. Behind the hole was about 120 bushels of wheat stowed.

The first horse lived about an hour, when she fell and

expired. Just as the other horse was in the act of being led into the stable from work it fell dead. (I did not know anything of this horse having been in the yard until after its death.) The heifer, as also the rest, were very ill.

To relieve this distended condition of the rumen I introduced the trocar, when the contents rushed out through the canula like a fountain. The extremities were deathly cold, the pulse at the tail was scarcely perceptible, all the usual signs of speedy dissolution rapidly made their appearance, and about eight p.m. she succumbed. The contents of the rumen were very fluid, and presented a greasy appearance.

From the nature of the contents in this case I at once abandoned all thoughts of rumenotomy in the treatment of the other animals, and relied on oleaginous and other purgatives, and abstinence from food and drink. One animal, which was in a tolerable condition, was slaughtered. I believe we should have saved all the rest had it not been that while a draught was being administered to one of the animals the head was elevated so much that some of the fluid went down the trachea, and symptoms of asphyxia at once became apparent; and although it did not at once terminate fatally, yet, combined with the disease, ultimately killed her. Three, then, after a great amount of nursing, care, and medicine, recovered; of the other three, one was killed by a butcher, another died from the artificial means had recourse to to promote health, and the third died *bonâ fide*. Throughout the disease the alvine evacuations were extremely fetid.

*Cadaveric Lesions. Horses.*—The stomach and large intestines were filled to repletion, and two ruptures existed in the second horse, one of the stomach, and the other in the commencing portion of the colon. In the first horse no ruptures existed. The ingesta presented a baked appearance. The mucous and peritoneal surfaces of both stomach and intestines were of a black hue.

*Heifers.*—As above stated, the contents of the rumen were in a very fluid and fermentative state, and the epithelium could easily be removed from the fibrous coat. The omasum, abomasum, and large intestines showed signs of active inflammation.

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## POISONING OF A HORSE BY EATING LAUROCERASUS FOLIA.

By FREDERICK ADSETTS, Veterinary Assistant, Newport, Salop.

On the 23rd of January I visited, in company with Mr. Walters, a horse supposed to be suffering from gripes.

*Symptoms.*—Pulse indistinct at jaw, and very feeble at heart. Mucous membranes injected, and of a yellow hue; respiration oppressed. Occasionally pawing and scraping the litter; lying down prostrate, and looking eagerly at his abdomen; the extremities cold; total loss of appetite; constipation of the bowels; the urine voided in very small quantities; continuous pain, but not very acute. We diagnosed the case to be congestion of the liver with constipation producing griping, accompanied with a sympathetic fever.

*Treatment.*—We gave a small dose of physic with a drachm of calomel and an antispasmodic draught, ordered him to be put in a loose box, diet to consist of bran mash, gruel, and chilled water.

24th.—Rather worse; pulse imperceptible; mucous membranes injected. The pain continued; no action of the bowels. We gave him four drachms of Aloes et Barb., and a draught containing Ether Nit. one ounce, Ether Sulph. one ounce in twelve hours, the mixture to be repeated. We made every inquiry whether the animal had taken or had had given him, either in the shape of food or medicine, anything likely to disagree with him; all we could ascertain was that he had had a little wheat with his other corn. We at once thought we had a case of gastritis and congested liver through eating wheat.

25th.—The horse appeared much the same. No excrement passed; pulse still imperceptible. We gave him a stimulant in draught linseed oil.

26th.—He had expired during the night. We were very suspicious that the animal had either taken or had had given him some narcotic poison.

*Autopsy.*—On opening the abdomen its contents appeared quite healthy, but on opening the stomach we found the vilous coat highly inflamed; the mucous membranes of the small intestines presented a similar appearance to the stomach, the mucous membranes of the cæcum and colon were the seat of considerable inflammation. In the cæcum, about

midway, was a stoppage of cut hay and straw. The lungs were quite healthy, but the heart displayed similar appearances to the stomach. The mucous coat of the auricles and ventricles was also much inflamed. We informed the owner that we had no hesitation in coming to the conclusion that his horse had taken some narcotic poison. The following day the owner sent a note, saying that the horse had eaten, the day previous, a quantity of laurel leaves, he wanting to know if they were poisonous. This at once accounted for the symptoms during life, and the *post-mortem* appearances afterwards, as the *Laurocerasus folia* contain a certain amount of hydrocyanic acid, which is a deadly poison.

## THE PRINCIPLES OF BOTANY.

By Professor JAMES BUCKMAN, F.G.S., F.L.S., &c. &c.

(Continued from p. 266.)

THE eighth alliance—the second of endogens—include several natural orders of plants in which the floral organs are clustered on and around a terminal flower-stem called a *Spadix*, which may or may not be enveloped in a leaf or leaves, to which the name *Spatha* has been given. This structure is well exhibited in the Lords and Ladies, now so common on every hedge bank, and which, under its botanical name of *Arum*, will be again referred to.

The *Aral Alliance* contain the following natural orders :

1. *Pistiaceæ*—Lemnads, or Duckweeds.
2. *Typhaceæ*—Typhads, or Bullrushes.
3. *Araceæ*—Arads.
4. *Pandanaceæ*—Screw-pines.
5. *Palmaceæ*—Palms.

Of these it will only be necessary to describe those affording the more practical details.

The Typhads are well represented by our common Bull-rush, the curious structure of which can hardly be described without figures. Most writers place them in a separate section from Arads, but Robert Brown united them with these, but whether alone or otherwise the foliage and half glumaceous nature of the inflorescence of *Typha* will place it near to the Carcies, which were dwelt upon in our last chapter.

Professor Lindley describes these plants as “found commonly in the ditches and marshes of the northern parts of

the world, but uncommon in tropical countries; one species occurs in St. Domingo, and another in New Holland. Two are described from equinoctial America."

The uses of *Typha* as medicines have been more or less extolled. The rhizomata are full of starch, and are said to be astringent and diuretic, and to have been employed in the east of Asia in dysentery, gonorrhœa, and the measles. The fact is that rhizomata have always more or less of astringency or of some flavour, and hence this portion of sarsaparilla, and the kindred structure in other plants, have ever had their advocates for some fancied medicinal uses.

To the sportsman both our English species are well known. They are often mixed in the marsh, and form a covert for water-birds, which he seldom fails to visit.

The bullrush, catstail, or reed-mace—all common names given to these plants—according to Dr. Syme, "are very ornamental on the margins of lakes and pieces of water, and they afford favourable shelter to wild-fowl; but as they increase rapidly, they must be cautiously introduced when the pool is small. This is the plant chosen generally by the early painters to represent the reed which was placed in our Saviour's right hand during His mockery by the Roman soldiers. In England the leaves are sometimes woven into mats and baskets, and occasionally cottages are thatched with them."

The Arads are represented by our common *Arum maculatum*, the lords and ladies of our childhood, the "cuckoo-pint" of the poets, as it comes "ere the swallow dares," and its lords and ladies usher in the cuckoo; this plant, and the still more stately *Arum italicum* of the conservatory, are well known to all. The curious structure, and the evolution of heat from the spathes, will ever render them interesting to the botanist.

The root tubers of these plants contain a fecula, which is known to be nutritious. Dr. Syme says that "large quantities of it are collected in Portland Island, and on the dry and sunburnt districts on the banks of the British Channel, and sold under the name of Portland sago. It is largely used to adulterate arrowroot."

This notion seems to have been copied from one author to another, but we never could find it authenticated, and it seems hardly likely that it can be used to any great extent, as it would take weeks to collect enough for a few pounds of starch, and this product can therefore be more readily and more cheaply obtained from potatoes.

Some of the exotic allies which possess larger *corms* are

still used as food by a large number of people; the species of caladium and colocasia, under the names of eddoes and yams, are well known in the West Indies; we have eaten both eddoes and yams roasted like potatoes, and found them to be exceedingly good.

The foliage of most of the order possesses highly irritant properties. Our country children frequently get sore noses and swollen faces from rubbing these parts with hands that had previously been busy with lords and ladies. Professor Lindley tells us that "the spadices of some species have a fetid putrid smell, others, such as *Arum cordifolium*, *italicum*, and *maculatum*, are found to disengage a sensible quantity of heat at the time when they begin to expand. The emanations from *Arum dracunculus* are extremely inconvenient; when in flower they produce a dizziness, headache, and vomiting. A writer in the *Annals of Chemistry* says that he was attacked with violent headache and sickness after gathering about forty of the spadices." There can be no doubt but that the *arads* form a very active group of plants, but it would appear that in most, if not in all cases the active principles are dissipated by heat, and hence even the corms or tubers, which in the raw state would be, if not poisonous, at least acrid and disagreeable, become wholesome and agreeable esculents when cooked.

The palms, which next claim our attention, are amongst the most useful family of plants the world possesses. "Wine, oil, wax, flour, sugar, salt," says Humboldt, "are the produce of this tribe, to which von Martius adds thread, utensils, weapons, food, and habitations."\*

It would take too long to go into a detail of the economic or medicinal qualities attributed to this tribe of plants, but we may mention palm-nut oil as a useful product both to the pharmacien and the machinist. Cocoa-nut oil is also used in considerable quantities.

Dragons' blood is procured from the fruit of *Calamus draco*. This dark red resin was once used to colour tinctures, and the cow leech has still faith in it as a reddening ingredient in *drinks* for red water; so our grandmothers still hold the yellow bark of the barberry tree as "a sovereign *remedy* for *janders*," and a dairyman would consider any drench for *yellows* as quite inoperative that did not contain turmeric. It was upon this doctrine of signatures which our forefathers acted in their uses of vegetables, but, as in the present day, educated men seek for principles. Dragons' blood, which

\* Vegetable Kingdom.

merely possesses colour, is discarded from the *Materia Medica*.

Vegetable ivory is a product of the seeds of a palm. The Spanish botanists, Riuz and Pavon, say of it, "The Indians cover their cottages with leaves of this most beautiful palm; the fruit at first contains a clear insipid fluid, by which travellers allay their thirst; afterwards, this same liquor becomes milky and sweet, and it changes its taste by degrees as it acquires solidity, till at last it is almost as hard as ivory. The liquor contained in the young fruits becomes acid if they are cut from the tree and kept some time. From the kernels the Indians fashion the knobs of walking sticks, the reels of spindles, and little toys which are whiter than ivory, and as hard, if they are not put under water."\*

The extended use of this vegetable has resulted in a ready method of adulterating the ground bones, which are so much used as a manure. Our agricultural friends will therefore find it to their advantage to grind the bones they employ, or if needs be, not to purchase ground bones or bone dust without first obtaining an analysis from the bulk.

Palms are mostly tropical plants, but of late they have been favorites with the cultivator, where large glass houses are at hand; a fine collection may be seen at Kew, to which we would refer the student who would wish to observe the grandeur, variety, and habits of the stately tribe of plants.

## Pathological Contributions.

### CATTLE PLAGUE.

In France cattle plague is still spreading; it exists now in three communes of Douai, and also in Lille, and in three arrondissements of Brest. The whole of the department of Côtes du Nord is infected, and the disease is raging at Leon.

A fresh outbreak occurred at Berne, but active means were at once taken to prevent its spread.

In Belgium no fresh cases have occurred, and the sources of contagion are presumed to be extinct; but the disease is raging all along the French frontier.

According to reports from Berlin, Germany is free from cattle plague, and stringent precautions against the intro-

\* Vegetable Kingdom.

permanent molars, 4th,  $\frac{1-1}{1-1}$ ; permanent molars, 5th,  $\frac{1-1}{1-1}$ ; central permanent incisors,  $\frac{1-1}{1-1}$ ; lateral permanent incisors,  $\frac{1-1}{1-1}$ ; corner temporary incisors,  $\frac{1-1}{1-1} = 32$ .

Rising 4.

Edges of permanent lateral incisors do not meet.

4 years.

Permanent molars, 6th,  $\frac{1-1}{1-1}$ ; permanent molars, 3rd,  $\frac{1-1}{1-1}$ ; cuspids or tush teeth,  $\frac{1-1}{1-1}$  \*

Permanent molars, 1st,  $\frac{1-1}{1-1}$ ; permanent molars, 2nd,  $\frac{1-1}{1-1}$ ; permanent molars, 3rd,  $\frac{1-1}{1-1}$ ; permanent molars, 4th,  $\frac{1-1}{1-1}$ ; permanent molars, 5th,  $\frac{1-1}{1-1}$ ; permanent molars, 6th,  $\frac{1-1}{1-1}$ ; central permanent incisors,  $\frac{1-1}{1-1}$ ; lateral permanent incisors,  $\frac{1-1}{1-1}$ ; corner temporary incisors,  $\frac{1-1}{1-1}$ ; cuspids or tush teeth,  $\frac{1-1}{1-1} = 38$ .

Rising 5.

Permanent corner incisors,  $\frac{1-1}{1-1}$ .

Permanent molars, 1st,  $\frac{1-1}{1-1}$ ; permanent molars, 2nd,  $\frac{1-1}{1-1}$ ; permanent molars, 3rd,  $\frac{1-1}{1-1}$ ; permanent molars, 4th,  $\frac{1-1}{1-1}$ ; permanent molars, 5th,  $\frac{1-1}{1-1}$ ; permanent molars, 6th,  $\frac{1-1}{1-1}$ ; central permanent incisors,  $\frac{1-1}{1-1}$ ; lateral permanent incisors,  $\frac{1-1}{1-1}$ ; corner permanent incisors,  $\frac{1-1}{1-1}$ ; cuspids or tush teeth,  $\frac{1-1}{1-1} = 40$ .

5 years.

Permanent incisors  $\frac{3-3}{3-3}$ , tush  $\frac{1-1}{1-1}$ ,\* permanent molars  $\frac{6-6}{6-6} = 40$ .

\* From 2nd or 3rd year to the 8th, very irregular.

Note.—Little nodes of tooth-like substance, having minute fangs, and inserted immediately anterior to the first molars of the upper, rarely of the lower jaw, are called *wolfs* teeth.

Tabulated by JOHN GORHAM, M.R.C.S., Tunbridge.

The study of the order and time of eruption of the teeth, the dentition as it is called, in the Horse, is important, because, as is well known that, by examining the mouth, the Veterinary Surgeon is enabled to arrive at definite conclusions as to the age of this animal. It is manifest, however, that if such conclusions are to prove correct, the exact age of the horse must in all cases have been first determined, and then the number and kind of teeth contained in the mouth at that age, carefully registering age and teeth in a sufficiently large number of well-attested examples. Such examples are contained and made use of in books, but they have always appeared to the author to require tabulating to make them really efficient in practice, inasmuch as the shedding of the temporary and the cutting of the permanent are so intricately interwoven, that it requires some care to pick them out and locate them in their proper order, and when this is done, a good memory to retain them. On consulting the most recent books on the subject the author has found it most conducive to the recollection of the facts contained therein to reduce them, therefore, to a tabulated form; indeed, it is almost impossible without such assistance to retain them in one's mind so that they shall become at all useful in practice. The contents of this Table have been chiefly drawn from Mr. Youatt's excellent work on this subject, with the occasional addition of the word "temporary" where this seemed required, in order to keep the distinction between the two kinds of teeth, *temporary* and *permanent*, prominently before the reader. The formulæ are those commonly employed in comparative anatomy, and have been adopted by the author in his manual on the 'Teeth of the Human Subject,' for while such formulæ have been hitherto used chiefly to distinguish the teeth of one group of animals from those of another, they are not the less admirably adapted to indicate the changes which are effected in the teeth of one and the same animal during the complicated processes of the first and second dentition.

AGE.	NAMES OF TEETH AND NUMBER CUT AT EACH AGE.	DENTAL FORMULA, OR NUMBER FOUND IN THE MOUTH AT EACH AGE.
Birth	Temporary molars $\frac{3-3}{3-3}$ , front temporary incisors $\frac{1-1}{1-1}$ .	Temporary molars $\frac{3-3}{3-3}$ , front temporary incisors $\frac{1-1}{1-1} = 16$ .
6 weeks.	Lateral temporary incisors $\frac{1-1}{1-1}$ .	Temporary molars $\frac{3-3}{3-3}$ , temporary front incisors $\frac{1-1}{1-1}$ , temporary lateral incisors $\frac{1-1}{1-1} = 20$ .
6 months.	Corner milk teeth, or temporary incisors $\frac{1-1}{1-1}$ .	Temporary molars $\frac{3-3}{3-3}$ , temporary front incisors $\frac{1-1}{1-1}$ , temporary lateral incisors $\frac{1-1}{1-1}$ , corner milk teeth $\frac{1-1}{1-1} = 24$ .
9 months.	—	Corner temporary incisors, edges do not meet.
1 year.	Permanent molars $\frac{1-1}{1-1}$ (4th molars in situation.)	Temporary molars $\frac{3-3}{3-3}$ , permanent molars $\frac{1-1}{1-1}$ , front temporary incisors $\frac{1-1}{1-1}$ , lateral temporary incisors $\frac{1-1}{1-1}$ , corner temporary incisors $\frac{1-1}{1-1} = 28$ .
18 months.	Permanent molars $\frac{1-1}{1-1}$ (5th molars in situation).	Temporary molars, $\frac{3-3}{3-3}$ ; permanent molars, 4th, $\frac{1-1}{1-1}$ ; permanent molars, 5th, $\frac{1-1}{1-1}$ ; front temporary incisors, $\frac{1-1}{1-1}$ ; lateral temporary incisors, $\frac{1-1}{1-1}$ ; corner temporary incisors, $\frac{1-1}{1-1} = 32$ .
2 years.	—	Incisors show considerable wear.
3 years.	Central permanent incisors or horse teeth $\frac{1-1}{1-1}$ .	Temporary molars, $\frac{3-3}{3-3}$ ; permanent molars, 4th, $\frac{1-1}{1-1}$ ; permanent molars, 5th, $\frac{1-1}{1-1}$ ; central permanent incisors, $\frac{1-1}{1-1}$ ; lateral temporary incisors, $\frac{1-1}{1-1}$ ; corner temporary incisors, $\frac{1-1}{1-1} = 32$ .
Later in 3rd year.	Permanent molars, 1st and 2nd, $\frac{2-2}{2-2}$ .	Third temporary molars, $\frac{1-1}{1-1}$ ; permanent molars, 1st and 2nd, $\frac{2-2}{2-2}$ ; permanent molars, 4th, $\frac{1-1}{1-1}$ ; permanent molars, 5th, $\frac{1-1}{1-1}$ ; central permanent incisors, $\frac{1-1}{1-1}$ ; lateral temporary incisors, $\frac{1-1}{1-1}$ ; corner temporary incisors, $\frac{1-1}{1-1} = 32$ .
3 years off.	Lateral permanent incisors $\frac{1-1}{1-1}$ .	Third temporary molars, $\frac{1-1}{1-1}$ ; permanent molars, 1st and 2nd, $\frac{2-2}{2-2}$ ; permanent molars, 4th, $\frac{1-1}{1-1}$ ; permanent molars, 5th, $\frac{1-1}{1-1}$ ; central permanent incisors, $\frac{1-1}{1-1}$ ; lateral permanent incisors, $\frac{1-1}{1-1}$ ; corner temporary incisors, $\frac{1-1}{1-1} = 32$ .
Rising 4.	—	Edges of permanent lateral incisors do not meet.
4 years.	Permanent molars, 6th, $\frac{1-1}{1-1}$ ; permanent molars, 3rd, $\frac{1-1}{1-1}$ ; cuspids or tush teeth, $\frac{1-1}{1-1}$ . *	Permanent molars, 1st, $\frac{1-1}{1-1}$ ; permanent molars, 2nd, $\frac{1-1}{1-1}$ ; permanent molars, 3rd, $\frac{1-1}{1-1}$ ; permanent molars, 4th, $\frac{1-1}{1-1}$ ; permanent molars, 5th, $\frac{1-1}{1-1}$ ; permanent molars, 6th, $\frac{1-1}{1-1}$ ; central permanent incisors, $\frac{1-1}{1-1}$ ; lateral permanent incisors, $\frac{1-1}{1-1}$ ; corner temporary incisors, $\frac{1-1}{1-1}$ ; cuspids or tush teeth, $\frac{1-1}{1-1} = 38$ .
Rising 5.	Permanent corner incisors $\frac{1-1}{1-1}$ .	Permanent molars, 1st, $\frac{1-1}{1-1}$ ; permanent molars, 2nd, $\frac{1-1}{1-1}$ ; permanent molars, 3rd, $\frac{1-1}{1-1}$ ; permanent molars, 4th, $\frac{1-1}{1-1}$ ; permanent molars, 5th, $\frac{1-1}{1-1}$ ; permanent molars, 6th, $\frac{1-1}{1-1}$ ; central permanent incisors, $\frac{1-1}{1-1}$ ; lateral permanent incisors, $\frac{1-1}{1-1}$ ; corner permanent incisors, $\frac{1-1}{1-1}$ ; cuspids or tush teeth, $\frac{1-1}{1-1} = 40$ .
5 years.	—	Permanent incisors $\frac{3-3}{3-3}$ , tush $\frac{1-1}{1-1}$ , * permanent molars $\frac{6-6}{6-6} = 40$ .

\* From 2nd or 3rd year to the 8th, very irregular.

*Note.*—Little nodes of tooth-like substance, having minute fangs, and inserted immediately anterior to the first molars of the upper, rarely of the lower jaw, are called *wolf's teeth*.

duction of the disease are maintained on the Russian and French frontiers.

SCAB IN SHEEP.

THIS disease prevails in Stettin and Stralsund, and infected cargoes of sheep from Hamburgh have been recently landed in London and at Middlesborough. It appears from the returns that scab has decreased in Great Britain since the last report.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

“RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of March, 1871, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	NUMBER OF ANIMALS AFFECTED.					DISPOSAL.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered at place of landing.
Bremen .	London	Foot-and-Mouth	6	...	...	...	6	6
Geestemünde .	„	„	32	59	...	...	91	91
Hamburg	„	Sheep-scab	...	514	...	...	514	514
„	Middlesborough	Foot-and-Mouth	7	...	...	12	19	19
„	„	Sheep-scab	...	4	...	...	4	4
Total.—Foot-and-Mouth			45	59	...	12	116	116
Sheep-scab . .			...	518	...	...	518	518
Total . .			45	577	...	12	634	634

“ALEXANDER WILLIAMS,

Secretary.

“Privy Council Office,  
“Veterinary Department, 13th April, 1871.”

## PARASITIC DISEASES.

SHEEP are reported to be suffering, in South Devon, from the presence of filariæ in the bronchial tubes, and also from the development of the cœnurus in the brain. This last parasite is to be referred to introduction of embryos of the tœnia cœnurus from the intestines of the dog.

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### Facts and Observations.

UTILIZATION OF SEWAGE.—Mr. David Forbes, F.R.S., after describing the processes, mechanical and chemical, by which sewage has been dealt with, called attention to what he said was an entirely novel process, brought forward by Dr. Price and himself. It was founded on the fact that certain mineral phosphates, especially those containing alumina, eagerly combine with the organic matter of sewage. A solution of the phosphates and milk of lime was added to the sewage, and the ammonia was precipitated in the shape of a double phosphate. Mr. Forbes illustrated the process with a bottle of Liverpool sewage, and the result was, that in a few minutes the precipitate was seen falling to the bottom, leaving the water perfectly clear and free from smell. In another experiment he added ink to the sewage, which gave it a black colour, but the colouring matter was at once removed by the addition of the solution of phosphates and the lime-water. In fact, he contended that the sewage water so purified could be drunk without offence, and he caused some amusement by drinking a wine-glass of the water clarified from the London sewage. Before recommending the process, he said they must be prepared to answer two questions—first, whether the water was sufficiently pure to be permitted to flow into rivers; and, secondly, whether the valuable constituents of the sewage had been precipitated. He proceeded to show that the answers to both questions were satisfactory, and, in conclusion, he expressed an opinion that his process would be extremely valuable in such localities as were found unsuitable for sewage irrigation.—*Journal of the Society of Arts.*

RELATION OF PIGMENT-CELLS TO CAPILLARIES.—The *Lancet* has called attention to some valuable researches of Dr. Saviotti, which we should be sorry to omit noticing. The

observer was engaged in studying the inflammatory process in the foot of the frog, and he first obtained a circumscribed spot of inflammation by means of a drop of collodion, and after a few days found the pigment-cells of the irritated spot accumulated around the vessels in a contracted condition, and in the course of a short time that they had entirely disappeared. He immediately applied himself to the question of explaining the mode of their disappearance. In other frogs he excited inflammation by dropping on the web a small quantity of a 2 per cent. solution of sulphuric acid. Again, after a few days, he saw that the pigment-cells had accumulated around the blood-vessels, and that, though they still preserved their contractility, their processes were less branched and numerous than natural. On further examination, he now observed that these processes began to penetrate the walls of the adjacent capillaries and small veins, causing an obstruction to the onward movement of the red corpuscles on their proximal side, while a clear space was observable on their distal side, occupied only by serum. And now one of two things occurred: either the process of the cell broke off, and was swept away by the blood current, or the whole cell gradually squeezed itself through the capillary wall (the part within the vessel becoming greatly attenuated and elongated) until it also was carried away. In the former case, the cell, shorn of part of its substance, still remained outside the vessel; in the latter it of course disappeared entirely. As regards the time occupied in these phenomena, Dr. Saviotti finds that the cell-processes penetrate the vessels in a period varying from three to six hours, and that it takes about the same length of time for the whole cell to follow and to be washed away from the internal surface, to which it long remains adherent.—*Ibid.*

**SULPHUROUS ACID.**—Dr. Wilks reports that he has used sulphurous acid with great success in cases of typhoid fever. He says that it “arrests the development of the fever poison, and by continuing this arrest long enough the fever is exterminated. Briefly, it is an antidote.”—*British Medical Journal.*

**THE USE OF AMMONIA IN SNAKE BITES.**—Mr. F. G. Adye-Curran, M.B., Assistant-Surgeon to the 83rd regiment, reports in the *Lancet* a case in which the ammonia remedy was tried without success. A native butler noticing a cobra di capello to emerge from a rat-hole, immediately informed his master, who came and fired at the cobra, wounding it in the neck, but not killing it. The butler, who

was partially intoxicated at the time, seeing the cobra trying to make its escape, caught hold of the reptile by the tail, when it turned sharply round and bit him in the index finger. He was immediately removed to the hospital, where a tourniquet was placed on the arm and wrist, the finger freely lanced and ammonia and ipecacuanha applied, while ammonia and brandy were given internally. The wound was sucked and the patient kept awake; but in spite of every effort he died four or five hours after being bitten. A curious circumstance in connection with this case is that the patient expressed himself as feeling no pain, and the usual symptoms of snake poisoning were absent.

**SUBSTITUTION OF SALTS COMPOSING THE BONES.**—That certain salts entering into the composition of the body can be substituted by others belonging to the same series, if supplied in the food, has been long known. Some good experiments, however, have been made in the course of the past year by M. Papillon, and are recorded in the 'Comptes Rendus.' In one of these a young pigeon was dieted on distilled water to which hydrochlorate, carbonate, sulphate, and nitrate of potash were added, and with grain made into a paste with strontia. The bird remained in perfect health for nearly eight months, when it was killed, and an analysis made of its bones, with the following results: In 100 parts there were of lime 46·75, of strontia 8·45, of phosphoric acid 41·80, and of phosphate of magnesia 1·80; residue, 1·10. In a second experiment a white rat ten days old was subjected to a similar regimen, except that phosphate of alumina was substituted for the strontia given to the pigeon in the proportion of about a grain and a half per diem. The animal remained to all appearance in good health for about six weeks, when it died suddenly in convulsions. An autopsy showed the presence of intense enteritis. Analysis of the bones showed that in 100 parts there were of alum 6·95, and of lime 41·10 parts. Another animal of the same litter was supplied with phosphate of magnesia instead of phosphate of alumina, and was killed at the same time. Analysis of its bones showed the presence of magnesia in the following proportions in 100 parts:—Magnesia 3·56, lime 46·15. In all the animals the appearance presented by the bones was natural, and they seemed to possess their ordinary physiological peculiarities.—*Lancet*.

## THE VETERINARIAN, MAY 1, 1871.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

### THE CATTLE PLAGUE IN FRANCE.

THE Paris Academy of Sciences is said to be occupying its attention with this matter; but unless more clear views are entertained of the true pathology of the malady, and especially of its extraordinary infectious nature, it will be many days ere France will have freed herself of the cattle plague.

According to an article which appeared in the *Journal of the Society of Arts*, Professor Bouley—one of the most able of the French veterinary surgeons, and recently the Inspector-General of the Veterinary Schools—would appear to entertain ideas of the curability of the plague and the non-necessity of the destruction of the carcasses even of diseased cattle. The professor's statements respecting the non-spontaneous origin of cattle plague in Western Europe are true to the letter; but if his opinions are correctly reported with regard to the non-necessity of burying or destroying the carcasses of plague-infected animals, it must be affirmed that nothing can be more illusionary or dangerous.

We are the more surprised at these statements knowing the promptness with which he dealt with the malady on its introduction into France in 1865—a promptness which limited the loss to only forty-eight animals. That full justice may be done to one who stands so high in the scientific world, we give the following extract from the article referred to. M. Bouley declares—

“The disease to be endemic in all that part of Europe comprised between the Ural and Carpathian mountains; that it is permanent, and constantly perpetuated by contagion. At the same time, he asserts that the disease has not the same serious effect on the cattle of the Steppes as it has upon other races. In Paris the mortality caused by it has been terrible, not more than 1 to 2 per cent. of the animals attacked having survived. In reply to those who have asserted

that the disease in question arises in Western countries from climacteric causes, or want of care, M. Bouley cites the following striking fact:—The 4000 bullocks and 220,000 sheep enclosed in Paris during the siege were placed in peculiarly unfavorable circumstances; all suffered, but not a single animal was attacked by the epidemic during the whole period of the siege. When the armistice opened the circle around the city, cattle were purchased from Prussian sources, and the disease immediately made its appearance, the stock was affected, and the animals died at the rate of two hundred per day. In support of this view he cited also the case of England and the opinions there entertained upon the subject.

“On another point of great importance M. Bouley dwelt with emphasis. He declared the flesh of animals attacked by the disease was perfectly innocuous, that there was not the slightest inconvenience in the use of such meat as food, &c. He protested against the practice which prevailed in the department of the Nord, where even animals suspected of being attacked were killed and buried. Our supply of butchers’ meat, said M. Bouley, is too precarious to allow of such waste, and, besides, the public health may suffer from the accumulation of so many carcasses. He protested in like manner against what had been done in Brittany, where eight hundred diseased animals a day had been placed on board old ships and sunk by cannon shot in the Atlantic.

“Experiments are being made under M. Bouley’s direction in the treatment of the disease with phenic acid, and Dr. Déclat is pursuing other experiments with an analogous substance. M. Bouley expresses great hopes of the success of these modes of treatment, the results of which will be reported shortly. M. Dumas, the perpetual secretary of the Academy, communicated another mode which had been suggested, namely, to surround the animal with an anti-putrid atmosphere by means of a considerable dose of naphthaline in the litter, to wash it with water containing phenic acid, and to administer daily from ten to twelve litres of water, containing a one thousandth part of phenic acid, this by way of preventive. In cases of positively diseased animals a like course is recommended, but with an increase in the quantity of the acid to 25 grammes (nearly an ounce) a day. In case the remedy should fail to save the animal, the flesh, it was observed, would be impregnated with the antiseptic, and cease to be an element for propagating the disease.”

With a vivid recollection of the consequences of preserving

animals affected with cattle plague for experimental treatment, we can but faintly express a hope that France may escape our experience; she evidently declines to profit by the lesson which cost us so dearly.

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THE ALLEGED OUTBREAK OF PLEURO-PNEUMONIA AMONG  
DUTCH CATTLE AT THE ISLINGTON MARKET.

REFERRING to our comments upon the unfounded report of cattle belonging to Mr. Kendall having been slaughtered on account of pleuro-pneumonia in the lairs at Islington, or in a slaughter-house adjacent thereto, the editor of the *Chamber of Agriculture Journal*, in allusion to a quotation from the *Journal* of February 20th, of a report of cattle plague among Dutch beasts landed at Harwich asks—"Are pigs animals?" We may venture to admit that they are, but we must call attention to the fact that we made no use to the word animals. The paragraph in the *Chamber of Agriculture Journal* for February 20th, page 140, reads thus:—"Cattle plague being now rife, almost within sight of our coast, no wonder that reports of a very alarming kind get into circulation. During last week, for example, it was rumoured that rinderpest had appeared in a cargo of Dutch beasts at Harwich. We are happy to say the report is not true. But the Secretary of the Home Cattle Defence Association writes us that a cargo of animals from Holland has been landed at Harwich with the foot-and-mouth complaint."

The only portion of the paragraph which struck us as being worthy of notice, and which we therefore quoted, was that which referred to the rumour of rinderpest in a cargo of Dutch cattle at Harwich, a port where, as we stated, *there is no part defined for landing cattle.*

In pointing out the extreme absurdity of such a rumour, we did not expect to be accredited with the discovery of a "mare's nest," or of any other phenomenon; we merely meant to remind the author of the report that very little advantage is likely to be gained from the publication of a

rumour of an outbreak of rinderpest in a cargo of Dutch cattle in a place where cargoes of Dutch cattle could not be landed while the Netherlands remained on the list of scheduled countries.

## Reviews.

Quid sit pulchrum, quid turpe, quid utile, quid non.—HOR.

*Symptomes, Lésions Anatomiques, Causes et Nature du Typhus Contagieux considéré dans les Différentes Espèces d'Animaux Domestiques.* By J. M. WEHENKEL, Veterinary Surgeon, Doctor in Medicine, Surgery, and Midwifery. Professor at the Brussels Veterinary School. Brussels, 1870.

*Du Typhus Contagieux Epizootique.* By ED. DÈLE, Government Veterinary Surgeon at Antwerp. Brussels, 1871.

*La Peste Bovine ou Typhus Contagieux Epizootique en Angleterre (1865-67).* By the same Author. Brussels, 1870.

PERHAPS in the whole range of medical literature, even if we include comparative with human pathology, there is not to be found a single malady which has given rise to more treatises, dissertations, and essays than the Cattle Plague. Since the commencement of the eighteenth century, the observers and writers who have devoted their attention to this serious bovine scourge, and who have published works on it, may be reckoned by hundreds, and yet the subject would appear to be like the widow of Zarephath's cruse of oil in furnishing an unfailing supply of material for illumination and wonder. Each visitation of the pest, each irruption beyond its supposed home into regions where it is only known as an exotic malady, has been accompanied or followed by an eruption of monographs so numerous and so diverse in their character, that the catalogue had reached an amazing size before 1865. Since that period, when Britain was visited for perhaps about the twelfth time, the list of continental authors has been largely supplemented, and the value of their labours, in a scientific point of view, greatly enhanced by more accurate observation and minute research. The experience of the direful effects of the disease has not been without its advantages to veterinary science, especially in those countries on the Continent which had the misfortune

to be invaded, or which, by timely precautions suggested by veterinary surgeons, were able to avert its desolating ravages. Holland, a country that suffered almost as severely as our own in 1865-67, and where veterinary medicine was held in as little esteem, quickly discovered that her severe misfortune was largely, if not altogether, due to her neglect of this science, and began to reform her veterinary school and improve the instruction afforded in it. Belgium, which also, by its contiguity to Holland, suffered heavily from the repeated importations of the scourge, shared in the desire to aid comparative pathology, even beyond the excellent school and teaching staff she maintains, and decorations and pecuniary rewards were unsparingly bestowed on those of our profession who had exerted themselves to extinguish the contagion. Medical men also took a lively interest in the study of the plague, and so far from defaming and abusing veterinary surgeons, as they did in England, they appear to have been prompt in recognising the necessity for active measures, and in applauding the success attending the stern suppression of the pestilence. Even with its final eradication their interest appears to have continued unabated; for so late as 1869, the Royal Academy of Medicine of Belgium offered handsome prizes for the best memoirs on the disease, with reference to its symptoms, causes, anatomical lesions, and nature, considered in the different species of animals capable of contracting it, and with regard to its diagnosis.

The two works at the head of the above list were successful in obtaining awards, and much credit is due to their authors for having, in a clear and concise manner, summed up what was known of the malady at the time they commenced their task. The symptoms, necroscopic appearances, varying characteristics, and essential features of the malady are carefully enumerated, and evidently no pains have been spared to indicate the peculiar morbid characters that have distinguished it at different invasions. Although there is nothing absolutely new in either of the memoirs, yet they can both be confidently recommended as affording a trustworthy *résumé* of what is known of the disease at the present time, the latest researches having been alluded to and commented upon.

With reference to the transmissibility of the contagion to other than bovine animals, it is worthy of remark that on the Continent, until 1859, it was generally believed that the latter alone were liable to its attacks; and in this country, until 1865, when sheep became infected, the same belief was entertained. Yet for at least more than two centuries observers had reported sheep and goats as suffering from the

same or a similar malady, and even the cervine tribe was decimated by it. For instance, in Lapland, in the latter half of the eighteenth century, the reindeer perished in great numbers with the same symptoms as were exhibited by the cattle in Sweden and Norway, which cattle the historian who has left us an account of the outbreak was certain were instrumental in bringing the disease among the deer. Many of these occurrences have been altogether overlooked by comparative pathologists; even so late as 1815, when the plague was carried into France and as far as Paris by the allied armies, the transmission of the contagion to the caprine species was recorded by a French veterinary professor, and yet we find no allusion to this in the latest treatises on the scourge.

We confess ourselves greatly indebted to M. Dèle for his excellent and particularly exact history of the épizoöty in England in 1865-67, and we have much reason to fear that this is likely to be the only complete and concise record of the ever-to-be-remembered invasion with which the future historian of animal plagues will be furnished. M. Dèle, whose acquaintance with the English language had enabled him to follow the course of the pest as it was recorded in the ephemeral literature of the day, originally published this history in the *Brussels Veterinary Journal*, and as each instalment appeared we had reason to be satisfied with the general correctness of his statements, and were frequently more than pleased with the manner in which he contrived to bring out of the apparently chaotic mass of reports and rumours with which the daily papers were crowded the most salient and important points in its progress. And we cannot overlook the sentiments of sympathy he has so generously expressed for his English colleagues during this eventful crisis, when they were exposed to a storm of vituperation and slander such as perhaps no body of professional men was ever subjected to, merely because they resolutely clung to the opinion that there was but one method of combating the pestilence, and that attempts to cure the stricken creatures meant the inevitable destruction of our splendid herds and the ruin of our agriculture. We sincerely thank M. Dèle for the justice he has done us in his in every way commendable history, which we need only say is well worthy of perusal, even by those who closely followed the course of events during the period named.

ENTOZOA IN RELATION TO PUBLIC HEALTH AND THE  
SEWAGE QUESTION.

By T. SPENCER COBBOLD, M.D., F.R.S., F.L.S.,  
Correspondent of the Academy of Sciences of Philadelphia.

(Continued from p. 291.)

IN connection with these veal- and beef-measle experiments, I may further observe that, although I have already (partly with the co-operation of Professors Simonds and Pritchard, of the Royal Veterinary College) made their general results public through the *Proceedings* of the Royal and Linnean Societies, I have hitherto had no sufficient opportunity of explaining their importance in relation to the sewage question. This I now propose to do; again remarking by the way, that the disorder thus superinduced is only one of the many parasitic diseases liable to be increased by extensive irrigation schemes. Here let it be borne in mind that the particular larvæ under consideration can only be propagated in the flesh of the ox, cow, and calf; at least, I am not aware that this cysticercal form has ever been detected in any other animal "host," and it certainly has not been recorded as occurring in the human body. This last-mentioned negative fact is the more remarkable, since the armed measle of the pig enjoys a comparatively wide distribution, whilst the adult representatives of both species exclusively infest the human bearer. It is by no means improbable, however, that this limitation may be eventually found to be untenable. Be that as it may, I have repeatedly shown that the beef tapeworm (*Tænia mediocanellata*) is more common with ourselves than the species derived from pork; nevertheless, this is not the view most generally held. Here I do not care to reiterate the data on which I first formed and taught that conclusion some years back, as I only once more allude to the fact in reference to the practical consequences of its due recognition. These are manifold. Thus, those persons whose religious convictions prevent their partaking of swine's flesh never suffer from *Tænia solium*; while, again, the thorough-going vegetarian may successfully boast that he will never play the part of "host" to any members of the tapeworm family. He is, however, in my judgment, the more likely to be infested by oxyurides and ascarides, especially if, at the same time, he is bound hand-and-foot to

the principles of teetotalism. It has also to be noted that neither of these exclusive habits as regards diet and drink will ward off the possible contingency of invasion from the cysticercus of the pork tapeworm, which, by the way, when taking up its residence in the brain, gives rise to epileptiform seizures. Fortunately, death is not common from this source.

But it will be said by Mr. Holland and his supporters that these mere professional facts have nothing whatever to do with the question in which they are more immediately concerned. It is hopeless, perhaps, to attempt to induce them to think otherwise. In vain we assert that a single person affected with tapeworm discharges thousands of eggs daily, and that the majority of the germs thus distributed pass into the sewage of our towns. In vain we explain that the further dispersion of these germs over our fields and market gardens ensure a more than ordinary facility of access into the bodies of cattle and other intermediary bearers. All such arguments, as well as others equally cogent, go for nothing. What these gentlemen desire in order to produce conviction I have already hinted at. To be still more precise, they say, in effect—"When, in the neighbourhood of our towns, and on our sewage farms, we see the sheep rotting from flukes and staggering from gid, and the oxen, cows, and other domesticated animals dying off by scores, as if attacked by a new plague, then your warnings shall receive consideration; but in the absence of trichiniasis and other virulent forms of entozoal disorder, we shall continue to maintain that 'the spreading of disease by the irrigation system is purely imaginary.'"

This kind of reply, as I have already urged in the Introduction to my small work on 'Human Tapeworms,' now out of print, is quite satisfactory to the persons making it, so long as they themselves remain free from internal parasites; but when they are attacked the case is far otherwise. In the many instances of real suffering which have come under my professional care—and some of which, it may be said, could never have occurred but for the fact of germ dispersion, taking place in one or other of the ways already explained—I can testify that such assurances as the above afford very little comfort to those who are called upon to entertain these peculiar guests. If, indeed, it could be safely alleged that parasitic disorders have not increased in consequence of sewage distribution, I do not hesitate to say that such a state of things would not disprove the injuriousness of wholesale irrigation, but would show, rather, that the un-

tiring exertions of our sanitary officers have more than counterbalanced the excess of evil arising from this source; and in connection with these special interests the members of this Association may justly lay claim to have played a most conspicuous part. But, as I have previously said—or, at least, inferred—we are not yet in a position to afford absolute proof, either one way or another. The methods hitherto employed have not, and could not have, enabled us to obtain satisfactory evidence as to the increase or decrease of parasitism, as the case may be. Comparatively few people recognise the importance of precise information on this subject; and I believe I am the only professional teacher who has ventured to give special courses of lectures on helminthology at a Medical College.

Again, if any one seeks for information in the Registrar-General's report as to how many cases of death from parasites occur annually, what will he find recorded? Nothing. The whole subject is in confusion, and will continue to remain so for a long time to come. Some years back, when investigating the question as to the mortality from parasites, I failed to find, save in the isolated cases reported in the medical journals, any public record of deaths from entozoal disease. Thus, death from parasites in the brain, liver, lungs, heart, and other organs would be registered under epilepsy, diseases of the liver, and so forth, to say nothing of the multitude of instances where the true nature of the disorder has unquestionably been overlooked. Long ago I took occasion to express my belief that annually several hundred persons died in this country from parasitic diseases, and I have since seen no reason to change that opinion. Far otherwise; and therefore, taking example from the spirit which animates the whole body of the profession, I spared no pains to enlighten the public on this matter, in so far as such efforts might tend to lessen the prevalence of certain well-known maladies.

Once more reverting to a principal point at issue, many will say with Dr. Corfield that we ought not to condemn the irrigation system, since no entozoal evils of any kind have arisen in localities where there has been a "long-continued application of fresh excrement and sewage." My reply is, that it is not the utilisation of sewage itself that I object to, but to certain wholesale methods of distributing it over the land in a fresh state. As to the assertion that no harm follows irrigation, no matter to what extent it be carried out, I have already shown the fallacy of drawing such conclusions on entozoological grounds, without so much as touching upon the overwhelming evidence that sewage exhalations and

contaminations are apt to give rise to dysentery, cholera, and fever. Speaking as a helminthologist, I contend that no closet-made reports, however valuable from a literary point of view, can be of any real practical service unless based upon an extensive acquaintance with the various forms of entozoa, and also upon evidence as to their prevalence, not only in the human subject, but also in the more important of our domesticated animals. Even an examination of dead animals not ordinarily used as food has indirectly thrown considerable light upon questions of general interest in this connection.

In the next place, I may here remark that not only are many forms of helminthiasis amongst mankind and animals ascribed to particular parasites which are in no way concerned with their production, but a still larger number of diseases have been ascribed as helminthic where neither entozoon nor parasite of any sort existed. My experiences on this head, both professional and otherwise, have been very remarkable, and not unfrequently of a painfully interesting character. If it be asked, therefore, what good result could follow further research in the direction I have indicated, I can confidently appeal to the knowledge of entozootics already acquired from helminthological investigation; and I am in a position to say that the mere registration of the relative abundance of different species of entozoa in separate "hosts" and localities might alone afford a fair and useful criterion as to the extent to which particular entozootics normally or abnormally abounded. I have indeed already attempted something in this direction, but the labour and expense involved in inquiries of this description have prevented my carrying out the researches to the necessary extent. Thus between the years 1857-60 inclusive, I was enabled, through the kindness of the authorities of the Zoological Society, to examine the bodies of no less than 122 vertebrates which had died at the menagerie, Regent's Park. Of these animal "hosts," I found thirty-eight harbouring, collectively, fifty-one different species of entozoa, amongst which was the remarkable *Bilharzia hematobia*, up to that time only known to infest the human body. The interest and importance of this fact will be inferred from what appears in the sequel. Again, at a subsequent period, and with a still more obviously practical end in view, I carefully examined the 620 preparations of entozoa and entozoal disease which, by patient searching for many weeks, I found dispersed throughout nine of the pathological museums of the metropolis. The results of this separate investigation

were most instructive, part of them being embodied in a brief paper published in the *Lancet* for May 13, 1865. Much of the information which I have thus acquired will never be utilised in any way. In this relation, therefore, I may be excused for remarking upon the good results likely to follow the delivery of short special courses of lectures on helminthology as part of the ordinary medical curriculum. The subject is eminently practical; and at the Middlesex Hospital, I have found students who, though they thought it a nuisance to attend lectures on botany, have not failed to manifest great interest in my discourses on parasites in relation to the diseases of mankind and animals.

I see by the *Times* of December 12, 1870, that the Medical Officer of the Privy Council has commented very severely on the power of water companies in general, and of the Vauxhall Company in particular. That criticism, of course, bears reference to the spread of diseases—such as fever, cholera, diarrhœa, and dysentery—in consequence of the ascertained presence of sewage impurities of drinking-water. From the strong language employed, one would almost be led to think that the responsible officers of these companies were divested of the commonest feelings of humanity. Of course, such cannot be the case. In all probability these gentlemen are by no means satisfied as to the “proofs” of their power for evil; or, in other words, they do not see the connection between infected water and the numerous deaths alleged to result from its use. I am not surprised at this; but, seriously, if these offenders were really animated by a desire to do their neighbours still greater injury, I think I could put them up to a plan by which, with the aid of entozoa, they might decimate the population of the East-end of London, without any probability of their being “brought to book” for it. And I may add that, perhaps, even Mr. Simon himself may not be fully aware to what extent entozootics may be propagated by sewage irrigation, or, for that matter, without it, whether intentionally or otherwise, by means of water.

Let, therefore, the promoters of irrigation and the members of water companies alike pause before they sanction methods by which new organic impurities are likely to be introduced into the “meat and drink” of our teeming population. If, as Professor Tyndall demonstrated at the Royal Institution only yesterday, mere “pellucidity is no proof of the absence of soluble impurities” in water, it may also be said that clearness of water offers no proof of the absence of insoluble impurities, in the condition of germs of entozoa. One hundred tapeworm eggs in a glass of water would neither

render the draught turbid nor reveal the presence of the germs to the naked eye. Bearing these facts in mind, it is some relief to see by the report of the Metropolitan Board of Works, published in to-day's *Times* (January 21, 1871), that the Essex Reclamation Society's proposition to utilise the daily supply of 270,000 tons of London sewage by the irrigation system is not likely to be carried out. At all events, the Board will neither advance money, nor afford the Company support of any kind.

In regard to the possible introduction of the little blood-fluke (now commonly known under the generic title *Bilharzia*, which I first gave to it), a few words of explanation will naturally be looked for. Whilst many have ventured to criticise unsparingly the warnings contained in my *brochure* already alluded to, others, like Dr. Letheby, have not failed to give more consideration to my statements. Any careful reader of the pamphlet, however, will perceive that I never asserted that the *Bilharzia* disease was sure to be propagated amongst us; but I did state that, in view of a much larger amount of egg-dispersion by means of sewage irrigation, it was by no means improbable that the African malady might become naturalised in this country. By the data then in my possession, I was perfectly justified in taking up this position; but, since the time referred to, and only very recently, I have had ample opportunity of personally studying the disease as it occurred, and still exists to a less marked extent, in a little girl who has come from Natal, South Africa, to be placed under my professional care. The details of this case I reserve for publication elsewhere; but the Association will readily gather its importance in relation to the irrigation question when I state my belief that, for months past, this patient has daily given off with the urine at least 10,000 eggs of *Bilharzia hæmatobia*. When first placed under my care, the consequent hæmaturia was both frequent and excessive; but, not to dwell on medical details, the only other point I care to insist upon just now relates to the degree of larval development hitherto noticed by observers abroad, and by Dr. John Harley in this country. I am happy to say that I have been able to watch the embryonal stage of growth to a somewhat further degree of development than has hitherto been witnessed by any other observer; yet much remains to be accomplished before our knowledge of the entire genetic relations of this remarkable parasite will enable us to clear up some of the important practical questions raised by myself in this connection. I may add that, although I have vainly sought by experiment to rear the higher larval stages of this

entozoon in the bodies of various kinds of intermediary hosts, I have, nevertheless, succeeded in rearing and watching the habits of the larva in the condition of an actively-swimming, cone-shaped, ciliated, infusorial animalcule, furnished with a highly developed water-vascular system. Finally, let me add that, contrary to all expectation—and as affording a result somewhat unfavorable, perhaps, to the views I have hitherto advocated—the larvæ of this entozoon develop more rapidly in pure water than in fluids which contain impurities of any kind; so that, in short, we may say that the young of *Bilharzia* cannot arrive at their ultimate destination, in the bodies of mankind and monkeys, until the urine or sewage in which they occur shall have been more or less considerably diluted with fresh or salt water, in either of which media, my recent experiments, thus far, prove that they are capable of developing themselves with extraordinary rapidity.

In concluding, I may observe that since the preceding remarks were penned I have received a new and interesting illustration of the fact that entozootics amongst animals are constantly overlooked, even where the parasites occur in considerable numbers. I refer to the prevalence of *Stephanurus dentatus* in the swine of the United States, the particulars of which curious discovery I have already communicated to the last week's number of the *British Medical Journal* (January 14). Finally, also, let me add that I have not by any means attempted or desired, on the present occasion, to treat the subject before us exhaustively. I shall, however, have accomplished all that was proposed if, in the judgment of the Association, I shall have succeeded in demonstrating the high probability, not to say the certainty, of a large increase of parasitism amongst mankind and animals, as arising from the distribution of fresh sewage by the method of irrigation on an extended scale.

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ON SEWAGE AND PARASITES, ESPECIALLY IN RELATION  
TO THE DISPERSION AND VITALITY OF THE GERMS  
OF ENTOZOA.\*

By T. SPENCER COBBOLD, M.D., &c.

AFTER the considerate manner in which my previous paper was received by the Association, I now venture to submit a few further details, which may be regarded as supplemental to the data supplied by the former communication; and in selecting the present order of facts, I have been guided partly

\* Read February 18th, 1871.

by the character of the remarks which fell from Mr. Hope, Mr. Smee, Mr. Hawkesley, and Mr. Michael, and partly by the suggestions kindly offered by Dr. Buchanan, Dr. Stallard, and others, after the close of the last meeting.

In view of determining the question at issue, it will tend to clear the ground if at the outset I observe that the sort of practical evidence most needed is precisely that which cannot be readily obtained. Clearly, the examination of the flesh of beasts, reared either upon, or by means of fodder derived from, sewage-irrigated meadows, would, if conducted by an experienced helminthologist, yield the required information. When Mr. Hope tells us that a cow fed for four years on his sewage farm competed for a prize at last Smithfield show, that fact does not by any means satisfy me as to the freedom of the animal from measles and other entozoa. As I have, in effect, already urged, it is useless to talk about the absence of proofs of parasitism, as derived from sewage, when we have no adequate means of getting at the evidence. Not only is it necessary to examine, *post-mortem*, animals which have been secretly hurried off to slaughter-houses as soon as they have displayed symptoms of unhealthiness, but we must also scrutinise the meat derived from apparently healthy beasts sent direct from sewage-farms. It is all very well to say that meat for our markets is sufficiently inspected. That it is intentionally so in all, and actually so in some instances, I do not doubt; but that the majority of our inspectors possess the requisite knowledge of entozoal forms, guaranteeing absolute efficiency in respect of their duties, I emphatically deny. Not only am I constantly interrogated respecting dubious appearances in the flesh of animals used as food, but an inspector in one of our largest cities has applied to me for specimens, to enable him to identify the cystic entozoa of cattle.

As regards the amount of egg-dispersion by means of sewage, I am free to acknowledge the impossibility of acquiring data capable of affording even an approximatively correct notion. On this score I do not care to insist upon the acceptance of conclusions which, for myself, only take up the position of strong convictions. If I express the opinion that we have a daily entry of 270,000,000 of the ova of intestinal worms into the metropolitan sewage, I can offer no proof as to the correctness of this surmise; or if I go further, and say that four times that number would probably be nearer the mark, my convictions are not disturbed by any counter-assertion to the effect that the event is impossible. After all, allowing the numbers to amount to 1,080,000,000,

that would, I reckon, only give us an average of one egg in seven ounces of sewage. Let those, therefore, who demand microscopic evidence as to the existence of entozoal germs in sewage, consider the amount of skill, time, and patience requisite for the detection of the presence of an organic particle, having a diameter of  $\frac{1}{850}$ th of an inch, and being concealed in such a relatively huge mass of offensive material.

Into this question of dispersion I cannot at present go further; besides, it must be obvious that the consideration of the vitality of the eggs of parasites, under varying conditions, is the point to which our attention should be primarily directed. Now, although, as far as I am aware, no investigations on this head have ever been made with especial reference to the sewage question, we are by no means destitute of facts of the highest practical value in this relation. My only regret is that the facts I have now to bring forward must be presented in so restricted and crude a shape. At all events, sufficient will be said to show the fallacy of drawing general conclusions from isolated data.

*Bilharzia Hamatobia*.—Whilst the eggs of this entozoon are still in the urine, there appears to be neither the power nor the inclination on the part of the embryo to escape from its shell; yet from the moment when the eggs are removed from the urine and placed in water, a series of changes are commenced and carried on with extraordinary rapidity. In less than two minutes I have seen a hitherto motionless embryonic mass alter its form, become violently agitated, and burst out of its envelope in the condition of a free swimming animalcule. Commonly, more time is required, especially if any appreciable quantity of urine is allowed to remain in the new medium. Thus, to record only one observation:—On August 21st last I placed a drop of fresh urine, containing twelve eggs of *Bilharzia*, on a slide under the field of a one-inch objective glass; and to this I added about eight drops of drinking-water. The first embryo escaped at the expiration of seventeen minutes, whilst two more emerged in another minute; the fourth embryo appeared at the end of the twenty-sixth minute, the fifth in twenty-eight, the sixth in thirty-two, the seventh in thirty-four, the eighth in thirty-seven, the ninth in thirty-eight, the tenth in forty, the eleventh in forty-three, and the twelfth in forty-six minutes respectively.

(*To be continued.*)

## Analysis of Continental Journals.

By G. FLEMING, M.R.C.V.S., Royal Engineers.

*Annales de Médecine Vétérinaire de Bruxelles*, January,  
February and March, 1871.

### VACCINATION OF SHEEP.

Notwithstanding the frequently reported inefficacy of vaccination in this country and elsewhere, as a preventive of variola in the sheep, Dr. Pipin states, as the result of his experiments and observations, that this operation is of little moment, and affords the animals which have been successfully submitted to it an immunity from smallpox. Consequently, he considers that vaccination may be advantageously substituted for inoculation. — *Wochenschrift für Thierheilkunde*, 1870.

### MYCOSIS OF THE LUNGS IN A HORSE.

In the forty-ninth volume of 'Virchow's Archives,' Dr. Bollinger describes a case in which vegetable parasites of low organization acted as a morbid agent in the production of disease. At the autopsy of an old and badly fed horse, made at the Veterinary Institute of Vienna, there was noted, in addition to the lesions of acute pericarditis and hydrothorax, the existence in each lung of from five to seven nodosities, varying in size from the magnitude of a hazel-nut to that of a walnut. These nodosities were nearly all sub-pleural, and occupied the posterior and superior portion of each lung; they were hard to the touch, of a whitish-grey colour, and sent prolongations into the adjacent tissue; at first sight they looked like simple fibroma. Offering some resistance to the scalpel, these nodosities presented on the cut surfaces three or four spongy patches of the volume of a hemp-seed to that of a pea, and resembling in no respect any pathological production heretofore described. They were isolated from the healthy pulmonary structure by a loose layer of conjunctival tissue, or, though rarely, by a thin capsule of the same material; these small spongy centres not only communicated with each other, but also with one or more of the fine bronchi, and in one of the nodosities they were replaced by a bronchiectasy the size of a pea, with unequal sinuous walls, and communicating with several of these centres. In passing the knife lightly over one of the spongy places a whitish puriform fluid was removed, in which the eye could

distinguish numerous corpuscles, offering the dimensions and appearance of grains of fine sand; identical corpuscles were found in the bronchi leading to the patches, and the walls of these were thickened. A microscopical inspection showed that the corpuscles were perfectly circumscribed, and had the form of rounded clusters; on examining one of these spheroidal bodies, previously broken up, by the aid of a high magnifying power, it was easily seen that they were composed of extremely delicate corpuscles, to which they owed their granular aspect. Nearly all these corpuscles were animated by an active molecular movement, and those that were immovable were enclosed by a gelatinous envelope in something the same way that the nucleus of a cell is by its protoplasm. In several of the recently incised patches there were also found, in addition to these corpuscles, a quantity of vegetable particles, fibrous and cellular in shape; while the framework of the patches themselves was formed by pulmonary tissue infiltrated with pus.

Dr. Bollinger, having made a special study of these productions, classes this peculiar pathological formation among the vegetable parasites grouped under the genera "*Zoogloca*," and proposes to designate it provisionally by the name of *Zoogloca pulmonis equi*. He considers the parasite, which he found in all the nodosities, as the primary cause of these, and believes that its germs, attached to vegetable matter in suspension in liquids, had been introduced into the ultimate bronchi and pulmonary alveoli; becoming developed and propagated in these situations, the *Zoogloca* had provoked and maintained a chronic inflammatory process, which brought about the destruction of the pulmonary structure, with partial substitution of cicatricial tissue. This morbid condition was named by the author "*pneumo-mycosis chronica*."\*—*Ibid.*, p. 847.

\* It may be remarked, with regard to this interesting case of pneumo-mycosis, that Heusinger ('*Recherches de Pathologie Comparée*,' vol. ii, p. 107) had, so early as 1821, observed the presence of a vegetable "mould" or fungus in the air-sacs of a stork, which had been found at Groningen—where it is rare to meet with these birds—by a peasant. When first discovered it was extremely feeble, and could scarcely drag itself along through the grass field in which it had alighted. It died during the same night, and was dissected a few hours after death. One of the ribs on the left side had been fractured immediately over the abdominal air-sac, and was united by a recently formed callus; the abdominal air-sacs were red and indurated and did not collapse on being incised, but emitted an odour of new cheese; their parietes were very thick, consisting of several lamellæ, the external of which was the normal membrane, and the others false membranes; the whole internal surface of the two sacs was entirely covered by a fungus plant with long filaments; the large pectoral sacs appeared at the first glance to be

## SUBACUTE ENCEPHALITIS.

By this designation Gemeinder describes an equine disease which, for a dozen years, has made ravages in Bavaria. It more especially attacks horses in good condition, of good constitution, and at the most vigorous period of life. The exciting causes are unknown, but there is no doubt that inattention to hygiene, insufficient exercise during the winter, lodgment in hot, badly ventilated stables, too much clothing, and the administration of food too rich in quality and overabundant in quantity, are all so many predisposing conditions. Horses submitted to the influence of these causes, says Gemeinder, shed their coats more rapidly than others,

healthy, but when viewed more attentively there were noticed here and there small red points, due to fine arborisations of the vascular membrane of the sac, and corresponding to these, on the inner surface, were very small white masses, which, when examined microscopically, were discovered to be patches of "mould" commencing to extend. These vegetations were also noted even in the air-conduits of the bones. All the other organs were healthy. But before Heusinger, Emmert and Mayer (Meckel, *Archiv für Physiologie*, vol. i, p. 310) had made a similar observation in the case of a tame jackdaw which, confined in a chamber, was affected in its respiration one day and died the following night. When opened next morning the bronchial mucous membrane was covered with fungi, the lungs were tuberculous and hepatised, but all the other organs were healthy. Jäger also dissected a swan that had just died, and found the air-sacs thickened, of a cartilaginous consistency, divided by septa, and their inner surface covered by "mould" (*ibid.*, vol. ii, p. 354). Theile one morning received a raven which had been kept in a room, and which had died the previous evening. The lungs were partly hepatised, and in the bronchi and air-sacs were discovered some thin patches covered with fungi. (*Zeitschrift für die Organische Physik*, vol. i, p. 331.) Deslongchamps had under observation an *Anas mollissima*, which was ill for three weeks with symptoms of disturbed respiration. Immediately after death he dissected it, and found the bronchial mucous membrane in the lungs and the air-sacs thickly lined by fungoid patches, measuring from two or three millimètres to several centimètres in diameter. These patches rested on a material which M. Deslongchamps thought was an albuminous exudation, beneath which the membrane was injected. (*Annales des Sciences Naturelles*, vol. xv, p. 371.) Müller and Retzius have observed fungi in the air-sacs, and at the same time mycoid masses in the lungs of a *Strix nyctea*, which had died at Stockholm. (Müller, *Archiv für Anatomie und Physiologie*, 1842, p. 198.) And Dr. Crisp somewhere mentions, if I remember aright, the presence of vegetable fungi in the lungs of a calf he was examining. I regret I cannot at this moment lay my hands on the extracts I made from his description. Heusinger was of opinion that, in the case of birds (for he does not appear to have been aware of the existence of fungi in the air-passages of other animals), there had previously been an exudative inflammation of the bronchi and air-sacs, and that the spores of the mycedinæ inspired in respiration found therein all the influences favorable to their development. It may be added, that animals fed on plants infested by the rust spores of the parasitical *Uredo Rubigo* are frequently found to have these spores in a state of active growth in the air-cells of their lungs.—G. F.

and when exposed to the action of a cold damp atmosphere they contract a predisposition to rheumatic and cerebral affections. The subacute encephalitis now under consideration appears to belong to the latter category. Gemeinder considered it as a rhuematismo-gastric-bilious or erysipelalous form of influenza, complicated with inflammation of the cerebro-spinal meninges.

At the commencement of the disease the animals often manifested symptoms of colic, pawing the ground and looking back frequently towards the right hypochondrium; they soon lay down and became tranquil for some time. They continued to eat, but preferred food which had little nutrition in it. In two or three days the visible mucous membranes assumed a yellow tinge, and a cerebral affection declared itself. Among those so attacked some were refractory or timorous before the invasion of the disease, others were somnolent and staggered in their gait; a number exhibited a certain superexcitation of the genital organs, due to serous infiltration of the meninges of the medulla oblongata and spinal cord, which soon resulted in incurable paraplegia; others moved about in a circular manner, or were delirious; while more showed symptoms of dysphagia and dyspnoea. The tongue was sometimes tumified and paralysed, consecutive on the loss of power of the ninth, tenth, and twelfth pairs of nerves.

Of all the manifestations noticed, the hepatic symptoms were the most constant and the first to appear; the disturbance of the liver's functions should therefore be considered as being the primary affection.

The cadaveric lesions were: the liver more or less deeply coloured than in a normal state, the parenchyma friable, and its serous envelope furnished with filamentous prolongations. The spleen increased in volume. The serous tunic of the intestines injected in places; the cæcum and stomach paralysed (?); the thoracic organs usually healthy, and the pharynx, œsophagus, and tongue paralysed (?). The cerebro-spinal meninges injected; the encephalon more or less consistent than in health; an accumulation of serosity in the ventricles and between the meninges; and the choroid plexus and meninges infiltrated.

With regard to treatment, Gemeinder employed, internally, nitre, calomel, tartarized antimony and camphor, or aloes combined with the antimony or with calomel. Externally, frictions with preparations of cantharides were applied to the neck and cranium. At a later period iced compresses were substituted, but with no more satisfactory results, and at

last, in other cases, he had recourse, at the commencement of the disease, to arteriotomy practised at the tail, and frictions on the cranium with a liquid composed of an ounce of volatile liniment and two drachms of croton oil. By this treatment he succeeded in obtaining, in two instances, a rapid and complete cure.—*Ibid.*, 1870, p. 68.

#### CHRONIC INFLAMMATION OF THE FEET OF CATTLE.

In consequence of the modifications occurring in the hoofs of cattle by prolonged and uninterrupted confinement in stables, which permits the horn to grow to a considerable length, there is frequently developed a chronic inflammation, not only of the heels, but also of the coronet and pastern. The animals so affected move about uneasily, and do not like putting their weight on the limbs, and the temperature is increased at the coronet and heel. If the disease is more intense, the animals remain in a recumbent position, and get up or move with difficulty; they walk as if 'foundered,' and manifest great pain when the feet are placed on the ground. The duration of the malady is usually very long, as frequently the proprietors do not perceive its existence, or allow it to go on unheeded, because they do not take into consideration the influence it may exercise, like any other painful disease, on other organs, and never think of the loss it is likely to occasion.

The treatment, according to Adam, who describes the malady, is very simple, but often troublesome; it is sufficient to restore the claws as much as possible to their normal form by removing the superabundant horn, and to combat the inflammatory phenomena by the employment of compresses or ablutions of cold water.—*Ibid.*, 1870, p. 313.

#### CERVICAL SUBLUXATION IN THE HORSE.

Weiskopf, after having by extension and counter-extension reduced the luxation, applied to the neck two wooden splints or boards, properly prepared, and afterwards tied up the animal's head short and high, maintaining it, at the same time, bent towards the left side by a strap fixed to the head-collar and surcingle. By this treatment, aided by a proper diet and irritant frictions along the vertebral column, he obtained a complete success. When the splints were removed, on the sixth day after their application, the head preserved its natural position, the horse resumed his liveliness, and only appeared a little unsteady in moving, while a slight tumefaction remained on the left side of the neck. Some frictions with alcohol along the back and loins were sufficient to dissipate these symptoms.—*Ibid.*, p. 257.

## EXTRACTION, BY GASTROTOMY, OF A FOREIGN BODY FROM THE SECOND COMPARTMENT OF AN OX'S STOMACH.

Schwarz, a veterinary surgeon at Landau, had recourse to this operation, which has been already described by Obich in 1863 and 1864. The symptoms which led him to expect the presence of a foreign body in one of the first compartments of the stomach were, meteorization for twenty-four hours, without circulation or normal defecation; dryness of the muzzle; disturbed rumination, and moaning when lying down.

After administering without effect, within four hours, two doses of spirits of turpentine, an ounce and a half in each dose, Schwarz proposed to perform gastrotomy. This operation, undertaken forty-eight hours after his first visit, allowed him, after the removal of a small quantity of alimentary matters, to introduce his hand into the reticulum, and extract from it a blunt-pointed nail. A perfect recovery soon followed.—*Ibid.*, p. 214.

## CATTLE PLAGUE.

In the journal from which the above extracts have been derived, there is an article on the cattle plague, which has furnished Professor F. Defays, of the Brussels school, with the following conclusions:—When the symptomatic tableau of the disease, at its different invasions, is compared, there are found variations which it is necessary to take into consideration, in order to be able to pronounce with certainty as to the nature of the disease. Thus, the buccal lesions which during the last invasion in Holland and Belgium (1865-67) were very marked, are at present scarcely perceptible in Alsace. It is the same with the muco-purulent secretion of the pituitary and conjunctival membranes, which is nearly always absent, while the pneumonic symptoms and the prostration of the vital powers are very pronounced. Death also ensues rapidly, the affected cattle seldom resisting the malady more than three days. "These remarks are valuable to us," adds M. Defays, "for should the disease preserve the form it now has in France, and, notwithstanding all the judicious measures adopted, it extends to our country, it is evident that we will be able to recognise it more readily than by adhering exactly to the tableau drawn up in 1866."

## COLIC.

In the same journal is a valuable notice with regard to

colic in the horse, which cannot be too widely published. It is relative to what an attendant should do before the arrival of the veterinary surgeon, when he has an animal so affected. Often it is deemed sufficient to allow the horse plenty of litter on which to roll about freely, but it is a fact that this procedure is not seldom followed by intestinal lesions which bring on a fatal termination. In fact, how can we expect that these disordered and violent movements should be less offensive in horses which have the stomach and intestines distended by food or gas than an accidental slip or fall, which so frequently cause injury? According to Jessen, Director of the Veterinary School at Dorpat, who has practised veterinary medicine with so much success for half a century, we ought to prevent horses affected with colic from knocking about and throwing themselves down on the ground.

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*Recueil de Médecine Vétérinaire, August, 1870.*

The number for last August of our excellent contemporary has just come to hand, the disastrous events of the lamentable war between the two great continental powers having suspended its transmission. It is to be hoped, however, that our colleagues were not compelled to delay the publication of the journal for the succeeding months, as we have been looking forward with much interest—we had almost written *anxiety*—for professional tidings of many veterinary surgeons in the French army whose names have become familiar to us through their writings, and of whose safety we shall be glad to hear. Their experience of the campaign, in a professional point of view, will be most interesting to veterinary surgeons in the British army at least. Their *confrères* in civil life, especially those in Paris, will have a scarcely less interesting narrative of their experience of war, as it affects the lower animals; and we, therefore, earnestly hope that we may be favoured with all the numbers of the journal up to the advent of peace.

MEMOIR ON THE OSTEOCLASTY OF CATTLE,  
PARTICULARLY STUDIED IN ALSACE.

By M. AUGUSTE ZUNDEL.

M. Zundel, the zealous and talented veterinary surgeon of Mulhouse, to whose writings we have on several occasions referred, has commenced a memoir on a malady which, though not altogether unknown in this country and rare in France, is yet enzoötic, and even epizoötic, in several parts

of Germany, and it appears from M. Zundel's statement, in Alsace, the border land between the two kingdoms. Generally known as "fragility of the bones," "cachexia ossafraga," "ossium fragilitas pecorum," "osteomalacia," &c., and to the Germans by the name of "knochenbrechigkeit," M. Zundel proposes to give it the designation of "osteoclasty" (from ὄστειον, bone, χλαω, break; χλασμα, χλασις, fracture; from thence the words *osteoclastis*, *osteoclasma*, and the adjective *osteoclasticus*).

In the early volumes of the *Veterinarian* the malady is noticed in translations from German journals, and since that period it has received most careful attention by several eminent veterinarians, and more particularly by Roloff, who, in 'Virchow's Archives' (vol. xxxvii), has published an almost exhaustive monograph on the subject as it presented itself to him in Prussian Saxony. In the present instalment, M. Zundel does little more than refer to the frequency of the malady in Alsace, where it is only observed in a special region—the Rhenish portion of the plain, or *basse plaine*, the geological and botanical features of which he carefully studies, and then enters into details of the symptoms. These we may revert to at another time when the concluding section of the essay shall have been published.

#### TWO CASES OF ANTHRAX DISEASE CURED BY CARBOLIC ACID.

By M. PAULÉAU.

A horse and a cow exhibiting symptoms of anthrax of a serious character were speedily cured by the administration of carbolic acid in the form of draught and enema. The cow was despaired of, but three doses of the acid, two table-spoonfuls to the half pint of tepid water, at an interval of half an hour, and three enemata containing the same proportion of acid, restored her to health in a few hours.

#### WOUNDS OF NERVES; RE-ESTABLISHMENT OF THE CENTRIPETAL AND CENTRIFUGAL CURRENTS IN LESIONS OF NERVES; AND THE RULES WHICH THE SURGEON SHOULD FOLLOW IN THE RE-SECTION OF NERVES.

By GIUSEPPE RUGGI.

In the work with the above heading, the following are the principal points of the several opinions put forward by M. Ruggi:—

1. When the continuity of a nerve has been interrupted

by a very extensive wound, the nerve is not restored to its anatomical or physiological continuity.

2. The more evident signs of the solution of continuity of a nerve are the termination of the upper end in a club-like mass; the persistence in this part of all the physical characters the nerve has had in a normal state; the atrophy of the lower end; and by the absence of a mass or tissue of any thickness between the two extremities of the nerve.

3. The muscles to which the nerve is distributed become inactive, then atrophied, without any chance of returning to their normal condition, unless the function of the nerve is re-established after some time, or in some way or another.\*

4. Anastomoses between large nervous trunks exist, though they are rare. They may bestow sensation and movement on a part, but only in a partial manner.

5. Anastomoses between the nerves of sensation of different regions are frequently met with, especially in the cutaneous surface, where this variety of nerves is chiefly distributed. These anastomoses only re-establish the functions of a nerve in an imperfect manner.

6. The superior end of the nerve remains atrophied to the first collateral branch, or the first anastomosis with some adjacent nerve. From this point it has all its normal characteristics, and its function is carried on in such a manner that the connection between the two nerves increases in dimensions.

7. The communications already existing between the nerves are those only which are developed; no new connections are created.

8. The connection by anastomoses existing between the sentient nerves in the different regions of the body is demonstrated by anatomical facts, clinical observations, and those furnished by pathological anatomy.

9. The direct anastomoses of the median nerve,—that is, the nervous ramuscles which pass from the upper to the lower ends—may re-establish, in a normal manner, the functions of the divided nerve.

10. It is by the reproduction of the nerve substance that Nature most frequently establishes the relations between the periphery and the centre, and *vice versâ*.

11. The upper end appears to be that in which the greatest reproductive activity should exist, since, though isolated, it

\* This fact is due to the anatomical disposition proper to the fibres of motor nerves, which do not anastomose at their free extremities, but terminate directly in the muscle, each entering into the constitution of a muscular fibre.

is capable of forming a ganglion, a fact not observed in the lower fragment.

12. The presence of the two ends of the nerve seems to be an indispensable condition to the formation of the nervous substance.

13. The reproduction of this substance is in relation to the distance existing between the cut ends of the nerve, the thickness of these ends, their direction, and the anatomical condition of the neighbouring parts.

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## ROYAL COLLEGE OF VETERINARY SURGEONS.

APRIL 5TH, 1871.

The President, Mr. WILKINSON, in the Chair,

PRESENT:—The President, Professor Simonds, Professor Brown, Assistant-Professor Pritchard, Mr. Fleming, Mr. Morgan, Mr. Hunt, Mr. Robinson, Mr. J. C. Broad, Mr. Lowe, Mr. Naylor, Mr. Withers, Mr. Cartwright, Mr. Broad, Mr. Gowing, Mr. Moon, Mr. Cartledge, Mr. Cowie, Mr. Coates.

*The Secretary* read the notice convening the meeting, after which the minutes of the last meeting were read and confirmed.

*Professor Simonds* said he thought it was unnecessary to have the minutes extended to such a length as they had lately been.

A letter was read from Mr. George Morgan, of Liverpool, acknowledging the honour of his election as a member of the Council.

A letter was read from Dr. Taylor, approving of the commencement of the examinations on the 18th April.

*Professor Simonds* asked if it was intended that the pupils who submitted to the practical examination in the early part of a day, should undergo the oral examination the same evening?

*The President* said it was intended that the practical examination should begin on Monday, the 17th April, and it was not desirable to puzzle the pupils by giving them too much to do in one day. It was also doubtful if the examiners from the country could arrive in London early enough on the Monday to get through the examination in time for the pupils to have a proper rest between the two examinations.

*Assistant-Professor Pritchard* said the pupils at the Royal Veterinary College would prefer having the practical examination and the oral examination the same day.

*Mr. Cartledge* asked whether, if a student were reported bad after the practical examination, he would be eligible for the oral examination?

*The President* said whatever happened at the practical examination would not prevent the student from attending the oral examination. If he were marked "bad" in the practical examination it would be taken into consideration as if he were "bad" in any other branch of the examination by the Board.

On the motion of *Mr. Cartledge*, seconded by *Mr. Morgan*, it was decided to commence the oral examinations on the same day as the practical examinations, Monday, April 17th.

*Professor Simonds* suggested that a committee of management of two members should be appointed to make all the arrangements for the practical examination.

*The President* said he had suggested that the Secretary should arrange with Mr. Harrison what animals should be sent, and then get men to take them to the lairs at the proper time.

*Professor Simonds* thought it would be better that some member of the Council should be appointed to assist the Secretary.

*Mr. T. Broad* consented to act with the Secretary in the matter.

A letter was read from Professor Williams, stating that the number of students who would present themselves for examination would be about thirty.

A letter was read from Professor M'Call, stating that nine students would present themselves for examination at Glasgow.

Two letters from Dr. Dunsmore were read, stating that arrangements had been made for holding the examinations in Edinburgh on the 13th, 14th, and 15th instant, and for commencing the examinations at Glasgow at 12 a.m. on the 17th.

A letter from Professor Williams stated that he anticipated some difficulty in providing cattle for the practical examinations, but would do all he could to assist the examiners.

A letter was also read from Mr. Cartledge, accepting the office of deputy secretary for the practical examination in Scotland.

A letter was read from Mr. Charles Clayton, of 135, Great College Street, who had been a student at Alfort School, and who wished to offer himself as a candidate for the diploma of the R.C.V.S., England. The letter stated that he was duly qualified to practise in France.

*Professor Simonds* said there could be no doubt that Mr. Clayton's statements were true. Upon the breaking out of the late war he went into the French army, and was shut up in Metz with Marshal Bazaine, but he managed to make his escape, and come to England. Since then he had been attending the Royal Veterinary College at Camden Town. The professors at that College were very desirous that the Council, if it could do so, should admit him to examination. He was an Englishman, a native of Cheltenham.

*Mr. Fleming* said he could testify to Mr. Clayton's ability as a writer in the French journals, and he thought it would be extremely hard if such a man should be obliged to study two years in an English college as a pupil before being admitted as a candidate for the diploma of the Royal College of Veterinary Surgeons.

*Professor Brown* said that the power of the Council to admit Mr. Clayton to the examination depended upon the meaning of the word "recognised" in the twenty-seventh bye-law, which said, "Each candidate intending to present himself for examination shall forward in writing to the Secretary of the Royal College of Veterinary Surgeons a notice of his intention, not less than seven days prior to the examination taking place. He shall also at the same time forward to the Secretary such certificate, or other legal proof, as may be required as to his having been educated at some one of the *recognised* colleges."

*Professor Simonds*: No doubt it means the colleges in Great Britain, but I think we might give it a broader meaning.

*The President* said, if the Royal College of Veterinary Surgeons received a certification from the principal of either of the recognised schools that Mr. Clayton had been educated at that school, he would be eligible for examination. The Council had nothing to do with the time he had been at the school.

*Professor Simonds* said the professors at the Camden Town College were most anxious to avoid affording a precedent for giving a certificate to a man who had only been two months at the College.

*Mr. Naylor* said it was very strange that Alfort, the *alma*

*mater* of veterinary schools, should not be "recognised" in England. He proposed that the Council should make a special exception in the Mr. Clayton's case, and recommend him to the Court of Examiners.

*Mr. J. C. Broad* seconded this proposal.

*Professor Simonds*: That is, that for temporary purposes this Council recognises Alfort as a school.

*Professor Brown* drew attention to the words of the Charter defining the qualifications of members of the College: "Such persons as respectively now are and may hereafter become students of the Royal Veterinary College of London, or of the Veterinary College of Edinburgh, or of such other Veterinary College, corporate or unincorporate, as now is or hereafter shall be established for the purposes of education in veterinary surgery, whether in London or elsewhere, in our United Kingdom, and which we or our Royal successors shall, under our or their sign manual authorise."

*The President* said it was evident that the Council had no power to grant Mr. Clayton's request; but there need be no difficulty in the matter if the professors who spoke so highly of him would simply notify that he had been educated at their school.

*Mr. Morgan* thought it would be opening a very wide door, and tend to injure the College, if any departure were made from the usual practice.

*Professor Simonds* said, of course the Royal College of Veterinary Surgeons had no power to refuse examination to any one who brought a certificate from the principal of one of the Colleges, even though he had only attended the school a month; but he wished, however, to avoid taking such a course, though he did not see how to do so.

*Mr. Naylor* then withdrew his motion.

*Professor Simonds*: Then you will give instructions to the Secretary to write to Mr. Clayton, that if he brings with him a certificate from the Royal Veterinary College, that he has been attending there, he will be admitted to examination.

*The President*: Yes, certainly.

The following letters were then read:

(1) From Professor Brown, stating that he had obtained the permission of the principal salesmen of the Metropolitan Market for the students to be allowed to examine their cattle in the market.

(2) From Mr. Gadsden, enclosing a corrected list of members of the College residing or having resided in the United States. Five of the members he had marked as dead.

*The Secretary* stated that he had written to Mr. Gadsden,

in reply, asking for his authority with regard to the decease of the members whom he represented as dead.

*The Registrar* read the obituary notice.

*The Secretary* announced that the examination papers of Messrs. Mitchell and Sheriff, of Calcutta, had been received, but had not yet been examined.

*Professor Simonds* asked what plan had been adopted with regard to the examination.

*The President* said a number of questions were sealed, and sent out to a gentleman in Calcutta, who was a colonel of artillery and a magistrate, who had consented to see that the answers were written without the aid of books, notes, or any other assistance whatever. The papers were then sealed up again and transmitted to England.

Letters were then read—

(1) From Mr. J. B. Taylor, of Ashton-under-Line, who desired to know if Mr. Stopford Taylor was on the Register of the College. In reply the Secretary had informed him that no such name was on the Register.

(2) From Mr. Brand, Controller of the Markets Committee, expressing the readiness of that Committee to receive a deputation from the Council.

The report of the Practical Examination Committee was read.

On the motion of *Mr. Cartledge*, seconded by *Mr. Fleming*, the report was adopted.

*The Secretary* said additional copies of the Register were required.

*Professor Simonds* moved, and *Mr. Gowing* seconded a motion empowering the Secretary to get 250 copies printed.

The report of the Finance Committee, which was read, showed that the present liabilities amounted to £77 16s. 2d. The Treasurer's report showed a balance at the banker's of £162 6s. 2d.

*Professor Simonds* said the usual course pursued in societies where a report was brought up was for the Chairman to read it and move its adoption.

*Mr. Broad* thereupon moved the adoption of the Finance Committee's report, and *Mr. Cartwright* seconded it.

The report was adopted.

Cheques were ordered to be drawn for current expenses.

*The President* proposed that cheques should be drawn to the amount of thirty-six guineas, to meet the expenses of the practical examination.

This was unanimously agreed to.

The report of the House Committee was adopted.

*The President* proposed that a letter, engrossed on vellum, should be presented to Professor Gamgee, at the annual meeting, thanking him for his presentation to the College of the skeleton of "Eclipse."

*Mr. Hunt* approved of the President's proposal. He also thought a tablet should be placed on the case containing the skeleton, stating from whom the gift had been received.

*Professor Simonds* asked if Professor Gamgee had sent the proofs (which in his letter he said he was ready to give) that the skeleton was really that of "Eclipse."

*The President*: No, we have been waiting to see what the Council would recommend.

*Professor Simonds*: But supposing it is the skeleton of some other animal.

*The President* said he had not the least doubt that the skeleton was the identical one that Bracy Clark formerly possessed.

*Professor Simonds* thought it was really premature to accord a vote of thanks for that which the Council had no identification of. He had frequently been in Bracy Clark's room and seen a number of bones lying on the floor, which Bracy Clark used to say were the bones of "Eclipse," adding that no hands of a common kind should ever touch them. He should therefore like to know who articulated the skeleton.

*Mr. Broad* said he had seen the bones many times before they were put together, and he was convinced that the skeleton was composed of the bones which Bracy Clark had. He believed he himself saw a portion of it undergoing articulation.

*Professor Simonds* thought Mr. Wallis of Staines could throw considerable light on the matter, for he was almost a house pupil of Bracy Clark's.

*Professor Brown* said he had not the slightest reason to doubt that the skeleton was what it was represented to be, but such a body as the Council of the Royal College of Veterinary Surgeons ought to regard its vote of thanks as the highest recognition it could possibly give to a donor. He feared that the proposed departure from the usual course would simply make the Council appear ridiculous.

*Mr. Hunt* said the skeleton of "Eclipse" had a specific value beyond its mere commercial value, for it was something that could not be obtained anywhere else.

*Professor Brown* thought, as a body of scientific men, the Council should receive the skeleton simply as an anatomical preparation.

*Professor Simonds* said one of the examiners entertained very great doubts about the skeleton being that of a thoroughbred horse, and did not believe that all the bones belonged to the same animal, though some of them might have belonged to "Eclipse."

*Mr. Robinson* said that if the different parts of the skeleton did not correspond in length and size and form, the Council might come to a conclusion by examining it as to measurement.

*The President* said the present was so special and unusual that some special recognition was desirable. He therefore proposed that a committee should be appointed to conduct the business of presenting the thanks of the body corporate to *Mr. Gamgee*.

*Professor Simonds* moved as an amendment that before such a course was adopted the Council should be satisfied, as far as it possibly could be, that the skeleton was really that of "Eclipse." He did so because *Mr. Gamgee* had said that he was prepared to give the necessary proof.

*Professor Brown* moved another amendment, "That the thanks of this Council be awarded to *Professor Gamgee* for his presentation of the skeleton of 'Eclipse.'"

*Mr. J. C. Broad* seconded *Professor Brown's* amendment.

*Mr. Cartwright* seconded *Professor Simonds's* amendment.

*Mr. Hunt* seconded the *President's* motion.

*The President* said it would be better to send the skeleton back to *Mr. Gamgee* than to doubt him in any way. The Council ought to accept the present as a liberal, generous, and kindly one from *Professor Gamgee*. It ought to be beneath the Council to cavil in such a manner.

*Mr. Gowing* said, after what had taken place, and he had the skeleton of a valuable horse, he would not present it to the College; but as *Mr. Gamgee* had expressed his readiness to clear up all doubt, the skeleton would be of more value if the proofs were obtained.

*Mr. Cowie* said he very much sympathised with *Professor Simonds's* remarks, but he thought *Professor Brown's* amendment rather ungracious.

*Professor Brown* said he did not intend it to be so; he had not the least wish to question *Professor Gamgee's* statement.

*Professor Brown's* amendment was then put to the Council and carried, nine voting in its favour and five against it.

*Mr. Fleming* presented to the Council for the library a work which he had just published on 'Animal Plagues.'

On the motion of *Mr. Broad*, seconded by *Professor Simonds*, a vote of thanks was accorded to *Mr. Fleming* for the present.

A letter was read from *Mr. Lawton*, Ashton-under-Lyne, who wished to know what steps he should take to prevent unqualified persons from practising in his district as veterinary surgeons.

*The President* suggested that *Mr. Lawton* should be informed that it was not within the jurisdiction of the Council to advise him what course to pursue.

*Mr. Withers* suggested that a register should be sent to *Mr. Lawton*.

The report of the Deputation Committee was brought in and read.

*Mr. Morgan* proposed the adoption of the report.

*Professor Simonds* said it might be as well to place the report on the minutes, though it would prove a dead letter, because the *Lancet* would not proceed with the bill this session.

*Assistant-Professor Pritchard* seconded the motion, which was agreed to.

*Mr. Cowie* moved the appointment of a Committee to make arrangements for the annual dinner.

A letter was read from *Mr. Silvester*, offering his services on the dinner committee.

*Mr. Hunt* seconded the motion, which was agreed to, *Mr. Cowie*, *Mr. Harpley*, *Mr. Silvester*, and *Mr. Moon* being appointed members of the committee.

It was next decided to have the dinner at the "Albion," Aldersgate Street, at 5.30.

*Mr. Morgan* recommended that the Secretary should draw up the annual report.

*Professor Simonds* thought it would be better if the draft report were submitted to a committee, consisting of the President, *Mr. Fleming*, and *Mr. Lowe*.

This was agreed to.

*Mr. Alfred Broad* and *Mr. Alfred Withers* were appointed auditors, and the meeting terminated.

## CENTRAL VETERINARY MEDICAL SOCIETY.

(OFFICIAL REPORT.)

THE monthly meeting of this Association was held on Thursday, April 6th, 1871, the President, George Fleming, Esq., F.R.G.S., M.R.C.V.S., &c., in the chair.

After the minutes were read and signed, and other preliminaries arranged, the ballot was taken, which resulted in the unanimous election of Mr. W. Helmore, M.R.C.V.S., Stratford, Essex. Mr. J. E. Jarvis, a newly-elected fellow, being present, was formally introduced by the President.

*Influenza in Horses.*

Mr. F. J. Mavor desired permission to make some remarks on the subject of the paper—Influenza in Horses—which was read at the previous meeting. Being absent from that meeting, and unacquainted with the nature of the proceedings, except as informed by the minutes, he thought one important point had been omitted—the peculiar and excessive amount of early prostration of power, involving the involuntary as well as voluntary muscular systems. This led to extreme torpidity of the bowels, as well as heavy hard breathing, and, in his belief, the cause lay in the great nervous centres alone. It is important, he said, that the seat of disease should be correctly ascertained, in order to pursue a proper course of treatment.

Mr. T. W. Gowing, sen., considered it necessary to inquire whether the nervous depression does not arise from the altered state of the blood, viewing it as an effect, not the cause. If the nervous centres are first affected, we must inquire how that is brought about.

Mr. W. Clark said he could not argue from large experience, but what he had already observed was the great tendency of influenza to assume varied forms and characters, and the depression alluded to might be absent in one or more of them.

The President remarked that these observations were re-opening the discussion of the past meeting, and he thought it necessary to learn the opinion of those present on the desirability of resuming that which had been formally closed.

After several fellows had spoken in favour of pursuing the subject of Mr. Mavor's observations, it was agreed to re-open the debate—to constitute the proceedings of the evening.

Mr. Thos. Burrill, jun., said the question before the meeting was evidently one of causes. In that raised by Mr. Mavor, who argued in favour of the nervous system being primarily affected, we might infer that such would bring about a relaxation of muscular fibre from diminished nerve force, and which terminates in the conges-

tion of organs so commonly witnessed in influenza. In the opinion of Mr. Gowing, from atmospheric or other causes, the blood is the seat of primary disease, from which follows the nervous depression and resulting train of signs characteristic of the malady.

*Mr. Mavor* contended that the latter would decide the existence of a blood poison, which he was not prepared to admit. He, however, thought it possible that a poison might be present, yet not affect the blood as to produce the depression referred to. In his opinion the nervous system is first affected, though the causes and *modus operandi* could not be explained. He argued from the analogous results of a blow or the effects of cold, which were evident and undoubted, but not capable of explanation.

*Mr. W. Hunting* said he could not admit Mr. Mavor's argument without comment. Under such a view, the presence of salines in the blood, sufficient to induce inflammation of the kidneys, would be included as a blood poison. He (Mr. Hunting) still believes influenza to be nothing more than simple fever of a non-contagious and non-infectious type, and, with Mr. Gowing, that the first causes are in the blood, due to the presence of certain matters which should be expelled, but, from an intervention to the action of organs, are detained, and proving antagonistic to orderly functions, derange the nervous system. His view is that the secretory organs are first affected.

*Mr. A. Broad* said, in referring the action of the cause first upon the blood, the atmosphere may be considered to produce it; but if the primary derangement of the nervous system is acknowledged, the cause may be one of an electrical character.

*The Secretary* said he was desirous of correcting an impression which had evidently entered the minds of Mr. Mavor and others absent from last meeting. The early prostration noticed in influenza was the first sign quoted in his paper, being the most prominent and unmistakable from all others. The cause also received an extended share of consideration, which also formed a salient point in the after debate, giving rise to a very satisfactory discussion. In his mind, the causes of the marked depression were clearly made out, and we need but go back to the principles of physiology to obtain abundant data for their origin. The functions of the skin are not confined to the elimination of fluids with salines in solution, and other substances in combination of a like nature, but those of a *gaseous* nature are abundantly expelled, as carbonic acid, sulphuretted hydrogen, &c. Nitrogen, in the form of urea, with lactic acid, are also abundantly transuded, and when an impervious coating is put over the skin, the retention of these materials proves the death of the animal. Shepherds practise this when they transfer the skin of one lamb to the body of another to cause the ewe to adopt it as her own. Seeing these facts, and also acknowledging the action of cold in suppressing cutaneous action, as well as during the existence of a continued damp, foggy atmosphere, inimical to the proper function of mucous membranes and respiration, as well as other organs, all of which were intended by nature for more

actions than one, yet none are capable of assuming in entirety the functions of others, we may easily account for an impure or specific state of the blood—its purification has not been going on, and it is therefore incapable of absolute nutrition. In addition, also, we know that blood possessing carbonic acid, &c., in excess, acts at once as a sedative to the nervous centres, and destroys the irritability of muscular fibre; hence the great lassitude, and subsequent absolute want of power, which is matured in proportion to the arrest of function, together with the very low temperature which always marks such conditions.

*Mr. Mavor* contended the causes might be due to electrical action inducing a derangement of nerve force. There is no reason why the nervous system should not be first affected, as well as the blood.

*Mr. T. Gowing, sen.*, thought if the cause were first centred in the nervous system, other conditions of a nervous character would be evident. We must bear in mind that many cases of influenza appear, in which the prostration is not so absolute, but in all which it has occurred as yet, he could feel no difficulty in referring it to the state of the blood.

*The President* said, in endeavouring to harmonise the views of Messrs. Mavor and Gowing, it might be argued that both were to an extent right. Accepting the statement of the Secretary, with reference to the effects of the cold upon the skin and mucous membranes, it would follow that the peripheral nerves would be the first to receive the influence, and they in turn would convey it to the great nerve centres, by which derangement follows. Again, acknowledging that the skin is a great emunctory for many deleterious substances, the effects of cold upon the peripheral nerves would be apparent also in the subsequent arrest of cutaneous transudation, and likewise interference with the blood-vessels of the skin. The retention of materials in the blood, the elimination of which had been stated as absolutely essential, would inevitably constitute a blood poison, and that fluid would fail to nourish the nervous system as it should, which must end in the production of much depression.

*Mr. W. Hunting* laid before the meeting the pedal bone of a horse, exhibiting a large depression in front, which he described as resulting from absorption, caused by a corresponding elevation, or horny tumour within the hoof. The specimen was closely examined, and considerable discussion followed.

*Mr. J. Woodger, sen.*, directed attention to a calculus of the triple phosphate kind, which had been passed, in addition to a great many more, by a horse under his care.

The question arose, why the horses of millers more commonly provide calculi of this kind than other horses, and it was discussed with animation, by nearly all present, the general opinion being, that powerful causes exist for derangement of assimilation, while the materials of which the stores are formed, are provided in the food.

The subject of treatment and prevention likewise received a lengthened consideration before the meeting separated.

At the ensuing meeting to be held May 4th, the President will offer suggestions on a rational method of treating Laminitis; and Mr. T. W. Gowing, sen., will bring forward a new tracheotomy tube, together with observations on the performance of tracheotomy in domestic animals.

## MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

A MEETING of this Society was held at the "Swan Hotel," Lichfield, on Tuesday, March 28th, 1871. The President, Mr. H. Pyatt, of Nottingham, in the chair. The following members were present: Messrs. Blakeway, Markham, Carless, King, Stanley, Proctor, Perrens, Coe, Cave, and Hon. Secretary.

Letters were read from Mr. Cartwright of Whitchurch, Mr. Rossel, Mr. Bailey, sen., and Mr. Ison, expressing regret at being unable to attend.

The minutes of the last meeting at Leicester were read and confirmed. The Treasurer's accounts not being complete, the consideration of them was adjourned till the next meeting.

A letter was read from the Secretary of the "National Veterinary Benevolent Fund," calling upon this Association to elect one of its members as a Life Governor of that institution, being entitled to do so from having voted a donation of £30 to the funds; Mr. Carless was unanimously elected to fill the office of life governor of the Veterinary Benevolent Fund.

The election of officers for the ensuing year was then proceeded with.

*Mr. Cave* proposed, and *Mr. King* seconded, the election of Mr. Blakeway, of Stourbridge, as President.

*Mr. Blakeway* proposed that Mr. Pyatt be re-elected, but that gentleman declining the honour Mr. Blakeway was unanimously elected.

Mr. Pyatt, Mr. Stanley, and Mr. King were elected Vice-Presidents, in room of Mr. Carless, Mr. Rossel, and Mr. Garrard, retiring.

Mr. Proctor was re-elected Treasurer.

Mr. Barry was re-elected Honorary Secretary.

*Mr. King* proposed that the future meetings of the Association be held at Birmingham and Derby alternately.

After some discussion, *Mr. King* proposed that the meetings should be held at Birmingham and Derby alternately during the next year. *Mr. Cave* seconded the motion, which was carried unanimously.

*Mr. Perrins* proposed, and *Mr. King* seconded, that the meeting be held at Birmingham in the month of July next.—Carried.

*Mr. Cooper*, M.R.C.V.S., of Lichfield, proposed by *Mr. King* and seconded by *Mr. Proctor*, was elected a member of the Association.

*Mr. Perrins* then read a short paper on the subject of acorn poisoning in cattle. An animated discussion ensued, in which all present joined.

A vote of thanks was given to *Mr. Perrins* for the able manner in which he introduced the subject.

A vote of thanks was given to the President for the kindly manner in which he had fulfilled the duties of his office during the year.

*Mr. Perrins* and *Mr. Pyatt* having responded, the proceedings terminated.

## THE LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE last quarterly meeting was held at the "Spread Eagle" Hotel, Manchester, March 15th, the President, W. Whittle, Esq., in the chair.

The following gentlemen were also present:—Messrs. Thomas Greaves, Peter Taylor, Thos. Taylor, W. Haycock, Thos. Walley, T. Hopkins, Anderson, Faulkner, Watson (Manchester); W. A. Cartwright (Whitchurch); A. Lawson (Bolton); Woods (Wigan); Morgan, Elam (Liverpool); M. E. Naylor (Wakefield); J. Taylor (Oldham); Brookes (Pickington); J. Lomas (Stockport); S. Lomas (Disley); J. Bostock (Altrincham); Woolner (Heywood); Parkes, and the Secretary.

Letters were received from Messrs. John Lawson, John Greaves, W. J. Challinor, A. Challinor, Phillips, Carter, Reynolds, and Fearnley, notifying their inability to attend.

After the minutes of the previous meeting had been read and confirmed, Mr. J. Lomas (Stockport) was elected a member, and Mr. Woolner was nominated for membership by Mr. Peter Taylor.

After the consideration of some other matters, entirely of a business nature, Mr. Thomas Walley was called upon to read his essay on the "Action of Medicines."

From the great magnitude of the subject the essay was necessarily a very lengthy one, but its excellence far surpassed its length; indeed it was the production of an author of no mean order, and the highly scientific and interesting knowledge displayed throughout the whole of the paper bespoke the great intellectual attainments possessed by its composer.

From the numerous different subjects commented upon in the essay, and opposite views of the speakers, the discussion which

ensued was naturally long and exciting, but at the same time highly interesting. The supporters of veterinary homœopathy had a capital opportunity afforded them for expounding their views, and great were the arguments advanced both for and against its use in veterinary practice. The discussion was supported by nearly all present, Messrs. Haycock, Cartwright, Naylor, Peter Taylor, Greaves, Thos. Taylor, Elam, and A. Lawson taking a most active part in it.

The subjects of broken wind, and the actions of various medicines were also discussed.

Several members present expressed a hope that Mr. Walley would publish his essay in the form of a pamphlet or book. Mr. Walley, who said he would take time to consider, has since notified to the Secretary his intention to accede to the request.

During the evening Mr. Bostock related a case where the only observable symptom was extreme lameness of the off hind-leg, for which no decided cause could be discovered. Eventually the horse died, and a ruptured heart was the only morbid condition found upon making an examination *post-mortem*.

Mr. Walley also related a case of some interest; it was one of colitis in a horse. There was severe inflammation of the muscular and mucous coats of the colon, and the disease terminating fatally afforded an opportunity for instituting a *post-mortem* examination. In addition to the inflammation of the colon, the posterior aorta was in a state of aneurism. Mr. Walley asked if the aneurismal condition of this large trunk of artery was a cause, exciting or predisposing, tending to produce the colitis. He was of opinion that it predisposed the animal to attacks of enteric inflammation.

Mr. A. Lawson proposed, and Mr. Peter Taylor seconded, a vote of thanks to the essayist for his admirable paper, and after a vote of thanks had been passed to the Chairman, the proceedings terminated.

Mr. W. A. Cartwright (Whitchurch) kindly consented to read a paper at the next (June) meeting, and papers have already been promised for the remaining meetings for the year.

W. AUGUSTUS TAYLOR,

*Hon. Secretary.*

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## ORDERS IN COUNCIL.

REGULATIONS RELATING TO THE LANDING AND INSPECTION OF FOREIGN ANIMALS ARRIVING AT PORTS IN GREAT BRITAIN, FROM AND AFTER THE 31ST DAY OF MARCH, 1871.

PRIVY COUNCIL OFFICE,  
VETERINARY DEPARTMENT;  
31st March, 1871.

*Marking.*

Each kind of foreign animal landed at a landing-place for slaughter (with the exception of sheep and swine landed within a defined part of the Port of London) shall be marked in the following manner, namely:—

*Cattle.*—By clipping the hair off the end of the tail, and by clipping a broad arrow, about five inches long, on the left quarter.

*Sheep and Goats.*—By clipping a broad arrow, about four inches long, on the forehead.

*Swine.*—By printing a broad arrow, about three inches long, on the left side, with the following composition, namely:—Rosin, five parts; oil of turpentine, two parts; and red ochre, one part; melted, and used warm.

*Detention.*

All foreign animals landed in Great Britain shall be detained for at least twelve hours after landing, except as hereinafter provided, in some lair or other proper place adjacent to the landing-place, for the purpose of being inspected by the Veterinary Inspector appointed by the Privy Council for that purpose; and every such Inspector shall have power to detain, for any longer period, any animal or animals which he has reason to suspect is or are affected with any contagious or infectious disease.

No animal, carcase, hide, meat, offal, provender, or manure shall be removed from the lairs, except with the permission of the Inspector.

*Inspection.*

All foreign animals shall be inspected by the Veterinary Inspector appointed for that purpose; and such inspection shall commence as soon as possible after landing.

The final inspection of each animal shall not take place until the end of the twelve hours, except as hereinafter provided, nor except during daylight.

REGULATIONS RELATING TO CONTAGIOUS OR INFECTIOUS  
DISEASES AMONGST FOREIGN ANIMALS LANDED AT  
PORTS IN GREAT BRITAIN.

1. *Slaughter.*

Should one or more sheep or swine be found to be affected with any contagious or infectious disease (except cattle plague), such sheep or swine shall be kept separate from those of the same cargo which have been passed as healthy. The slaughter of the healthy sheep or swine of such cargo may be permitted to take place immediately, and such slaughtering may, if desired by the importer or consignee, be continued without intermission.

The carcases of the healthy animals, so slaughtered, may be removed without a *post-mortem* examination, under the superintendence of the Inspector, or of the police, or of any officer appointed by the local authority in that behalf.

The slaughter of the diseased animals shall take place under the superintendence of the Inspector, who shall make a *post-mortem* examination of each carcase, and give instructions as to the disposal of it.

2. *Cleansing and Disinfection.*

When any animal suffering from any contagious or infectious disease has been landed at any port, or has been slaughtered at the landing-place in consequence of being so affected, the landing-place, lair, or other place where such animal has been, shall not be used for any other animals until such landing-place, lair, or other place has been properly cleansed and disinfected.

3. *Cattle Plague.*

When cattle plague has been detected in one or more of a cargo of animals, the whole of the animals forming such cargo shall be detained and slaughtered at the place of landing.

4. *Pleuro-Pneumonia.*

When pleuro-pneumonia has been detected in one or more of a cargo of animals, the whole of the cattle forming part of such cargo shall be subject to the following regulations, namely:—

When such cattle have been landed at any place other than within the defined part of a port, they shall be slaughtered at the landing-place, or if, at the port at which such cattle are landed, there is a part defined for slaughter, they may, with the permission of the Commissioners of Her Majesty's Customs, be removed into such defined port for the purpose of such slaughter.

When such cattle have been landed within a defined part of a port, or have been moved as above provided into such defined part, they shall not be removed therefrom alive, but shall be slaughtered within such defined part.

### 5. *Foot-and-Mouth Disease.*

When foot-and-mouth disease has been detected in one or more of a cargo of animals, the following regulations shall apply: Provided that such regulations shall be deemed to apply only to the class of animals amongst which the disease has been found to exist.

1. The cattle, if any, so affected shall be slaughtered at the landing-place.

2. The cattle, if any, not so affected shall either be slaughtered at the place of landing, or if, at the port at which they are landed, there is a part defined for slaughter, they may, with the permission of the Commissioners of Her Majesty's Customs, be removed into such defined part.

3. The cattle, when landed within a defined part of the port, or if moved, as above provided, into such defined part, shall be slaughtered within such defined part, subject, however, to any regulation affecting any port, in the defining order of which, special permission is granted to remove cattle out of such defined part.

4. The sheep, if any, so affected shall be slaughtered at the landing-place.

5. The sheep, if any, not so affected, shall either be slaughtered at the place of landing, or if, at the port at which they are landed, there is a part defined for slaughter, they may, with the permission of the Commissioners of Her Majesty's Customs, be removed into such defined part.

6. The sheep, when landed within a defined part of a port, or if moved, as above provided, into such defined part, shall not be removed therefrom alive, but shall be slaughtered within such defined part.

7. The swine, if any, so affected, shall be slaughtered at the landing-place.

8. The swine, if any, not so affected, shall either be slaughtered at the place of landing, or if, at the port at which they are landed, there is a port defined for slaughter, they may, with the permission of the Commissioners of Her Majesty's Customs, be removed into such defined part.

9. The swine, when landed within a defined part of a port, or if moved, as above provided, into such defined part, shall not be removed therefrom alive, but shall be slaughtered within such defined part.

### 6. *Sheep-Pox.*

When sheep-pox has been detected in one or more of a cargo of animals, the whole of the sheep forming any part of such cargo shall (subject to Regulation No. 1) be detained and slaughtered at the place of landing.

### 7. *Sheep-Scab.*

When sheep-scab has been detected in one or more of a cargo of animals, all the sheep forming any part of such cargo shall (subject

to Regulation No. 1) be detained and slaughtered at the place of landing, or if, at the port at which they are landed, there is a part defined for slaughter, they may, with the permission of the Commissioners of Her Majesty's Customs, be removed into such defined part for the purpose of such slaughter.

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CONTAGIOUS DISEASES (ANIMALS) ACT.

(325.)

At the Council Chamber, Whitehall, the 20th day of April, 1871.

By the Lords of Her Majesty's Most Honorable Privy Council.

Present:—Lord Privy Seal. Mr. Forster.

The Lords and others of Her Majesty's Most Honorable Privy Council, by virtue and in exercise of the powers in them vested under The Contagious Diseases (Animals) Act, 1869 (in this Order referred to as the Act of 1869), and of every other power enabling them in this behalf, do order, and it is hereby ordered, as follows:—

1. This Order shall take effect from and immediately after the twenty-eighth day of April, one thousand eight hundred and seventy-one; and words in this Order have the same meaning as in the Act of 1869.

2. The Orders described in the Schedule to this Order are hereby revoked to the extent in that Schedule mentioned.

3. Nothing in this Order shall invalidate or make unlawful anything done under the said Orders, or any of them, before this Order takes effect, or interfere with the institution or prosecution of any proceeding in respect of any offence committed against, or any penalty incurred under, the Act of 1869, or the said Orders, or any of them.

(Signed) ARTHUR HELPS.

SCHEDULE.

- |   |  |
|---|--|
| 1. The Contagious Diseases (Animals) Order of August, 1869.   | So much of the Schedule as specifies the Netherlands.                                |
| 2. The Order of Council of the twentieth day of September, one thousand eight hundred and seventy, relating to cattle, sheep, and goats brought from a Port of the States of the North German Confederation or of France. | Except so far as the Order relates to sheep and goats brought from a Port of France. |

## NEW MEMBERS OF THE PROFESSION.

At the several meetings of the Court of Examiners of the Royal College of Veterinary Surgeons, held on April 17th, 18th, 19th, 20th, and 21st, the following students at the Royal Veterinary College, London, received the diploma of the College, and were admitted members of the profession :

*April 17th.*

Mr. William Fryer . . . .	Stroud, Gloucestershire.
— Henry Dyer . . . .	Pimlico.
— Thomas Henry Simcocks . . . .	Drogheda, Ireland.
— Frederick George Samson . . . .	Lower Mitcham, Surrey.
— George Balls, Jun. . . . .	Brixton Hill, Surrey.
— George Joseph Robt. Rayment . . . .	Acton Green, Middlesex.
— James Clough . . . . .	Huddersfield, Yorkshire.
— Charles Whitney Gillard . . . .	Stafford.

*April 18th.*

Mr. Edwin Hodgkinson . . . .	Islam, Staffordshire.
— William Theobald Polding . . . .	Blackburn, Lancashire.
— William Johnson Briggs . . . .	Tipton, Staffordshire.
— John Mead . . . . .	Eaton Bray, Dunstable.
— Arthur Goulé . . . . .	Droitwich, Worcestershire.
— John Albert Taylor . . . . .	Manchester.
— James King Gooch . . . . .	Holt, Norfolk.
— Thomas Colley . . . . .	Sheffield.

*April 19th.*

Mr. Henry Thomson . . . . .	Old Barracks, Sheerness.
— William Fawdington . . . . .	Monkbridge, York.
— William Bromley . . . . .	Lancaster.
— Daniel Henry Tombs . . . . .	Great Barrington, Burford.
— Joseph Davies . . . . .	Everton, Liverpool.
— Alfred Richard Williams . . . . .	Tavistock, Devonshire.
— John Mason Heard . . . . .	Tavistock, Devonshire.

*April 20th.*

Mr. William Walls Townson . . . .	Ambleside, Westmoreland.
— Septimus Frederick Willows . . . .	Stallingbro', Lincolnshire.
— John Casewell . . . . .	Goldstone, Salop.
— William Oliver . . . . .	Longnor, Staffordshire.
— William Jackson Moore . . . . .	{ Junior Army and Navy Club, King Street, St. James's.

*April 21st.*

Mr. Charles Clayton . . . . .	Cheltenham, Gloucestershire.
— Frederick John Covington . . . .	London.
— Charles Antony Green Armytage . . . .	Clifton, Bristol.

At the meetings of the Court of Examiners of the Royal College of Veterinary Surgeons, held in Edinburgh, on April 13th, 14th, and 15th, the following Students of the Edinburgh Veterinary College passed their examination, and received the diploma of the College.

*April 13th.*

Mr. William Frederick Blanshard . . . . .	Sheffield.
— George Elphick . . . . .	Brighton.
— Anthony Prescott . . . . .	Manchester.
— William Leather . . . . .	Liverpool.
— John Shaw Jackson . . . . .	Lythe, Yorkshire.
— David Rowbottom Sowerby . . . . .	Messingham, Lincolnshire.
— Robert Pearson . . . . .	Brunhaven, Dunfermline.
— George William Westerman . . . . .	Wakefield.
— Thomas Shaw . . . . .	Wakefield.
— Alexander Johnston . . . . .	Roslin, Edinburgh.

*April 14th.*

Mr. George Digby Whitfield . . . . .	Middleham, Bedale, Yorkshire.
— William Brownlie . . . . .	Coatbridge, Lanarkshire.
— David Adamson . . . . .	Brechin, Forfarshire.
— Alexander Aitken . . . . .	Dalkeith.
— Peter Johnstone . . . . .	Limerick.
— William Hepburn . . . . .	Edinburgh.
— Caleb R. Leverett . . . . .	Ipswich.
— George A. J. Muir . . . . .	Tarbolton, Ayrshire.
— Samuel Littler . . . . .	Long Clawson, Leicestershire.
— Duncan Hutcheon . . . . .	Tillery, Aberdeenshire.
— Andrew Greig . . . . .	Balgediemmis, Kinrosshire.
— Charles E. Robson . . . . .	Dundalk.

At a meeting of the Court of Examiners of the Royal College of Veterinary Surgeons, held in Glasgow, on April 17th, the following students from Glasgow Veterinary College passed their examination, and received the diploma of the College.

*April 17th.*

Mr. James Home . . . . .	New Maines, Berwickshire.
— James Brodie Nisbet . . . . .	Hawick, Roxburghshire.
— David Constable . . . . .	Errol, Perthshire.
— Hugh Kidd . . . . .	Lochmaben, Dumfriesshire.
— William Peddie . . . . .	Cathcart, Renfrewshire.
— Charles Nottage . . . . .	Lancaster.
— David Neil . . . . .	Dumbarton.
— Andrew Clark . . . . .	Ballantrae, Ayrshire.

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Communications and Cases.

OBSERVATIONS ON THE ANATOMY AND  
PHYSIOLOGY OF THE HORSE'S FOOT.

By GEORGE FLEMING, M.R.C.V.S., Royal Engineers.

*Physical and Chemical Properties and Minute Structure  
of the Hoof.*

(Continued from p. 321.)

IT has been already stated that the horn fibres are tubular,\* that their upper extremities—those next the living surfaces—have each a minute canal or pore, which contains an extremely fine tuft of vessels, that penetrates it to a depth varying from a quarter to half an inch. This tuft, being more or less conical or tapering, and the tube or fibre being, as it were, moulded on it, the canal has the same form,—wide at its commencement, where it is immediately in contact with the living surface, and gradually contracting in calibre as it passes downwards, though never becoming wholly obliterated. In a very thin transverse section of the wall or sole, we can see these canals surrounded by fine concentric lines, which represent the thin epithelial lamellæ that form the walls of the canal or fibre. If the transverse section be made near the coronet, or on the upper surface of the horny sole or frog, the apertures will be found large, and the concentric rings few in number; but when we examine a portion of either of these divisions lower down, we find that this order of things is becoming reversed;

\* Professor Gurlt, of Berlin, was the first to observe this tubulous character of the horn fibres. His description was published in Muller's 'Archives' for 1836.

the canals are contracted, and are filled with a white material, which some writers have designated cretaceous, others homogeneous; while the concentric laminae are proportionately increased in number and compactness.

The minute structure of the horn fibres has been examined by several eminent continental veterinary professors, and though, on the whole, their researches have tended to throw much light on the subject, yet it has not been completely elucidated; the arrangement of the cells in the fibres has not, to my knowledge, been definitely explained; their non-vital contents have not been made out, neither has the manner in which the fibres themselves are cemented into a solid mass been clearly shown; in fact, so far as I can learn, very much relating to the histology of the hoof and the subjacent tissues has yet to be examined and explained. In the mean time I will endeavour to describe what my own researches have afforded in this respect, and I trust it will be found that our knowledge of the structure of such an important organ is largely increased, and many obscure or debatable points finally settled.

Microscopically, we find the texture of the wall looser and less solid looking on its inner than its outer face. The fibrous tubes are somewhat larger, and are rounder or slightly oval in shape; while the concentric lamellae are apparently more extensively disposed around them, from their want of compactness. Towards the outer surface this appearance changes; the lamellae become more densely aggregated, as is shown by their closer markings and deeper tint, and they, with the canals, are greatly elongated on a plan with the direction of the wall. To display the structure of this compact mass of horn, chemical reagents are required, the most useful of which is caustic potash or soda.\*

When a minute portion of horn has been properly prepared, the cells are disunited and enlarged, and where previously nothing was observed but delicate lines with an almost transparent and apparently homogeneous substance† between,

\* In my investigations I have found a very expeditious method of displaying the cellular arrangement of the hoof to be as follows:—The minute portion to be examined is put on the slide and covered by a rather large covering glass, which is retained by a small brass-wire clip. A drop or two of the potash, or soda solution, is then allowed to flow between the glasses, and the object is passed a few times quickly over the flame of a spirit lamp. The horn immediately swells out, becomes transparent, and the disposition of the cells can then be easily seen.

† Professor Gourdon, of Toulouse, terms the interfibrous substance *amorphous*: “Si, toujours à l’aide du microscope, on examine la corne du sabot prise en masse, on la voit entierment formée par une substance amorphe traversée dans toute son épaisseur par une serie de tubulures

we now have an assemblage of well-defined independent bodies, resembling, in every respect, the cells obtained by slight friction from the surface of the skin. These cells, after the effects of compression have been partially or altogether removed, offers various outlines, according to their situation and mode of aggregation, being round, elongated, oval, polygonal, or irregular. They enclose a nucleus more or less distinct, which is supposed to be the "keratin" or substance peculiar to horn, epidermis, hair, &c. These cells compose the hoof, with the exception, of course, of the villi, which may be said to enter into its composition during life, and the pigment-cells or granules, which will be described hereafter.

A transverse section of a wall fibre from near the coronet, treated with potash, presents the following appearance (fig. 14). The concentric arrangement of the cells around



FIG. 14.—Transverse section a of wall horn-fibre, from near the coronet; after boiling in caustic potash. Magnified 350 diameters.

the central cavity is well marked, and the latter is almost obliterated by the expansion of its encircling elements. The large cells at the margin of the fibre are those which have become entirely separated by the action of the potash.

If we take a slightly wider section, and treat it in the same manner, we will be able to perceive not only the arrangement of the cells composing the wall of the fibre, but also discover the nature of what has been termed the homogeneous, agglutinating, and structureless horny matter. In the annexed drawing (fig. 15), representing a transverse section of one

*étroites,*" &c.—"De la Corne du Sabot du Cheval," *Journal des Vétérinaires du Midi*, 1865, p. 381.

whole fibre, and portions of two others, from the lower half of the wall, the relations of the fibre-cells to the interfibrous

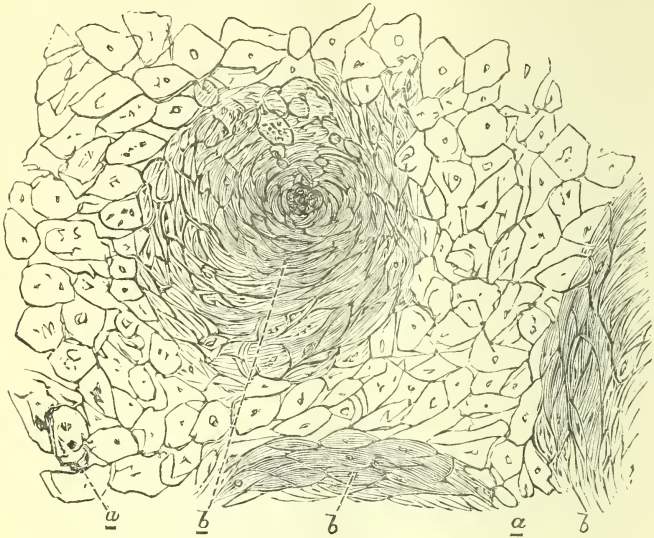


FIG. 15.—Transverse section of three horn-fibres from the wall of the hoof, lower margin; after boiling with caustic potash. Magnified 350 diameters. *a*. Interfibrous cells. *b*. Fibre-cells.

structure, which is found to be also cellular, is at once distinguishable. While the cells composing the fibres are arranged in dense concentric layers around these in a vertical direction, the interfibrous cells are comparatively loosely placed, and in a horizontal manner; so that in the hoof we have the epidermic or epithelial cells assuming two directions, those of the fibres proceeding in the same course as these, *i.e.* from above downwards, closely packed behind each other, and the interfibrous cells, polygonal in shape, laid in the contrary direction, *i.e.* horizontally, less densely agglomerated, and without any particular regularity.

In a transverse section of a fibre we can only perceive the edges of the cells; but those lying between the fibres show their faces quite distinctly, their margins being more or less directed towards the sides of the fibre-cells. This arrangement is made still more manifest, perhaps, if we make a perpendicular section of a small portion of the wall. When carefully made and prepared for examination, this section is very interesting, and enables us to understand at once the

structure of the fibre, the nature of its hitherto undefined contents, and the disposition of the cells on each side of the fibre. A preparation of this kind is copied in the annexed drawing (fig. 16). From this it will be seen that each horn-tube or fibre bears a great resemblance (microscopically) to a human hair, in consisting of a *cortical* or outer investing series of layers of cells of a dense texture (apparently), laid

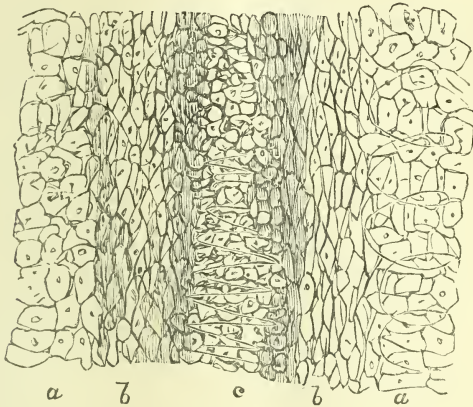


FIG. 16.—Side view of horn-fibre from the wall of the hoof; after heating in caustic potash. Magnified 500 diameters. *a*. Interfibrous cells. *b*. Cortical or wall cells of the fibre. *c*. Medullary or internal cells of the fibre.

upon one another in the direction of the fibre, and a softer looking, or *medullary*, series filling the interior.

The cortical cells, which form the chief portion of every fibre, when viewed in this manner, appear to be longitudinally striated and fasciculoid, and when treated with acids or alkalis, it is seen that they are elongated, flattened, dense-looking, and rigid. It is to their lamellar disposition that the tube owes its fibrous aspect. The outer layers gradually incline from the vertical to the horizontal position, before finally amalgamating with the interfibrous cells.

The medullary cells which fill the tube, and appear to the naked eye in a transverse section of the wall or sole fibres as minute white circular points, are generally small, and in shape round or polyhedral. They have no very definite arrangement, not being subjected to any appreciable degree of pressure, though careful observation may discover that they are laid to some extent in superposed rows which give rise to a *cordon* that follows the axis of the fibre. Near the

end of the villus we not unfrequently observe them to be loosely and irregularly disposed, wide spaces often occurring between their clusters, but as the fibre passes downwards, they become more densely aggregated, and towards the lower or ground extremity of the tube are moderately compressed, probably owing to the concussion arising from the foot striking the ground. They generally exhibit a nucleus, and as a rule minute white granules are mixed among them. Their white colour, visible to the unaided eye, is due, I think, to the presence of air among them in a minute state of division, as a very weak solution of any alkaline substance is sufficient to expel it, and then the chalky-looking appearance vanishes.

The peculiar loose arrangement of the medullary cells and their form, accounts, I am led to imagine, for the notable hygroscopic properties of the horn composing the hoof; moisture readily passing up among them from the lower ends of the fibres, even to the villous prolongations they contain at their upper extremities. No membrane, so far as I have been able to ascertain, lines this canal. In withdrawing the villi from their canals in the horn, it is frequently observed that they carry a number of epidermic cells with them, and that these are laid flat, one upon another, on the sides of the villi—a circumstance which not only goes to prove the vertical arrangement of the cells in the horn fibres, but also the absence of any intra-tubular membrane, which was supposed to line and support these canals.

Professor Chauveau\* was of opinion that the cavity of the fibre was occupied by an amorphous matter of a different character to anything else in the hoof; that this material—which he considered as the third histologic element entering into the composition of the foot cover—was also dispersed in the concentric lamellæ of the fibres, and even in the inter-tubular substance, and that it played an important part in endowing the horn with its cohesive properties. This is palpably an error.

It may be remarked that in the hoof of the ox and sheep, the fibres of the wall are thin and wide apart, though the arrangement of the cells is the same.

The colour of the horn of the wall, sole, and frog, when other than white, is due to the presence of *pigment granules*, minute specks of irregular shape, closely and thickly disseminated among the epidermic cells in proportion to the depth and extent of the tint.

I have very rarely been able to trace the presence of pig-

\* 'Journal de Méd. Vétérinaire,' Lyons, 1853.

ment *cells* (the *corpuscles pigmentaires*, *corpuscles punctiformes* of Gurlt and Chauveau), and am of opinion, notwithstanding the strong evidence of certain authorities, that they are very scarce, particularly at some distance from the coronet or secreting surfaces. Indeed, in pulling the villi out of the horn-tubes we find them covered, not only with cells, but, should the horn be black, also with fine dark-coloured granules.

Not unfrequently this colouring matter is diffused in irregularly shaped granular masses, which are thickly clustered together in the black horn, the numerous particles of each mass not being enclosed apparently in any cell-wall. These collections are most abundant, as might be supposed, in the cortical lamellæ of the fibres, especially those towards the outer surface of the wall. They offer a black, brown, or brownish-yellow hue, and in many specimens appear as narrow elongated particles, disposed in a longitudinal manner, as in the horny lamina; concentrically, as in the walls of the fibres; and irregularly, as in the interfibrous spaces.

Professor Gourdon\* does not believe in the existence of pigment-granules or corpuscles in the hoof, and imagines its dark colour to be due to a general and deeper tint of the fundamental horny substance in the dark than the white horn. This idea is readily disproved by making a thin transverse section of a white-and-black hoof at the point where the shades meet; the presence of granules in the one, and their absence in the other portion; their abundance in the deep-coloured horn, and diminished quantity in the grey, is easily demonstrable. Specimens of this kind are shown in figs. 18 and 23. The first exhibits the dark pigment permeating the inner layer of wall-fibres and laminae, and abruptly terminating, leaving the remainder of the horn of a pale yellow tint, while the second offers some streaks of grey penetrating the white, the tint being due solely to these tiny black particles.

While the horn cells exhibit the most beautiful play of colours by polarised light, the pigment-granules disseminated among them suffer no change of hue.

Another proof of the presence of this pigmentary matter, as well as of its power of resisting ordinary decomposing agencies, is to be found in the circumstance that black hoofs, steeped for many months in water, become softened and pulpy, and the superficial horn cells more or less broken up and dissolved; but on the surface of the horn, and even in the water, the colouring matter is seen floating about like a

\* 'Journal des Vétérinaires du Midi,' vol. viii, p. 389.

thin film of the finest lamp- or ivory-black, and which readily stains the fingers. This is not observed during the maceration of white hoofs.

It is a matter of common observation among horse-men, and has been so from the earliest times, that white hoofs are much less durable and resisting when exposed to attrition or other tests of resistance than dark-coloured ones, and that the hardest and toughest are those which are of the deepest shade of black. I think there can scarcely be a doubt as to the correctness of this observation; and the fact is entirely due, I believe, to the presence of these pigmentary particles. The material of which they are composed is particularly resisting and indestructible; it is insoluble in water, potash, acids, and several other matters which act more or less promptly on horn. Chemically, it is formed of a peculiar matter named *melanine*, and contains more carbon than most other inorganic substances, every 100 parts containing  $58\frac{1}{2}$  of this element. In addition to this insoluble constituent in each 100 parts of melanine, there is one of oxide of iron. So we can readily understand why black hoofs are better for wear than white ones, and why white horn should be much softer and more destructible than the darkest coloured.

(*To be continued.*)

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## TWELVE CASES OF TETANUS.

By ANDREW SIMPSON, M.R.C.V.S., Kendal.

AFTER reading the communication of Mr. J. W. Hill, in the April number of this Journal, recording the successful treatment of a case of tetanus by aconite, I felt constrained to spend an hour in briefly describing the beginning and the end of twelve cases that I have had under my care since March, 1869.

I do this as a matter of duty, and not with the intention of vaunting any pet system of treatment I may adopt, to the exclusion of all other plans; but I have a strong faith in the philosophy of results, and these last, more than anything else, must indicate the best known (to the individual) mode of management; and it is with a view to comparison, or any other useful purpose it may serve, that I submit this (I may call it) statistical report to my professional brethren.

Mr. Hill very naturally congratulates himself on the favorable issue of his case; but I think he attributes this to

an agent that, in the doses he gave it, perhaps did little either good or harm, and with many such remedies this is the proper dose. The only marked effect that I ever noticed belonging to this "favourite agent," whether in large or small doses, was that it gave the animal much trouble from the tingling sensation it is said to produce in the mouth, and a very visible flow of frothy saliva, both of which may be of some curative value (?)

I do not purpose giving the symptoms of each of the cases in detail, as they are well known to all who will take any interest in this paper, but will only speak of cases that, had I the power of the newly attached and very valuable co-editor of this Journal as a delineator, I would simply send a sketch *à la* Mayhew of an animal suffering from this disease, as the shortest, most characteristic, and, perhaps, the most impressive method of describing tetanus practically.

In the absence, then, of pictorial illustration, let each member draw upon the impression left on his retina by his last case, and I do not think he will have much difficulty in supplying the hiatus left by my illustrative incapability.

When I speak of a case as being traumatic, I mean that some visible or known injury exists, or did lately exist, to which we attribute the induction of the disease; when of idiopathic, that after careful examination no lesion can be found, nor does the attendant know of any injury that (although leaving no mark) could have induced the attack.

This quite intelligible distinction I believe to be of little consequence, further than if one was to pay no attention to it they might overlook an important element in the treatment of the case, viz. the local treatment; otherwise, as far as I have had any experience, the course and termination of the two varieties are precisely alike.

I look upon a case of so-called traumatic tetanus as more likely to yield to proper treatment, because you have the whole facts before you, so to speak, whereas in the idiopathic form the distinction often depends upon the carefulness with which the practitioner prosecutes his search, so that the same case might be idiopathic to one and traumatic to another observer.

**CASE 1. Idiopathic tetanus; recovered.**—A chestnut gelding, eight years old, nearly thorough-bred, the property of W. H. Wakefield, Esq., Sedgwick, had been in a straw yard all the winter, along with another horse. On careful examination, at the time of the attack, no injury could be found. The weather, for some time before, had been very

cold and wet, and I attributed the disease to exposure to cold. All the well-marked symptoms of tetanus were present when I first saw him. I had him removed to a nice quiet box, the light of which I partially excluded (I think this is of much consequence during the first week of the malady) by hanging sacks over the windows. .

I gave Aloës Barb. ʒvij in solution, it being possible to open the jaws about an inch. I then ordered ʒss doses of Scheele's prussic acid to be given night and morning. I had the advantage of a consultation, the second day of this case, with the late lamented Mr. Lawson, of Manchester, who approved of the treatment, but said that it would have been as well had I omitted the physic (it never operated). He also left me an elastic injecting apparatus, so that the prussic acid might be quietly given through it. This instrument was used two or three times; but it alarmed the animal so much, catching and introducing this thing, that I had to think of a better plan. This, I think, I found, and have continued it in such cases since. It is to mix the medicine in a small quantity (say a pint) of any bland fluid (barley boiled to a thin jelly), in a soup-plate, or any other convenient clean dish, and present it to the animal; they will always suck it up. This I offer before the ordinary mash has been given, and insist upon them taking it before they get anything else. I give as much well-boiled barley, corn, linseed, carrots, &c., either separately or mixed, according to the state of the bowels, as they will take. I never give bran. They can dispose of a great quantity, if suitably prepared, by sucking it up.

I also keep a bit of nice fresh hay in a convenient place, and the same with a pail of water. If necessary, I put on cloths and bandages; but they they are never disturbed afterwards till undoubted amendment takes place. Such was the treatment in this case, and with slight modification it has been adopted in all the cases I am about to recount, only I have never given any physic since. Attention to general comfort, quietness, and cleanliness, is strictly enjoined. I have used sawdust, straw, and chopped straw, for bedding the box. I prefer the latter. I continue the prussic acid in doses varying from fifteen drops to a fluid drachm twice a day, until the muscular rigidity gives way, the average period being about a month before removal or any out-door exercise is allowed.

CASE 2. *Traumatic tetanus; recovered.*—A three-year-old heifer, in calf, the property of the same gentleman, had been

taken to a fair with some others, and had been badly treated by their horns. Considerable bruises were to be found on many places of the body. She had also been chased about a good deal. Not having been sold, she was brought home, and in about a week after she was noticed to be getting "small-looking," and feeding badly, *although always at it*. I saw her a day or two after, and found a small bit of hay sticking out of her mouth. On letting her out into the fold the stiltiness of muscular spasm was manifest; her nose was pocked out, a frothy rim of saliva round the lips, neck bent downwards, and could only move "all of a heap." The jaws could be opened about as much as would admit the neck of an ordinary bottle. I had her removed to a suitable place, and commenced the same plan as before described, modified to suit the different subject. The bowels being torpid, I introduced calomel ʒij dry into her mouth. This animal would not at first take the medicine herself, and the tube had to be used a few times, but by and by she came to it. One circumstance in particular gave much trouble in this case, viz. hoven, sometimes to a very great degree; this symptom was combated by the use of the hollow probang, which succeeded well. Duration of disease three weeks.

CASE 3. *Idiopathic tetanus; recovered*.—A colt, nearly a year old, cart-breed, belonging to the same. Supposed cause, exposure to cold after galloping in the field. Nothing unusual appeared in this case; symptoms were well marked, jaws not so close when not interfered with, as may be observed in trying to get a bit of carrot into his mouth. (I have frequently noticed that when the tetanic patient was undisturbed he could take up a bit of carrot, turnip, potato, &c., that you could not have opened his jaws to admit.) This animal was so wild, never having been handled, that it made him almost opisthotonic catching him, so that this was not repeated. The advantage of the voluntary system of drugging is here very apparent. Duration of disease one month.

CASE 4. *Traumatic tetanus; recovered*.—A cart-mare, aged, the property of Earl Bective, while in harness slipped on the ice, came down, and broke her knees slightly. This did not interfere with her work. About a week after she was noticed stiff and off her feed, and "slavering." She got a few days' rest, but, not getting any better, I had to see her. Found the knees about right, but unmistakable tetanic rigidity of the muscles of the neck, back, tail, and ex-

tremities. Jaws might be opened  $1\frac{1}{2}$  inch. Treatment as before. This animal would take more than  $\text{ʒiv}$  of the acid in all. Duration four weeks.

CASE 5. *Traumatic tetanus; recovered.*—A grey cart-mare, six years old, the property of Mr. R. Burton Strickley, got loose in the stable during the night, and, probably from some nail or hook sticking out of the wall, she suffered an extensive triangular flap wound on the back part of the thigh; this was attended to in the usual way, but within a week tetanus supervened. I could get no box at this place, and she had to remain in her stall in the same stable with other horses. She got on very slowly, the improvement not being uniform as in cases where they can be treated *solus*. Treatment *ut antea*. Duration six weeks.

CASE 6. *Idiopathic; destroyed.*—Belonging to Mr. James Scott, Windermere. A 'bus horse, aged, had been hard worked the last week, sweating a deal, and having to stand waiting trains. Cause, exposure and over-work. The same treatment was commenced; but his owner being unwilling to try the case to the end, thinking it hopeless, had him put down without my knowledge. Duration of treatment three days.

CASE 7. *Traumatic tetanus; died.*—An aged mare, the property of the same gentleman, came down and broke her knees; being considered of little value, was not attended to for some time. I saw her a fortnight after the accident. The joint of one knee was open, and synovia was escaping freely.

Local and constitutional treatment was adopted, but death took place four days after I first saw her.

CASE 8. *Traumatic tetanus; recovered.*—A carriage-horse, five years old, the property of W. Thompson, Esq., Morse-dale Hall, ran away in a cart, fell, and broke his knees, opening one of them. For a fortnight the case did well, when tetanus of a severe character set in. Treatment *ut antea*. Duration of the case six weeks.

CASE 9. *Traumatic; recovered.*—A filly foal, about two months old, the property of C. W. Wilson, Esq., High Park, while galloping about with its dam, got one of its fore feet in a hole, and wrenched the fetlock-joint, causing great pain, swelling, and lameness. The mare and it were shut up in

a box, and rest, fomentations, bandages, &c., used. After about a week tetanic symptoms appeared, and continued for three weeks. No treatment, but attention to general comfort and quietness.

CASE 10. *Traumatic tetanus; recovered.*—Mr. Thomas Kendal, farmer, Park House, docked two very well-bred two-year-old colts; about a week after, one of them “turned badly, in a strange way that he had never seen before;” and, notwithstanding all that he could do with the help of “good farrier books,” &c., died on the fifth day, and now he came to say that the other was “just going on in the same way.” I found the colt completely unable to move in his box, and very much distorted from irregular muscular action. The docked stump looked healthy. (The bleeding in both cases was stopped by a ligature an inch above the divided end, and to this, I have no doubt, the singular fatality may be attributed.) The usual treatment was commenced; the colt did well until the first bottle of the medicine getting done, a day and a half was lost before a fresh supply was obtained, when a marked relapse took place; after this steady improvement followed. Duration five weeks.

CASE 11. *Idiopathic tetanus; died.*—Richard Knight, Esq., called at my place with a brown mare, four years old, in his drag. He “could not understand what was up with her; she had been as stiff as a crutch for three or four days and was taking nothing. Would I give her a ball or something?” This would have been a very difficult matter indeed; on warning him of the serious nature of the case, he was very incredulous. I advised that she should be taken quietly home—a distance of  $2\frac{1}{2}$  miles. I followed, but could find no injury. Treatment as before. Duration three days. This mare was a bad taker, although her jaws were not so much fixed as some of the others.

CASE 12. *Traumatic tetanus; recovered.*—A bay gelding, five years old, the property of John Garnett, Esq., of this town, sustained a contused wound on the front of the near fetlock (hind), by throwing himself down on the kerbstone in the street, during an obstinate fit. I saw him about a week after, when the usual signs of tetanus were apparent. Thinking this was not a very serious case, and being anxious to try what the same plan of treatment would effect, omitting the acid, being handy for me, I saw him frequently, and would have had immediate recourse to the medicine if this had been necessary. No medicine. Duration three weeks.

The conclusions I have arrived at from a moderate experience of this disease, so far as its treatment is concerned, are— That most of us do too much; this is not a disease that will admit of elaborate doctoring. Bleeding, blistering, physicing, sheepskins hot, daily applied, &c. &c., had better be practised on cases of a less serious character, where a detailed onslaught may be made with impunity. I do not know that prussic acid even is necessary, but I have never seen it do harm and I think, as in Case 10, I have seen its discontinuance lead to an aggravation of the symptoms.

That the most favorable sign is the continued sucking of suitable food, and on this alone, for the most part, will the prognosis depend.

That most reliance is to be placed on good lodgings, suitable food and drink, attention to local lesions, a careful quiet attendance (not a curious one, that *must* be going every hour to “see how the animal is getting on”—a visit morning and night is all that is necessary); and that till something better be found, hydrocyanic acid (Scheele’s), given as stated here, will be my sheet-anchor.

Would it not be well at this time, when we have all the advancement of the profession so much at heart, that every month some one should “draw” upon his “case-book” to furnish us, through the pages of the *Veterinarian*, with a short account of the management and termination of (say) six or twelve cases of—

Epizootic Influenza. Difficult Parturition. Results of Neurotomy. Parturient Apoplexy (Milk Fever). Quittor and other injuries to the Coronet. Canker. Sand-crack. False Quarter, &c.; and Fractures and Amputations.

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## THE PROGRESS OF VETERINARY SCIENCE.

By JOHN GERRARD, M.R.C.V.S., Lincolnshire.

THE laws of scientific progress, as well as of social benevolence, require that every man should endeavour to assist others by the results of his experience. He that has at last escaped into port from the fluctuations of chance and the gusts of opposition, ought to make some improvements in the chart of life, by marking the rocks on which he has been dashed, and the shallows where he has been stranded.

It may at first sight seem strange that, out of some fifteen

hundred legitimate practitioners in the British Islands, only a very few care to record their experience, or, indeed, to enlighten or instruct others, thus working together for one great object, offering prospects of equal benefit to all—the advancement of veterinary science.

Too often do we find the pages of the *Veterinarian* occupied by profitless discussions regarding methods of teaching at present pursued, and means for their improvement; long dissertations on the unprolific and unprofitable stalking-horse, *educational reform*, and the elevation of the body corporate—which seems about as distant and as difficult of accomplishment by these means as the discovery of an antidote for the virus of variola or a cure for glanders. Were it not for an occasional paper read at, or the records of the proceedings of, some provincial or central association, keeping alive the interest of things scientific, I am afraid we should soon sink below *par*.

When the history of the Victorian era of veterinary science comes to be written, it will present too few names worthy of the pen of the honest historian. Nor can it be much wondered at when we consider how many of us are thrown on the world as legitimate practitioners when we have scarcely mastered the bare rudiments of science, to say nothing of practical application of the principles we have learned. Plunged at once into the whirl of business, to strike out for a living, catering for work and attending to its drudgery is almost incompatible with the further pursuit of scientific truth or study of any kind, to say nothing of the recording of cases or original observations or research. The mind, under such circumstances, gets jaded, worn out, and sometimes miserable, intolerant of any effort, and the would-be man of science too often settles down into a compounder and vendor of colic and cow drinks, hoof ointments and sheep dips; indeed, the only interest it keeps awake is the pecuniary, which is all involved in the pharmacy. That such reasons may account for the paucity of communications, will be readily admitted; still, I think every one should consider himself bound to do something for the general good, striving to render some service to science by his studying it, to realise the advantage of having studied his profession, not merely as an object of gain, but from a love of its intrinsic excellence, always remembering that medicine is a progressive science, and that whilst the wise and learned who have studied it have done much to its advancement more remains to be accomplished; that the realm of *animated nature* is ever a fresh school, and a love for it the best incentive to speed us on our life-long education.

Foremost among the advances in our science and art is the application of histology and physiology to pathology. The time has now arrived when the history of a case or series of cases will not be considered complete unless the microscopic appearances be given; and justly so, for it promises to be the only instrument capable of ascertaining the minute tissue-changes which take place in diseased and healthy organisms, hence its importance and necessity in a collegiate course.

By the aid of the microscope we have been able to determine that the active element in vaccine lymph consists of minute particles not exceeding  $\frac{1}{200000}$  of an inch in diameter, and that two of the most destructive of epizootic diseases, variola ovina and glanders, are dependent for their existence and propagation upon extremely small living solid particles, to which the title of *mycrozymes* is applied. An animal suffering under either of these diseases is a source of infection and contagion to others, for precisely the same reason as a tub of fermenting beer is capable of propagating its fermentation by "infection" or "contagion" to fresh wort.\* By its use we have ascertained that the vesicular epizootic, or foot-and-mouth disease, is of a fungoid nature, and owes its virulent contagious character to the dissemination of the spores of a cryptogamic plant; while the beautiful discovery of the propagation of the itch acari, the character of the several tinea in man and animals, are no less the proofs of its utility, to say nothing of its use in renal diseases; indeed, its uses and revelations are legion, and would weary by repetition. Truly does Mr. Fleming say—"That no anatomist, physiologist, or pathologist, deserves the designation who is unacquainted with its use and discoveries." It is remarkably easy for Mr. Fleming, or any other of Her Majesty's men, the Professors at our Colleges, or even those having large town practices where they can conduct the principal part of their business on their own premises, to become experts in its use and profit accordingly; but it is another and very different matter for the great body of hard-worked country practitioners, to sit down after a hard day's ride, or get up after a late night's work, to prepare specimens and contract their pupils to look at them, and derive any benefit therefrom. We must be content, therefore, to accept the teachings of those favoured individuals, and return them our thanks for their labours in our behalf and in the interests of science.

In the matter of teaching, great advances have lately been apparent. Formerly it consisted of, or was confined to, a dry detail of symptoms, without attempting to connect them with

\* Huxley.

their causes, as if the science had been founded on observation and experience alone, and the application of a number of specifics believed to cure them. Now it begins to assume a more philosophical aspect. Attempts to theorise on the phenomena of disease are observable, and have led those who glory in styling themselves practical men to sneer at all modern advances in pathology.

Until lately it was imagined that the chief, if not the only method of obtaining skill in art is by practising it; that is, obtaining experience. In medicine this is proverbial, and every practitioner is more apt to boast of his experience than of his scientific knowledge. At one time a diploma to practise the art could be got after a three months' attendance at college; now three years are considered barely sufficient to get posted up to the present state of science, which is now advanced beyond art, even working out details, and making art obedient to her commands.

Only a few years ago some veterinarians of high standing professed to hold a specific for "broken wind;" now we have learned dissertations on its phenomena, which tell pretty clearly that a radical cure has yet to be found. From our advanced knowledge of physiology, diagnosis is gradually becoming more and more perfect, and by the use of instruments and chemical tests, which bring morbid structures into more intimate relation with the senses, it is losing its conjectural character, and approaching an exactitude to which the practitioners of a former period were altogether strangers. It is recorded that some of the former teachers at the London Veterinary College used to instruct their pupils to carry about with them a small trocar and canula, to pierce through the intercostal muscles (in the absence of the owner or his groom), to ascertain if the chest contained fluid, in order to give a correct diagnosis. Now the sounds of the chest have been studied and simplified, and are known by almost every tyro; at least the symptoms of hydrothorax are easily recognised without having recourse to such procedure.

Recent advances in diagnosis and pathology have not failed to suggest the reasonableness or unreasonableness of former modes of treatment; for when the principles which guided our predecessors were shown to be incorrect, there was every reason to suppose that their practice was incorrect also. In nothing is this more apparent than in the treatment of diseases, such as influenza, pleuro-pneumonia epizootica, and other blood diseases of a similar kind; in short, the almost complete abandonment of the antiphlogistic method and the establishment of a more rational and suc-

cessful practice, based on our increased knowledge of pathology and physiology. The caloptric test for cataract is a triumph of the application to art of physiological knowledge and philosophical principles. As it may be new to some of your readers I may describe it. Take a horse into a dark place, bring a light within six inches of one of his eyes. By looking steadily for a few minutes into the eye, you will observe three reflections of the light used, two of them in a vertical and one in an inverted position; now move the light a few inches from right to left, looking steadily into the eye, when the two vertical images will move in the direction of the light, and the inverted one in the opposite direction. If cataract be present no inverted image is visible; the lens being opaque, no rays of light can pass through it. In connection with cataract we may allude to its nature and treatment, as propounded by its discoverer—the late Sir David Brewster.

This great philosopher found that, when the lenses of several animals, and perhaps of all, are kept in distilled water, the rings or quadrants of polarized light change their form, and even their colour, as if the lens was assuming a new and more complex structure. After a certain time the lens bursts from the breaking of the capsule or bag which encloses it. The distilled water had been absorbed in such quantity as, at first, to stretch and then tear the capsule, and the effect of its expansion was to give it a polarizing structure, which modified the polarizing structure of the lens itself. This experiment goes to show that the disease of *soft cataract* in the human eye may be produced by the lens absorbing too much water, from an excess of water in the aqueous humour, and that *dry cataract* may be produced by the lens not receiving a proper supply of water, in consequence of the aqueous humour containing too much albumen. In short, that the lens is nourished by imbibition from the aqueous humours, and in certain conditions of system the humours get too dense to allow of the passage of fluid to the lens, so that it gets dried up; the serrated margins of the fibres composing the lens appear separate from each other, producing dry cataract, or, *vice versá*, producing soft. He further thought that, by puncturing the cornea and allowing the aqueous humours to escape (the chamber became filled up with a less dense fluid), or by injecting a quantity of water into it, a cure might be effected. By taking advantage of this and similar discoveries, our science has made good progress within the last twenty years; the theories of the inflammatory process, and the natural course of disease have been greatly modified within that period.

Modern experience has demonstrated that many methods of treating various disorders which were taught and sanctioned by the profession twenty years ago are no longer applicable. As examples of this, I may mention the treatment of laminitis, introduced by Mr. Broad, now extensively and successfully practised; the operation for canker, introduced by the Manchester school; treatment of wounds by metallic suture and carbolic acid; and others of a similar nature. Not to enlarge on the complete change in our ideas as to the nature of disease, which in many cases used to be regarded as an enemy we were called on to lay siege to, attack, and conquer, may now be regarded as our best friend, the natural result of those injuries to which the animal economy is necessarily exposed, the efforts of nature to expel from the system the noxious causes by which the so-called disease has been produced. It is when we approach the province of the organic chemist (to whom we are looking for the solution of the occult changes in the blood and secretions under diseased actions) that we find ourselves most deficient and progress less apparent.

The ethical relations of the profession are in a transition state, and some progress towards improvement is observable. The conventionalisms of differences of education and title, and other pettinesses which set professional brother against brother, and the public against both, are fast dying out, or appearing in their true character as utterly insignificant, when compared with the beneficent and grand objects which a united profession might accomplish. The associative principle—such a prominent feature of the present day—has greatly assisted towards this consummation; whilst its other advantages are so palpable as to make one almost wonder why it is not universal. Certainly no one living man has contributed more, both by word and deed, to effect this than the veteran Thomas Greaves. Unfortunately in this Dutch paradise of a country we are not so far advanced as to unite in a scientific brotherhood; or we are too selfish to permit ourselves to do so. To some of the older members, centrally situated, I would beg respectfully to say, "Try it."

The preliminary and practical examinations are signs of progress, forced on by the advancing spirit of the times—symptoms that the majority of the members of Council are desirous we shall advance according to the much-used aphorism, "Practice with science," and show us that they are in earnest in their efforts to raise and maintain the prestige of the profession. As to the proximate or ultimate effects of the practical test, it would be premature to speculate. Although

it has been denounced by high authority as a "farce," it is a "farce" which requires a good deal of training and teaching of the various actors to enable them to act their parts so as to ensure them being called before the curtain.

The relations of society towards the profession are gradually changing for the better, but there is still great room for improvement. It seems strange that the most lucrative appointment rightfully belonging to the profession should be given to a medical man. One would almost think it inconsistent with the duties of a member of the sister science to hold the appointment of Cattle Inspector to the Privy Council: but mammon is everything now-a-days. When the legislature can so ignore the claims of the profession as to appoint a medical man to a place that should by right and justice be conferred on some of its members, need we wonder at local authorities appointing police officers as cattle inspectors all over the country. We may despair of seeing any change in this state of matters until an association be formed and an agitation set on foot by a united profession. In these days of increased representation and liberal measures, it is not too much for the veterinary profession to ask to be allowed to have a representative elected by its members to look after their interests. What more fit or grateful tribute of respect or esteem for any member of the profession, after a long, disinterested, and successful career, than to be returned by his fellows as their representative to the British House of Commons!!!!

I find, however, that I am entering on new and debatable territory, and diverging from the scientific path. I shall conclude by expressing the hope that the points touched upon may be productive of increased activity, and the ideas advanced may tend to engage the attention of some of the older members, and incite to action in the cause of organization, to enforce our rights and advance our interests; at the same time not losing sight of the scientific part, which will, I doubt not, best enable us to attain to a higher importance in the estimate of mankind.

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#### DESCRIPTION OF THE POST-MORTEM EXAMINATION OF THE ANIMAL AFFECTED WITH EMBOLISM OF THE ILIAC ARTERIES.

(Case described at p. 182, vol. xliv.)

By SAMUEL LITTLER, M.R.C.V.S., Long Clawson.

THE grey mare whose ailment I described in the March number of the *Veterinarian* as "Embolism of the Iliac Arte-

ries," was destroyed on the 24th of April, and a *post-mortem* examination made immediately afterwards; but, being then in Edinburgh, I had no opportunity of witnessing the dissection; my father and brother, however, attended, and to them I am indebted for my knowledge of many of the facts embodied in this report. There were also present the following veterinary surgeons:—Mr. Naylor and Mr. Goodhall, both of Soughborough; Mr. W. R. Marriott, of Cotgrave; and Mr. J. Marriott, of Car-Colston.

Neither my father nor I saw the mare alive after the middle of August, 1870, she being, from that time until her death, under the care of Mr. W. R. Marriott. As no definite or trustworthy account could be obtained of the pathological condition of the mare during the last eight months of her life, I pass over that hiatus, and proceed at once to a description of the lesions observed in the dissection of the carcase. First, it may be stated that the body was much emaciated, a condition, however, quite incompatible with the manner the animal had been fed and managed of late. The muscles, although attenuated, possessed the normal colour, and even those of the hind extremities showed not the least pallor.

On the removal of the intestines and pelvic viscera an abnormal condition of the terminal part of the posterior aorta and of the iliac arteries, evidenced by their bold and grotesque contour, was at once recognised. The posterior aorta at the part named had an aneurismal-like bulge, whilst the internal iliac arteries were distended throughout, the right one more so than the other. Each of these vessels presented here and there a slight protuberance, which had destroyed its cylindrical character, and given to it an indefinite form. Both the external iliacs were considerably increased in size, but the enlargement was not uniform. In the right artery the enlargement terminated about four inches from the origin of the vessel in a swelling of an oval form. In the left artery, however, it was continued, even as far as the femoral artery. Several small circumscribed melanotic tumours—probably lymphatic glands enlarged by the deposit of melanotic matter—were noticed in various situations. A tumour of this kind, somewhat flattened in form, and about an inch and a half in diameter, occupied the angular space formed by the divergence of the internal iliac arteries. The contiguous areolar tissue, as well as that enveloping the iliac arteries, was of a light mottled grey colour, due, apparently, to the deposit of a small quantity of black pigment, while the distended parts of the iliac arteries themselves exhibited a still darker shade, as though they contained a larger amount of similar colouring matter.

The heart was seemingly normal in volume, relatively heavy, and inordinately firm to the touch, imparting an impression of being a solid body. The walls of the ventricles were thick, and the cavities small; they contained no blood. But the auriculo-ventricular and semilunar valves were perfectly healthy, and the carneæ columnæ were especially well developed. A heart of this kind, by those who are incapable of conceiving of mere hypertrophy as a healthy condition, would be simply designated a strong one. But although the heart in question, divested of its vessels, weighed only six pounds and a quarter, it was a beautiful specimen of centric hypertrophy, occasioned—not as suggested at the *post-mortem* examination by hard work and good food; conditions to which the animal had not been subjected for the last six years of her life—but by the persistent obstruction which existed in the diseased blood-vessels, to the equable flow of blood through the system. Here nature had, by the addition of homogeneous tissue, increased the strength of the central organ of circulation in order that it might overcome the obstruction. The hypertrophy in this case may be viewed as a grand illustration of conservative means by which a force adequate to surmount the increased resistance to the circulation was secured.

That part of the spinal cord, with its membranes, extending from the ninth dorsal vertebra to the sacrum, showed not the faintest trace of disease. It was firm to the feel and evidently well nourished.

Having given a strict outline of the diseased arteries as seen *in situ*, and of other morbid conditions as observed in the course of the examination, I shall now describe the changes which were found to have taken place within these vessels; and also notice certain unnatural conditions of some of the blood-vessels of the extremities.

The posterior aorta from its region to the point where the utero-ovarian arteries arise was apparently healthy; but that portion of the vessel situated between these arteries and the internal iliacs were found to contain two firm, yellow, fibrinous clots, very slightly stained with the colouring matter of the blood. They were non-organized and also non-adherent to the inner tunic of the vessel. These clots weighed together ten drachms. The smaller one was placed anteriorly; it only weighed three drachms and a scruple. The coats of the aorta were not diseased even at this point, but simply distended by the fibrinous clots.

The *left external iliac* artery as far as the circumflex ilii, although occupied by a fibrinous cord resembling in physical

characters the posterior aortic emboli, was evidently permeable ; but from the origin of the circumflex to near the commencement of the femoral artery, its serous membrane was destroyed and its canal completely obliterated by the presence of fibrinous matter in various stages of organization or degeneration.

The *right external iliac* artery also contained a fibrinous deposit, but not so large as that found in the left one. It extended scarcely four inches along the course of the vessel. As far as the circumflex ilii it was similar in appearance to that in the left ; but beyond this point for about two inches it assumed the form of a very coarse rete of well-organized fibrine restricting the dilatation of the vessel, yet allowing the transmission of blood. It terminated in a reddish-brown ovoid clot, enclosed in an organized layer closely adherent to the wall of the vessel. The circumflex artery of this side, although healthy in itself, contained a loose yellow clot continuous with that of the iliac artery.

The *internal iliacs* contained a great amount of organized fibrine firmly adherent to their inner surfaces, as well as several reddish-brown loose clots and many fibrinous bands united together and intersecting their canals. These vessels, however, were far from being closed by their contents ; each having a winding canal of considerable calibre.

The iliac arteries with their abnormal contents, and the distended part of the aorta with its emboli, all together weighed five ounces.

The right lateral, sacral, gluteal, and obturator arteries at their commencement, and also the left femoral almost throughout, though pervious, contained bands of false membrane attached to their inner surfaces and running parallel to their long axes.

The internal plantar arteries in both fore legs and in the near hind one were obliterated ; and the internal plantar veins in both hind legs and in the off fore one were in the same condition. All these vessels had entirely lost their tubular character, having become converted into mere fibrinous cords.

## THE PRINCIPLES OF BOTANY.

By Professor JAMES BUCKMAN, F.G.S., F.L.S., &c. &c.

(Continued from p. 340.)

THE plants to which we would now direct attention are

remarkable for requiring a constant submersion in water for their well-being; they are noticed by Professor Lindley under the head of *Hydrales*, the *Hydral alliance* consisting of several natural orders of unisexual aquatic Endogens. This unisexual character, however, is not universal, as the pretty little British plant known as Frogbit is an exception, as in it the flowers are bisexual. This alliance is, however, a very natural one, all its members grow at the bottoms of rivers, canals, watercourses, and ponds, elevating their foliage and flowers above the surface of the water in summer, and so performing the flowering and seeding functions. They are for the most part interesting plants even as represented by our native species, such as the frogbit, water soldier, of the pond. The marine sea-wrack; the *Vallisneria*, of New Holland, which, though not naturalised in our ponds, is found in almost every microscopist's study; and the *Anacharis*, of North America, which, unfortunately, though but lately introduced, is not confined to the study, but has found its way from thence into all our rivers and watercourses, and is at present doing a considerable amount of mischief.

Of these plants we have three natural orders as under:—

*Hydrocharidaceæ*—Hydrocharads.

*Naiadaceæ*—Naiads.

*Zosteraceæ*—Sea-wracks.

Each of these have but comparatively few genera and species, and these are of little or no importance in a dietetic or medicinal point of view, and yet they are all so full of interest that it seems important to give a few notes on some of the more prominent individuals amongst them.

#### HYDROCHARIDACEÆ.

As examples of these we would refer to such native species as—

*Stratiotes aloïdes*—Water soldier.

*Hydrocharis morsus-ranæ*—Frogbit.

The Water soldier would seem to get its generic name from its sword-shaped leaves through *σπαρτός*, an army, the truth doubtless being that on the now exploded doctrine of signatures the shape of the leaves pointed out that it was capable of curing all kinds of sword cuts. It is a comparatively rare British plant, and one which some thirty years ago we used to meet with in Battersea Fields, but which modern encroachments or improvements have doubtless swept away.

The *Frogbit*—sometimes called the Pride of the Water—well deserves the latter appellation, as from its circle of floating uniform leaves the lovely silvery chalice of three-petalled flowers are pleasingly conspicuous. This also used to grow in the ponds and brooks of Battersea Fields, but it is not uncommon in wet marshy districts, especially near rivers, as in parts of Gloucestershire and Worcestershire near the banks of the Severn.

This is a very interesting plant for the fresh-water aquarium.

The foreign plants of the order are also interesting, so much so that we must not omit to mention the *Vallisneria* and the Water-thyme.

The first of these, *Vallisneria spiralis*, is remarkable for the curious arrangements which it possesses for bringing about fertilisation. This plant, as described by Professor Lindley, is one “whose inflorescence lives and passes through all the stages of its existence under water, except just at the time when fertilisation is necessary, when the flowers rise above the surface for a few hours. Darwin, in his ‘Loves of the Plants,’ alludes to it in the following strain, which, as well as the note upon this part of the poem, we transcribe for the information it is meant to convey:—

“As dash the waves on India’s breezy strand,  
Her hushed cheek pressed upon her lily hand,  
VALLISNER sits, upturns her tearful eyes,  
Calls her lost lover, and upbraids the skies;  
For him she breathes the silent sigh forlorn,  
Each setting day; for him each rising morn.”

“This extraordinary plant,” as explained by our author, “is of the class Two-houses. It is found in the East Indies, in Norway, and various parts of Italy.—*Lin. Spec. Plant.* They have their roots at the bottom of the Rhone. The flowers of the female plant float on the surface of the water, and are furnished with an elastic spiral stalk, which extends or contracts as the water rises and falls. This rise or fall, from the rapid descent of the river, and the mountain torrents which flow into it, often amounts to many feet in a few hours. The flowers of the male plant are produced under water, and as soon as their farina, or dust (pollen) is mature, they detach themselves from the plant and rise to the surface, continue to flourish, and are wafted by the air or borne by the currents to the female flowers.”—Darwin’s ‘Loves of the Plants, with Philosophical Notes,’ p. 33.

This plant is kept by the microscopist for exhibiting the circulation of the sap in the tissue of the leaves. It is no less useful as a purifying adjunct in the freshwater aquarium.

The Water-Thyme, named—

*Elodia Canadensis*, Michaux;  
*Udora Canadensis*, Nuttall;  
*Anacharis Alsinastrum*, Babington;  
*Serpicula verticellata*, Mühlenberg—

has the trivial name of little water snakeweed in the United States, where, according to Beck, "it occurs in still waters from Canada to Virginia."

It is, however, said not to be so common in the States as with us, and therefore some authors seem to consider it a native plant; but, as justly observed by Dr. Syme, "its extraordinary increase of late years is an argument in favour of its foreign origin, for, if it be not a new plant in our own rivers, how is it that it never before exhibited this remarkable property of rapid increase? If it be a native, this new faculty has been recently imparted to it, which seems absurd."

During our residence at Cirencester we were constantly boating and botanizing on the Thames and Severn Canal, and we feel sure that for the first few years of our stay not a plant was to be seen. However, one afternoon a single specimen was observed, and from this, in constant visits, we observed its rapid spread until in three years the canal got so choked as to oblige its removal, when the quantity was so great that we were desired to investigate its properties with a view to making it useful as a manure, but as its solid contents were so infinitesimally small in comparison of the bulk it was not worth the carriage.

At present it is in the upper parts of the River Yeo, and in every brook and pond near. Now, it is curious that in the places named, Potamogetons and other pond weeds abounded only a few years since, but now this interloper has driven out the native flora, which is accounted for by Dr. Syme on the following supposition—"Perhaps our sluggish streams, the decomposing animal and vegetable matters in the Cambridge waters, and especially the excess of lime present, may be favorable to its development, and form an inexhaustible supply of inorganic food for its nourishment and support."

The *Zannichillia* or horned-pond weed of our pools is a good illustration of the Naiads. This plant is curious for the arrangement of its flowers, as the male flower usually consists of a single stamen placed at the outer margin of the female or pistilliferous flower.

This plant is as common to American waters as it is with us, still, as a British species, it can only be considered as locally abundant.

The *Zosteraceæ* forms but a small natural order represented by our native *Zostera marina*, the grass-wrack of our sea-coast; and, as stated by Dr. Syme, "it is found forming extensive submarine meadows in estuaries, the lower parts of tidal rivers, and muddy coasts, and likewise grows frequently in salt-water ditches."

The sea-wrack is largely collected for manure, and also for the manufacture of alkali, and even for the preparation of iodine, but this, we think, is done without due examination, as it is popularly classed with the seaweed. Being light and soft it is collected for use in packing china and furniture; and during the cotton famine it was recommended as a source of supply for a fibre to supersede cotton itself, but we never heard of any success in this direction. It is applied as a poultice to scrofulous tumours, but this was probably from a supposition of its being a seaweed.

In concluding our notes on these plants we cannot resist saying that interesting as are their study, in a botanical point of view, little indeed can be said in favour of any medicinal or economic value of any one of them. The whole alliance may be said to consist of interesting but inactive, and, therefore innocuous individuals, but the next alliance, the *Narcisales*, will amply make up for this deficiency.

## Pathological Contributions.

### CATTLE PLAGUE.

IN Northern France the rinderpest rages in the arrondissements of Valenciennes, Cambraix, and Avesnes. In Dunkerque and Hazebrouck the health of stock is reported to be satisfactory.

In the department of Ardennes the plague has appeared in two communes near the Luxembourg frontier.

In Lille the disease is decreasing according to the last reports.

Italy experienced an incursion of the plague in the early part of the month of April at Como, and Novara, near the Swiss frontier. The authorities appear to have been on the alert, and adopted stringent measures, a prevention with good results, as no fresh cases have been reported since the end of April.

Belgium has been free from cattle plague for some weeks, and no fresh outbreak has been reported.

Poland is also reported to be free, but fresh outbreaks are of common occurrence in that country.

In Gallicia and Buckowina the cattle plague still prevails.

## PLEURO-PNEUMONIA.

THERE is a slight increase in the number of infected counties since the last return; the numbers being forty-one against thirty-four in the previous return.

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## FOOT AND MOUTH DISEASE.

THE number of counties from which reports have been received is forty-seven against fifty in the previous return; the number of cases, however, has slightly increased as compared with the last report, but in comparison with the corresponding return of last year the attacks have decreased by nearly two thirds.

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## OSSIFYING ENCHONDROMA IN THE MAMMÆ OF A BITCH.

MESSRS. Gowing & Son have forwarded a very interesting specimen of a tumour which was removed from the mammæ of a bitch by Mr. Gowing, junior. The morbid growth was tuberosus in the external surface, and covered with a very attenuated integument. Internally it presented the aspect of a colloid tumour having numerous loculi, which were filled with a gelatinous material possessing the characters of glue. The walls of the loculi were composed of cartilage of the foetal variety, the cells being small and aggregated. A considerable extent of ossific deposit was found in the interior of the growth. The glue-like substance was made up of large granular cells, nucleated cells, and plates of cholesterine.

MESSRS. Gowing & Son report that the animal is doing well.

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## POISONING CATTLE BY WATER DROPWORT.

MR. OLVER, M.R.C.V.S., Edingall, Tamworth, has sent us an account of the sudden death of some cattle from eating the roots of the plant commonly known as water dropwort, *Cenanthe crocata*. There are many species of the dropwort, all of which are poisonous to a greater or less extent; those best known are the large dropwort *Cenanthe crocata*, and the fine-leaved *Cenanthe pellandrium*, both of which are common on the banks of rivers and ditches, as well as in swamps and watery places. In the present instance the mischief arose from the scourings out of ditches which contained the roots of the plant, being cast into a field in which the animals were turned to graze. Several allied instances of the kind have come under our immediate observation,

and farmers cannot be too careful in preventing such scourings out being deposited in places to which cattle have access.

Mr. C. Johnson, in his work on 'British Poisonous Plants,' says, "The water dropwort is perhaps the most virulent of the umbelliferous plants; and as its roots bear the same similarity to parsnips in taste and appearance that the leaves do to celery, accidents from its use have not been unfrequent. Some years back a number of convicts working upon the river bank near Woolwich found a quantity of this plant. Struck by its resemblance to the well-known vegetables above mentioned, seventeen of them ate it. Shortly afterwards nine of the men went into convulsions, and became insensible; one died in five minutes, another in a quarter of an hour, a third in an hour, and a fourth a few minutes later. Two more expired in the course of a few days. They appear to have partaken both of roots and leaves."

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### YEW POISONING.

A WEEK or two ago Mr. Prew, farmer and miller, of Sharnbrook, Bedford, lost three valuable in-calf cows in consequence of their eating the clippings of a yew tree, which had been thrown into the yard by the person who trimmed the tree. The account which we have received states that for thirty-five years a similar practice had prevailed, but without being attended with any injurious consequences.

Cases of yew-poisoning are not unfrequent, and many of the facts connected with them would seem to point to the plant being more injurious in some seasons than in others. The condition of the cattle has also much to do with the result attending the eating of yew; if the rumen, for example, contains only a moderate amount of ingesta, and if the animals from being hungry eat the plant with avidity, although the quantity may not be large, fatal consequences are more likely to follow. Thus the hungry animals of a herd have often been known to perish, and the others to escape.

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### CHRONIC DISEASE OF THE KIDNEYS IN TWO MARES.

WE are indebted to Mr. F. Earl, M.R.C.V.S., Shifnal, for an interesting description of two cases of diseased kidneys, both of which proved fatal. The changes observed on a post-mortem examination indicated that in each instance the

glands had been the seat of disease for some time, although little or no suspicion of the kind seems to have been entertained. In one case Mr. Earl describes the kidneys as being increased in size, pale in colour, and so soft and flabby as to be easily broken up by the slightest pressure. In the other, he says that the pelvis of each gland contained a quantity of purulent matter, and that numerous small abscesses existed in the medullary portion; indeed, that it was impossible to make a section of either kidney in any direction without cutting through several of these abscesses. Both animals were attacked with illness a few days only before death. The symptoms were those which are usually met with in intestinal affections associated with colic. The remedies had recourse to, which consisted in a great measure of stimulating agents, contributed, in Mr. Earl's opinion, to a more speedy fatal result than would otherwise have been the case.

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#### ILL EFFECTS OF THE PRESENCE OF LARVÆ IN THE SINUSES OF THE HEAD OF SHEEP.

INVESTIGATIONS long since made into the natural history of the gad or breeze fly established the fact that the larvæ of the variety known as the *Æstrus ovis* located themselves within the sinuses of the head of sheep. The number of larvæ obtaining an entrance through the nasal passages into the frontal and other sinuses is, however, as a rule, exceedingly limited, and as such it is very rare that any ill effects are produced by their presence. A parallelism of this is to be met with in numerous cases where parasites are present. The ill consequences are in proportion to their number, not to the simple existence of the parasites. There are other cases, however, where even one parasite may cause irreparable mischief, or even death itself; for example, an hydatid—*Cœnurus cerebralis*—in the brain of the sheep. These facts are alluded to for the purpose of explaining how it is that this year we have heard so much of the serious results which have followed the full development of the larvæ of the *Æstrus ovis*. Sheep have suffered to a most serious extent in many of the southern counties, and in not a few instances even death has supervened. The leading symptoms have been a copious discharge of a glutinous kind from the nostrils, occasional cough of a choking-like nature, frequent sneezing, impeded respiration, swellings around the nasal openings, effusion into the areolar tissue beneath the jaws, great depression, leading in many instances to a semi-comatose condition, loathing of food, and in the latter stages, even diarrhœa.

The number of larvæ found in examining the sinuses has often exceeded a score. Doubtless others have escaped, so that we are without positive information as to how many may originally have been present.

The inhalation of the fumes of burning tar, especially if made more potent by casting on the flame small quantities of sulphur from time to time, has proved useful to those sheep which gave early indications of being affected, by causing a more speedy expulsion of the larvæ. The exhibition also of a little turpentine mixed with glycerine has led to a similar result.

It seems almost unnecessary to add to these remarks by further reference to the natural history of the *Æstrus ovis*. It may, however, be stated that in the latter months of the summer the fly deposits its ova near to the nasal openings, notwithstanding the efforts which are made by the sheep to guard against this being done by herding themselves as close together as possible, and keeping their muzzles almost buried in the dust. Within a few days the young larvæ, scarcely visible to the eye, are hatched, and immediately they begin to crawl into the nasal passages, and to feed upon the natural secretion furnished by the mucous membrane. They march onwards into the frontal and other sinuses, where, as their proper habitat, they remain until about the beginning of the month of May, or a little later, by which time they will have attained their full development. The change they are now about to undergo, viz. the pupa state, leads to their efforts to escape, and which, as has been shown, may be attended with serious consequences to the sheep. When free from their dwelling place they bury themselves just beneath the surface of the soil, and are soon transformed into their perfect chrysalis form. After a few weeks—sometimes five or six, but varying according to circumstances—the fully formed æstrus bursts from its prison house, seeks its mate, and in due course the impregnated female deposits her ova on the part of the sheep already described. Climatic variations greatly influence the perfecting of the transformations of the larvæ. In cold seasons they perish in considerable numbers, while in hot they are preserved, and hence in such years as 1868 and '70 myriads of æstri were perfected which otherwise would not have been.

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#### THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

“RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of April, 1871, have been

found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	NUMBER OF ANIMALS AFFECTED.					DISPOSAL.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered at place of landing.
Bremen .	London	Sheep-scab	...	447	...	...	447	447
Hamburg	Hartlepool	Foot-and-Mouth	2	3	...	53	58	58
"	Middlesborough	"	...	...	...	4	4	4
"	Newcastle-upon-Tyne	Sheep-scab	...	445	...	...	445	445
Rotterdam	London	Pleuro-Pneumon.	3	...	...	...	3	3
"	Hull	"	1	...	...	...	1	1
Total.—Pleuro-Pneumonia			4	...	...	...	4	4
Foot-and-Mouth .			2	3	...	57	62	62
Sheep-scab . .			...	892	...	...	892	892
Total . .			6	895	...	57	958	958

"ALEXANDER WILLIAMS,

"Privy Council Office,

Secretary.

"Veterinary Department, 11th May, 1871."

### Facts and Observations.

ROYAL AGRICULTURAL SOCIETY.—At the meeting of the Council of the Royal Agricultural Society on May 3rd, it was decided by 31 votes to 6, to hold the country meeting of the Society for 1872 at Cardiff. Cheltenham was the only competing town, Newport having withdrawn in consequence of the Inspection of Sites Committee not being able to report in favour of the accommodation offered by that place. At the same meeting it was also resolved to hold the meeting of 1873 in the districts comprising the counties of Northumberland and Durham and the North and East Ridings of Yorkshire.

TEXAS CATTLE KINGS.—Texas, it is well-known, contains from half to two thirds of all the horned cattle reported by the census as in the United States. The vast herds of that State

are under the control of comparatively few men, who are called cattle kings, in contrast to those operators who are known in New York as railroad kings. A writer in the *Pittsburgh Commercial* says there are four million cattle in Texas, one million of which are beeves ready for market. It must be borne in mind, however, that these animals have to be fed for some little time before their flesh is considered fit for eastern consumption. The plains over which the Texas cattle roam contain one hundred and fifty million acres. The following are a few of the ranchmen, with their respective herds:—Richard King has a farm on the Sante Cantrutos River, of 84,132 acres, on which he keeps 65,000 cattle, 20,000 horses, 7000 sheep, and 8800 goats, and employs 300 Mexicans to attend them. He sells 10,000 beeves annually. A Mr. O'Connor owns a large pasture field on San Antonio River, where he grazes 40,000 head of cattle, and sells 75,000 dols. worth each year. He commenced the business in 1852 with 1500 head, and his present enormous herds are the result of natural increase. Another man named Robideaux, has a ranch of 142,840 acres near the mouth of the Rio Grande. It is surrounded on three sides by water, and to enclose the third required the building of 31 miles of plank fence. He has 30,000 head of cattle, besides an immense amount of other stock. John Hitson, whose farm lies on the Brazos River, has 50,000 cattle, and drives to market a squad of 10,000 or so annually. Ten years ago he had a beautiful little blue clay farm in Tennessee, which he sold to get money enough to take him to Texas. He is now 40 years old, and besides his Brazos property, own a stock farm nearly as extensive on the South Platte, in Nebraska. During the month of October, last year, it is stated that it took 111 cars per day to transport Texas cattle from Abilene, Kansas, and that a single bank in Kansas City handled, during the season, over 3,000,000 dols. cattle money.—*The Farmer*.

PURCHASING SHEEP FOR EXPORTATION TO FRANCE.—The serious losses of cattle which are taking place in France, from the spread of the cattle plague, has led to the purchase of a considerable number of store sheep in the south-eastern counties for exportation to that country. Cattle dealers from France have visited most of the markets in Kent, and become keen competitors for stock of this kind. About the middle of May, the state of the food supply in Paris rendered it necessary for arrangements to be made between the Thiers government and the Commune for 6000 bullocks and 10,000 sheep to enter the city, for the supply of the hospitals, *Bureaux des Bienfaisances*, and women and children.

## THE VETERINARIAN, JUNE 1, 1871.

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Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

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### THE ANNUAL MEETING OF THE MEMBERS OF THE VETERINARY PROFESSION.

It is certainly a significant fact that not more than about four out of every hundred of the veterinary surgeons practising in various parts of the country can be induced to contribute the influence of their presence to the only meeting which takes place in the course of the year, at which the proceedings of the elected representatives of the profession can be fairly discussed, and condemned or approved as they may seem to deserve.

The reason of this want of interest is not easily discovered ; distance can have little to do with the non-attendance of members, because many come from afar while many who are near stay away. Urgency of occupation would be a satisfactory plea, but unfortunately for its force we are conscious of the fact that some of the practitioners most actively engaged are regular in attendance ; and, besides, the same excuse of existing engagements is not urged when meetings of less professional importance distract the attention. There is, in short, no ready escape from the conviction that a prevalent apathy is the true cause of the meagre attendance at our annual meetings. Politically we have no *locus standi*, and we do not care to assert our right to claim one ; there is enough in the daily routine of practice to occupy the time, and the question of the progress of the profession in science and social character is too abstract in its nature to attract the interested attention of the busy or of the indifferent man ; hence we go on year after year in the old rut ; meeting, discussing a few points of more or less insignificance in the report of the proceedings of Council, re-electing members of Council who go out by rotation, and then dining together in honour of these moderate achievements. It may not be possible under the circumstances to do more ; but it must also be admitted that it would be difficult to do less, and if the duties we have

enumerated are all that the charter requires or permits to be done, we can hardly wonder at the entire absence of enthusiasm on the part of members of the profession in regard to them. But we apprehend that no real necessity exists for the rigid adherence to the beaten path. The members of the profession are in possession of the records of Council proceedings before the annual report, which only contains a summary of those proceedings, is placed in their hands; they are competent, therefore, to form an opinion upon the subjects which the Council have had to legislate upon during the year; and in speaking upon the report any and every member may express his independent sentiments; and although it is not the custom to conclude by a resolution, it is still easy for the meeting to indicate its sense of the actions of the Council by adopting or rejecting their report. Much good would arise to the Council from trenchant criticism, and far more satisfaction would be gained by them in making a triumphant defence of the proceedings which had been honestly attacked, than in accepting a languid vote of confidence in their policy, which no one is sufficiently interested in to positively condemn or strongly approve.

The report which was read at the last annual meeting contained references to such essential matters as the preliminary educational test, and the recently established practical examinations—subjects which might well have called forth a decided expression of opinion; but it seems to have become the fashion for members to exhaust their oratorical forces at the meetings of the various associations, keeping no unuttered thought in reserve for what should be the chief assemblage. With this state of things we must perforce strive to be content for the present; not, however, without protesting against the indulgence of a spirit of supineness, which in a young profession is culpable weakness. It may be the comforting duty of our successors to advise the members of the veterinary profession to “rest and be thankful,” but the period for that assurance has not yet arrived, nor can we, having regard to the signs of the times, prophesy its advent with any reasonable hope of fulfilment.

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## Reviews.

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Quid sit pulchrum, quid turpe, quid utile, quid non.—HOR.

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*Animal Plagues, their History, Nature, and Prevention.* By  
GEORGE FLEMING, F.R.C.S., M.R.C.V.S., &c. London:  
Chapman & Hall, Piccadilly.

THERE is a wholesome rule which obtains among journalists not to write in laudatory terms of the works of the members of the staff. The author of 'Animal Plagues' would, we are convinced, least of all advise a departure from the usual course to be made in his favour; nor is it in any sense necessary to make an exception in respect of a writer whose works are so well recognised by his professional brethren. Our simple duty is, therefore, to indicate the nature and scope of the book before us.

'Animal Plagues' is a consistent history of the progress of epizootic diseases which have attacked animals from the earliest historical times, from the "murrains" of Europe to the cattle plague in England in 1865. Each chapter in the book comprehends a "period," and by this method of division the labour of reading is materially diminished; we have no desire, however, to delude the reader into the belief that the book will afford recreation for a listless mind in some idle hour; on the contrary, he who reads it at all must make up his mind to read literally and accurately, or he had better leave its pages uncut.

## Extracts from British and Foreign Journals.

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### THE CATTLE TRAFFIC RESTRICTIONS.

YESTERDAY, May 16th, a large and important deputation from the inhabitants of all the principal towns in Lancashire and Yorkshire waited upon Mr. Forster, the Vice-President of the Council, at Whitehall, with a view to induce him to recommend to the Government the removal of certain restrictions relative to the importation of foreign cattle into this country, as contained in the Contagious Diseases (Animals) Act, 1869. By this statute, it may be remembered, the re-

ception of cattle from various parts of Europe was, with the object of preventing the spread of rinderpest, confined to certain ports—one of them being London,—but this restriction has within the last few weeks been removed as regarded Dutch animals, which may now be brought into England at any of the ordinary ports. This arrangement was come to on the extinction of the cattle plague in Holland, and on a special understanding with the Government of that country. The deputation yesterday requested Mr. Forster to extend that state of things so as to include cattle from the non-infected parts of Germany, in order that the animals might be shipped to Hull and the other neighbouring ports, be carried thence alive to the principal towns, and be slaughtered within a definite period and with similar restrictions to those in force in London, the cost of transit from the metropolis to the north thus being saved. The cities and towns represented by the deputation were Manchester, Liverpool, Birmingham, Ashton, Bolton, Burnley, Bury, Bradford, Dewsbury, Derby, Grimsby, Glossop, Hartlepool, Halifax, Hull, Huddersfield, Leeds, Middlesborough, Newcastle-upon-Tyne, Oldham, Plymouth, Stockport, Southampton, Staleybridge, Sheffield, Sunderland, Durham, and South Shields.

*Mr. Jacob Bright, M.P.*, introduced the deputation to Mr. Forster, and urged that the great towns of the north of England had a right to as much freedom of trade in regard to cattle as London had; that they were willing to put themselves under any restrictions which the Government might make if that concession was granted; and that there was no more danger attending the reception of cattle into Hull, Goole, Grimsby, and other ports than into London. He dwelt also upon the increase in the price of meat which the present system involved.

*The Mayor of Manchester* (Mr. Grave) read memorials to the Privy Council from the inhabitants and Town Council in favour of the removal of the restriction as regarded the German cattle trade, in which they represented that it was unjust to the large industrial towns in Lancashire and Yorkshire that London should enjoy a complete monopoly of that trade, and the large supply of food arising therefrom.

Memorials to the same effect were presented from each of the other towns.

*Sir Edward Watkin* and *Mr. Mark Price* also spoke.

*Mr. Forster*, in reply, said it had been found impossible to put inland towns in the same position as London, or to influence the natural difference of price. He reminded the deputation that Thames Haven contributed but a small part

in the reception of foreign cattle into London, and stated that out of 125,000 beasts brought into the metropolis last year, 35,000 only were landed at Thames Haven. The trade of that place was almost confined to cattle, and the Privy Council were able to put such restrictions on the traffic between it and London as would be utterly impracticable between Hull or Grimsby and the inland towns. After seeing the last depositions on the subject he tried his utmost to frame regulations with regard to those towns, but to obtain the required amount of security restrictions would have had to be made which might possibly have been regarded by the inhabitants as a mere mockery, and have increased rather than decreased the price. The Privy Council would, he feared, be obliged to come to the same decision on the present application. The result of the cattle plague had been to create great fear lest the disease might be imported again, and the general principle of the Act of 1869 was to allow free entrance to cattle coming from countries free from the plague, and to cause all beasts from infected countries to be slaughtered at the port of London. Upon that principle he had always acted, and on a recent occasion he removed the restriction from a valuable import only when he found that it was safe to take such a step. (Hear, hear.) Holland had been free from the cattle plague for three years, and so also had several parts of Germany, but he had been unable to make arrangements with the Governments of the latter country, by which the importation of the dangerous Steppe cattle with the sound animals could be prevented. On the other hand, a law had been passed in Holland prohibiting the import of cattle there, and he thought, therefore, the export would be safe. It had been said, however, that this removal of the restriction would be of little or no importance; but as to that he must differ, seeing that in 1870 the cattle imported from the Netherlands numbered 76,323, and from Germany 53,656, while those from the whole of the unscheduled districts were 140,000 in number, and from the scheduled 53,000. He believed that if Germany had been in a position to send larger numbers of cattle she would have done so, and he attributed the high price of meat, not to the restrictions imposed, but to the climate and weather of last year, and partly to the effects of the war. He felt convinced that if the restrictions were removed the Steppe cattle would be at once imported, and that the results would of necessity be most disastrous. In this matter Germany would not protect England even to the extent that she pro-

tected herself, and the fearful danger that existed might be seen by the extent to which cattle plague had increased in France, where it had been introduced by a few herds of the Steppe cattle, imported with others for the use of the German army. Therefore it was impossible for the Privy Council at present to put Germany in the same position as Holland. He would, however, look into the matter again (hear, hear); but his firm belief was, that to carry the live animals into towns, restrictions would have to be made which he feared the deputation would regard as a mockery on his part. He warned them that if their present demand was granted the larger supply of Dutch cattle would be materially affected, it being impossible to make restrictions which should not apply to the whole of the foreign cattle. Hull and Grimsby were both opposite Holland, and in that they had such an advantage over London, that the Dutch trade might be attracted to them. He felt, therefore, that it would be doing harm to those ports rather than good, to make an opening in the German trade by restricting that of the Dutch. Few things had ever given him more anxiety than that, and at his last concession with regard to Holland the farming interest had become extremely angry, and his friend Mr. Read, the member for Norfolk, was going to bring the matter in their interest before the House. He promised to give the subject his earnest consideration; but he repeated that, in his opinion, if their application was granted more harm than good would be occasioned.

*Sir Edward Watkin* said the deputation would be ready to promise that both the conveyance and the distribution of the cattle should be isolated, and that the limitation of time should be respected; and he asked what was the difference between their position and that of London.

*Mr. Forster* said that within the last month he had thrown open the ports of Holland, which imported 76,000 cattle last year, and he should like to know how the deputation would be benefited if both that supply and the German were fettered on account of the suggested extension. He did not apprehend any increase in the German supply, believing that if it had been possible to obtain it the cattle would have been sent to London, where the prices were much higher than usual. In the six years prior to 1865 the average number of cattle imported annually to England was 161,000; in 1869 it was 216,000, and in 1870, 201,000. The importation of sheep was free, except to those arriving with German cattle.

*Mr. Price* said that distinction was virtually useless, seeing

that the sheep came from the same place as the cattle, and were mixed up together in London.

*Mr. Forster* said the danger of contagion from sheep was very much less. He hoped when the waterside market was finished the cordon around London would be got rid of. He promised, in conclusion, to reconsider the matter, and if he found he could safely modify the restrictions with regard to the inland traffic, he would at once communicate with the members of the deputation.

*Mr. Bright* having thanked the right hon. gentleman for his courtesy, the deputation withdrew.—*Times*.

## ROYAL COLLEGE OF VETERINARY SURGEONS.

ANNUAL MEETING, HELD MAY 1st, 1871.

JOHN WILKINSON, Esq., President, in the Chair.

THE twenty-eighth Annual Meeting of the Members, politic and corporate, of the Royal College of Veterinary Surgeons, was held by advertisement, and in accordance with the provisions of the Charter, on the first Monday in the month of May, being the 1st day thereof, 1871, at the College, No. 10, Red Lion Square, Holborn, London.

PRESENT:—The President, John Wilkinson, Esq.; Professors Brown, Williams, Deputy-Professor Pritchard, and Assistant-Professor Axe; Messrs. G. Armitage, G. Balls, G. Balls, Jun., J. D. Barford, Thos. Barrell, C. Barrow, F. Blakeway, T. D. Broad, Alfred Broad, Thos. Burrell, Jun., B. Cartledge, Matthew Clarke, C. Clayton, Thos. Colley, M. H. Comerford, Jas. Cowie, Joseph Davies, Wm. Dobie, Hy. Dyer, J. W. Evans, Wm. Field, Jun., Jas. Findlay, G. Fleming, J. J. A. Francis, R. F. Frost, T. W. Gowing, T. W. Gowing, Jun., T. Greaves, C. W. Griffis, M. Hack, Jas. Hall, M. J. Harpley, W. Helmore, C. Hunting, Wm. Hunting, Fredk. Jarvis, J. F. Jeeves, Hy. Lawrence, C. Lawrence, G. A. Lepper, Jas. Moon, Jas. Moore, G. Morgan, Rupert Mosley, M. E. Naylor, A. J. Owles, J. M. Parker, R. B. Paterson, Thos. Paton, F. Plomley, Rd. Pritchard, Jas. Rowe, Jun., F. P. Samson, C. Sanderson, T. Sangster, F. R. Silvester, F. T. Stanley, Chas. Steel, Thos. J. Symonds, J. W. Talbot, C. Taylor, J. M. Thorne, D. H. Tombs, W. Townson, J. H. Withers, Josh.

Woodger, Josh. Woodger, Jun., Ed. Woodger, J. A. Woods, and the Secretary.

The Secretary read the Notice convening the Meeting.

The minutes of the last meeting were read and confirmed.

The Secretary then read the Twenty-eighth Annual Report, including the Treasurer's Annual Balance-sheet.

#### REPORT.

The Council of the Royal College of Veterinary Surgeons has to report to the Body Corporate that, at its First Meeting, held in May, and in accordance with the provisions of the Charter, John Wilkinson, Esq., Principal Veterinary Surgeon to the Army, was elected President, and the following gentlemen were elected as Vice-Presidents:—Professor Brown, Messrs. Alexander Lawson, Harrison, Dray, Naylor, and Clement Lowe; Treasurer, Mr. S. H. Withers; and Secretary, Mr. W. H. Coates.

It is almost impossible to do more, within the limits of a report, than merely touch on the salient points of so broad a subject as the history of a year's transactions of a corporate institution; but in this instance care has been taken to note occurrences which appeared to be of importance.

The legislation of the year commenced very auspiciously, and sanguine hopes were entertained as to the ultimate success of the two urgent measures, which public and professional opinion had forced upon the attention of the Council.

It will be in the recollection of the members of the Royal College that some very important preliminary steps were taken during the preceding year respecting the "matriculation examination." Communications were carried on by deputations and official correspondence. These means were continued at the commencement of the present year, and an apparent unanimity existed amongst all the parties engaged, not only as to the principle upon which the negotiations were based, but also as to the amicable manner in which the scheme should be carried out. The Schools placed themselves in communication with the Council and with each other, with a view of establishing a code of rules which would be at once binding on the contracting parties as to their reciprocal obligations, and ensure an uniformity of action.

There was a decided feeling expressed in regard to the absolute necessity of having the operations of the scheme carried out under the supervision of the Council, in order that the examination might be a *bonâ fide* one, and the Staff of each School relieved from what was considered a very onerous responsibility.

The negotiations were carried on in a favorable manner until the month of July, when the Council received a communication from the Royal Veterinary College, of which the following is a copy:

ROYAL VETERINARY COLLEGE,  
July 16th, 1870.

*To the Governors of the Royal Veterinary College.*

MY LORDS AND GENTLEMEN,

We, the undersigned Professors, having agreeably to your request given our best consideration to the subject of the matriculation examination, as well as to the propositions relating thereto made by the Council of the Royal College of Veterinary Surgeons and the Veterinary Colleges of Edinburgh and Glasgow, beg respectfully to place before you the following suggestions:

First. That at the ensuing admission of pupils into the College in October next, the College of Preceptors be engaged to conduct the matriculation examination.

Secondly. That in the event of your determining to act upon the foregoing suggestion, publicity by advertisement be at once given to the regulations under which the matriculation examination will be conducted.

Thirdly. That as, under existing circumstances, no advantage can, we believe, accrue to this Institution from placing any control over the nature or extent of the matriculation examination into the hands of the Royal College of Veterinary Surgeons, it is inexpedient to submit to such control.

Fourthly. That inasmuch as we fail to see in what manner this College could be benefited by its authorities entering into the proposed contract with those of the two Scotch Colleges, it would be unwise at present to make any agreement with them, beyond the entering into a mutual understanding that no pupil should be permitted to present himself for matriculation examination at one College if he had been rejected at the corresponding examination of either of the other two Colleges, until six months after said rejection.

We remain, my Lords and Gentlemen,  
Your most obedient Servants,

(Signed)

CHARLES SPOONER,  
R. V. TUSON,  
WM. PRITCHARD,  
J. WORTLEY AXE.

The conclusions arrived at with reference to the accompanying Report were—

First. "That the first suggestion in the Professors' Report be approved."

The Governors therefore resolved that the sum of ten shillings and sixpence be paid by each candidate as the fee for matriculation examination.

Secondly. "That the second suggestion in the Professors' Report be approved."

The Governors thereupon resolved that the Principal and Professors be requested to draw up the advertisement referred to in this suggestion, and subject it to the approval of the Chairman of the General Purposes Committee.

Thirdly. "That the third suggestion in the Professors' Report be approved."

The Governors thereupon resolved "that they are quite aware that they cannot submit to the control of any other body without the previous consent of the President of and subscribers to this Institution, but they are much indebted to the Royal College of Veterinary Surgeons for their suggestions and advice, and will be glad to act upon this advice so far as is consistent with the interests of this Institution."

Fourthly. "That the fourth suggestion in the Professors' Report be approved."

The Governors thereupon resolved "that it is most desirable that they should, without committing themselves to any absolute contract with either or both of the other Colleges, come to an understanding with the governing bodies thereof whereby similarity of matriculation examination may be established in the several Colleges, and lists of candidates, stating those admitted and those rejected, may be interchanged between the authorities of the same."

Fifthly. It was resolved "that a copy of the above proceedings be communicated to the Royal College of Veterinary Surgeons with the expression of the Governors' sincere desire to co-operate with the Council in producing united action on the part of the several Colleges for the purpose of establishing by common undertaking an identity in their requirements of candidates for admission, so far as that no candidate shall be admitted who may fail in passing a matriculation examination under the following heads :

1. Writing from dictation.
2. Parsing a simple sentence.
3. Reading aloud.
4. The first four rules of arithmetic and simple rule of three.

(Signed)

C. N. NEWDEGATE, M.P.,  
*Chairman.*

It is scarcely necessary to say that this communication was received with very profound regret, because it not only annulled all that had been effected in the direction of simplicity and unification, but threw back the whole affair into its former unsatisfactory condition, and too clearly showed that any further efforts at mediation on the part of the Council would utterly fail.

An extract of the above, along with a letter, was sent by desire of the President to the Principals of the Edinburgh and Glasgow Veterinary Colleges, requesting to have their opinion on the subject; to which the following replies were received:—

VETERINARY COLLEGE, EDINBURGH;  
August 2nd, 1870.

*To the Secretary, Royal College of Veterinary Surgeons,*  
10, RED LION SQUARE, LONDON.

DEAR SIR,

I beg to acknowledge the receipt of your communication of the 26th ultimo, and in reply beg to state, for the information of the President of the Royal College of Veterinary Surgeons, that paragraph *fourth* referred to relates to a proposal made by me to Professor Spooner. The proposal was to the effect, that the various Veterinary Colleges should enter into a binding agreement "that no pupil should be permitted to present himself for matriculation examination at one College if he has been rejected at the corresponding examination of either of the other two Colleges until six months after said rejection." And in addition that the Boards of Examinators of the Royal College of Veterinary Surgeons and of the Highland and Agricultural Society shall not receive any student for examination with a view to obtain the diplomas or either of them which these Boards have hitherto been in use to grant, except upon production of the necessary Certificate or other evidence to instruct, that before commencing his course of veterinary instruction at any of the Colleges referred to the student has undergone and passed the preliminary examination, unless under certain exceptions in 5th paragraph of accompanying printed document.

I regret very much that the Royal Veterinary College has not agreed to the proposal which I made to them on the above terms, but on the contrary decline to enter into any binding agreement, with the view of having the preliminary examination conducted in a manner calculated to obtain the confidence of the profession.

In these circumstances it has been Resolved, "That the Edinburgh Veterinary College shall institute a preliminary

examination at the commencement of the ensuing Session, with the object, as far as possible, to raise the standard of veterinary education. But whilst entering upon this course of procedure, I cannot help observing that if each College, as in the above proposal, be allowed to conduct the examination in question independently of each other and without the control of an impartial Body such as the Royal College of Veterinary Surgeons, it will be apt to degenerate into a mere sham, and can never under any circumstances be regarded by the profession as a guarantee of the proficiency of the candidates in the subjects examined upon. As the only means, therefore, of securing that the examination shall be genuine, and such as the profession can with confidence rely on, I intend to petition that the Royal College of Veterinary Surgeons shall take the matter into their own hands, and if they have not the power at present, that such power be obtained, so that the preliminary examination shall be put on the same footing and be conducted in a manner similar to the professional examination.

(Signed)

W. WILLIAMS,  
*Principal Professor.*

The following was the reply from the Principal of the Glasgow Veterinary College:—

VETERINARY COLLEGE, GLASGOW;  
*August 1st, 1870.*

JOHN WILKINSON, Esq.,

*President Royal College of Veterinary Surgeons.*

DEAR SIR,

I am in receipt of letter dated 26th ultimo, enclosing copy of part of a communication addressed by Professor Spooner to you anent the preliminary educational test, and requesting an expression of my opinion on the present phase of the situation.

I am exceedingly sorry to observe the position the Royal Veterinary College has taken up in this matter, and certainly think it would have been to the advantage of all concerned had the teaching Colleges and the licensing College joined hands in carrying out the matriculation examination. Since, however, this cannot be accomplished, I have resolved to carry out the suggestions made by the Council in their report of 21st June last, an extract of which I had the honour of receiving, with this reservation in the meantime, that the test, as formerly, be applied by myself and others connected with the Institution.

(Signed)

JAMES McCALL.

It will thus be seen that the loyalty of those authorities to the Royal College of Veterinary Surgeons was unshaken, and that they fully shared with the Council in the disappointment at finding all progress in this direction frustrated.

But notwithstanding this failure, the Council have no reason to doubt that the Members of the Royal College will in time acquit themselves of their obligations to the profession and the public by instituting, through the medium of the Council, such surveillance over the character of the educational examination as will not only bring about a progressive advancement in its standard, but give a higher claim to the title which the Royal Charter gives to the Members of the Body Corporate. In the meantime, the Council believe that a matriculation examination has been instituted at each School.

During the year the Council have had to legislate on another subject of at least as much importance as the matriculation examination—that is, the ‘Practical Examination,’ the necessity for which has taken deep root in the minds of those who are best able to appreciate its value. A Committee has, with much thought and after frequent deliberations, elaborated a scheme which promises to be successful when carried into operation. Intercourse has been held with the authorities of the three schools, and it would be unbecoming in the Council if they omitted to state that the authorities in Scotland at once generously assented to the proposals of the Royal College, and offered every facility for carrying on the examination in their respective Colleges; and with a praiseworthy liberality also offered to provide such subjects as the Examiners might desire.

The Council deeply regret that they cannot include the third School, that of London, in this congratulatory notice; but they feel there would be culpable reticence if mention were not made of the circumstance that, wishing to obtain a similar facility for carrying on the examination within the College at St. Pancras, they asked for permission to do so, and a somewhat lengthy correspondence on the subject ended in a refusal, conveyed in the following terms:

“With every desire to promote the wishes of the Council of the Royal College of Veterinary Surgeons, with regard to the practical examination, the Governors are of opinion that it is not desirable that this examination be carried on within the walls of the College.”

The Council, though very much disappointed, were by no means discouraged, and at once, through the instrumentality of the Committee which had been appointed to carry out the

scheme, sought for suitable premises elsewhere, and finally decided upon the lairs of the Metropolitan Cattle Market, as they afforded considerable facilities for carrying out the examination.

A deputation was formed for the purpose of waiting upon the Chairman of the Markets Committee. On the 17th of March this body waited, by appointment, on that gentleman and the members of the Markets Committee, at Guildhall, and was not only received with much courtesy, but marked attention. The object in view was highly approved, and every facility offered which the lairs afforded, and such use of cattle, &c., as the owners thereof might be kind enough to place at the disposal of the Examiners. The business of the meeting was closed by the best thanks of the deputation being offered to the Chairman and members of the Committee, for the valuable assistance which they had given to the Royal College.

The Council voted the sum of thirty-six guineas for the fees for the practical examination, and, with a view of securing every facility for the successful carrying out of the examination, provided such assistance as might be required by appointing a Committee, consisting of members of Council residing in London, with power to add to the number, to aid the Examiners if necessary.

The Council would ill requite the zeal and ability which the members of the Committees have displayed in the performance of the arduous duties which have devolved upon them whilst elaborating the two subjects which will mark the year as one of the most eventful in the annals of the Royal College, without stating that they are entitled to the best thanks of the body corporate.

There has not been any opportunity afforded this year of ascertaining whether the matriculation examination has been satisfactory or not, inasmuch as the students who came up for the general examination "had not been examined under the new arrangement; but the *modus operandi* which had been arranged by the Council and its Committees, with reference to the practical examination," may be said to have worked well, and to have carried out all that could have been expected under the circumstances.

The Council have to mention the resignation of the President of the Royal College of Veterinary Surgeons, which was almost immediately followed by his unanimous re-election at a Special Meeting convened for that purpose.

During the past year the Juries Bill occupied the attention of the Council, when the subject was again placed in the hands of the Parliamentary Agents.

The President of the Royal College was not made acquainted with the fact that the Bill had passed the Commons, and was in Committee in the House of Lords, until the day of its being set down for a third reading in the House of Lords, but lost no time in having interviews with the noble lord who had the management of the Bill, and several other members of the Upper House; but, to his regret, he found that it was too late to effect any amendment, as the Bill was ready for the third reading that evening.

The Council have had their attention recently directed to a clause in a "proposed Medical Act Amendment Bill," about to be brought before Parliament, and which appeared in the *Lancet* of November 26th, 1870, which runs thus, in Section 20, Clause 29:—"Nothing in this section shall impose any penalty on any person engaged solely in the cure or treatment of the diseases or injuries of animals, and not of human beings."

The subject was referred to the Parliamentary Committee, and a deputation was appointed to wait upon the framers of "the Bill," with a view to an alteration being made in the clause, so as to effect a recognition of the Royal College of Veterinary Surgeons.

This deputation, consisting of the President, Professors Simonds and Brown, Mr. G. Fleming, and the Secretary, waited upon the proposers of the Bill on the 4th of February.

The President explained the object of the meeting. He then read "Clause 29" of the proposed Bill, and having referred to it as an infringement of the rights of the Royal College of Veterinary Surgeons, as secured by Charter, he pointed out the relevant portion of the Charter thus:

The Royal College of Veterinary Surgeons was a chartered body, "recognised as a profession, and that its members were solely and exclusively of all other persons whomsoever shall be deemed and taken and recognised to be members of the said profession or professors of the said art, and shall be individually known and distinguished by the name or title of veterinary surgeon."

The subject to which he particularly desired to draw attention was that the clause, in the proposed Medical Amendment Act, not only did not recognise the Royal College of Veterinary Surgeons, but, in his opinion, would give a legal right to unqualified men to practise as veterinary surgeons, because, as an Act of Parliament of subsequent date to our Charter, it would interfere with our now unquestionable rights as by that Charter established.

It was suggested that the following alteration would probably meet the views of the Committee :

“ Nothing in this section shall impose any penalty on any member of the Royal College of Veterinary Surgeons who is engaged solely in the cure or treatment of the diseases or injuries of animals, and not of human beings.”

The alteration was cordially accepted, and the deputation expressed their best thanks to Dr. Anstie and Mr. Carter, who joined him during the discussion, for the expression of friendly sentiments towards the Royal College of Veterinary Surgeons.

On the subject of the General Examinations, the Council, at the request of Professor McCall, decided that the future examination of his students should be held in Glasgow, instead of in Edinburgh, as it was found that very little additional expense would be incurred.

Specimen drugs and chemicals have been furnished for the use of the examinations in Scotland.

Eighty-seven pupils from the different schools have received the diploma of the Royal College of Veterinary Surgeons during the past year.

The Council regret having to announce the death of two illustrious men, members of the Court of Examiners, viz. Professor Syme, Examiner on Anatomy at the Scottish Section of the Court of Examiners ; and Dr. Miller, of King's College, Examiner at the chemical table in London.

The vacancies thus caused have been since filled by the election of Professor C. L. Bloxam, of King's College, London ; and Professor Wm. Turner, of the University of Edinburgh, both of whom are believed to be eminently qualified to fill the duties required of them.

The Registrar has to report the death of fifty members of the profession since the last Annual Meeting. One most regretted by the profession is Mr. Wm. Ernes, of John Street, Bermondsey. He was elected one of the first Members of Council of the Royal College of Veterinary Surgeons, which office he held up to the time of his decease. He was elected a Vice-President 1850, and President of the College in 1863. He also presented several foreign and other works to the library of the College.

The Annual Register of the Royal College of Veterinary Surgeons will shortly be issued gratuitously, on application, to members of the profession.

Presentations have been made to the Library and Museum of the College by Dr. Alex. Williams, of the Veterinary Depart-

ment Privy Council Office, Professor Gamgee, G. Fleming, Esq., F.R.G.S., Royal Engineers, and Mr. G. Armatage, of London.

During the past year the Central Veterinary Medical Society applied to the Council of the Royal College of Veterinary Surgeons for the use of their Boardroom to hold their Meetings, which was granted for one year.

The Financial Statement is annexed. The balance in hand after defraying the expenses of the year amounts to £162 6s. 2d.

S. H. WITHERS, *Treasurer, in Account with the Council of the Royal College of Veterinary Surgeons, from APRIL 1st, 1870, to MARCH 31st, 1871.*

Dr.	£ s. d.	Cr.	£ s. d.
Balance at Bankers', April, 1870 . . . . .	95 13 6	Examiners' Fees and Expenses . . . . .	396 12 11
Examination Fees . . . . .	752 17 0	Rent . . . . .	60 0 0
Interest on Deposit Account . . . . .	1 8 3	Rates and Taxes . . . . .	38 5 8
Dividends . . . . .	23 11 10	Salary to Secretary . . . . .	100 0 0
Registers . . . . .	0 7 0	Insurances . . . . .	1 18 9
Property Tax . . . . .	1 0 0	Advertisements . . . . .	9 5 7
		Printing . . . . .	5 7 6
		Stationery and Postage	
		Stamps . . . . .	12 1 0
		Reporters . . . . .	14 3 6
		Diplomas . . . . .	8 3 0
		Drugs for Examiners' Table	6 7 10
		Coals, Gas and Wood . . . . .	13 3 6
		House Repairs . . . . .	3 8 6
		Wages . . . . .	20 0 0
		Petty House Expenses . . . . .	23 13 8
		Balance at Bankers' . . . . .	162 6 2
	<u>£874 17 7</u>		<u>£874 17 7</u>

Amount of Stock standing in the names of the Trustees £534 0 11, Three per cent. Consols.

We, the undersigned, have examined the above accounts, and have found them correct,

April 12, 1871.

ALFRED WITHERS, } *Auditors.*  
ALFRED BROAD, }

*Mr. Cowie* moved that the report be received.

*Mr. Cartledge* seconded the motion.

*Mr. Gowing* said it was stated in the report that some intimation had been received with regard to the Medical Act Amendment Bill, but the source from which that information was obtained was not stated; he believed it emanated from the President and Council of the Central Veterinary Medical Society.

*Mr. Burrell* said that as far back as August, 1869, a communication was made to one of the members of the Parliamentary Committee, stating that the Jury Bill would be introduced in 1870, and requesting that some action should be taken in the matter. The attention of the Council was directed to the subject, and they referred it to the Parliamentary Committee. The matter was afterwards again referred to the Council, who placed it in the hands of the parliamentary agents. By that time the Bill had reached the second reading in the House of Commons, so that no action could be taken upon it. If action had been taken earlier, there was little doubt that the Bill would have been altered to suit the views of the Council.

*Mr. Coates* said that as soon as the parliamentary agents communicated with the Council the President took action in the matter.

*Mr. Burrell* said that the original communication was made to the Parliamentary Committee by himself. He communicated with the Secretary, informing him when the second reading would come on.

*Mr. Coates* referred to a letter written by Mr. Burrell on the 31st March, stating that the second reading would take place on the 16th April, and also to another letter dated the 6th April, stating that the second reading would take place that day, and not, as erroneously stated in the first letter, on the 16th.

*Mr. Morgan* said that the matter related to last year's proceedings, and not to those of this year, and was not therefore a subject for discussion.

*Mr. Burrell* said that the Bill did not pass until about June or July last year.

*Mr. Morgan* said that in April the Parliamentary Committee was almost dissolved, and a new committee was elected in June, to whom the matter would be comparatively fresh, and it would be no wonder if they overlooked it, especially as it was in the hands of the parliamentary agents. No blame attached to the President, who deserved their best thanks for the prompt steps he had taken in the matter.

*Mr. Greaves* said that the question arose during the time he filled the chair. On the 6th of April the Secretary showed him the letter he had received, stating that the Bill would be read a second time that evening. He immediately went to the office of the Privy Council to consult Professor Simonds and Professor Brown. Professor Simonds was not there, and he then went to see him at the College, but did

not succeed ; he saw Professor Spooner, however, who gave him the best advice he could. At a later hour in the day he saw Professor Simonds, and it was his opinion, as well as that of Professor Brown, Professor Spooner, and himself, that it was impossible to do anything in the matter at so short a notice.

*Professor Brown* confirmed the statement of Mr. Greaves, who, he said, had done all that was possible under the circumstances. Mr. Burrell's letter, he said, was read on the same evening at the meeting of the Council, and was referred to the Parliamentary Committee. Nothing happened until the session passed away ; a new council was elected, and suddenly the President, Mr. Wilkinson, received information that the Bill was about to be read for the third time in the House of Lords. He obtained, as soon as possible, an interview with the noble lord who proposed the Bill, and discussed the matter with him ; but it was then of course too late to do anything. He had no doubt if earlier notice had been received that a clause would have been inserted in the Bill of the kind desired, but whether it would have passed the House was another matter.

*The President* said that everything was done by the Council that had been done before. The matter was placed in the hands of the Parliamentary Committee, and by them referred to the Parliamentary agents, who had previously been very vigilant. It was their business to watch the progress of the Bill, and the Council reposed the greatest confidence in them. If blame was to be attached to any one, he was afraid the Parliamentary agents must bear it. As soon as he heard from the Secretary that the Bill was in the House of Lords he saw Lord Romilly upon the subject, who was informed that it was quite impossible to take any steps in the matter.

*Mr. Helmore* said it was to be regretted that the matter did not end more successfully, but he did not see that any one was to blame. It was also a subject of regret that a conflict had taken place between the Council and College with regard to the practical examination, but the affair was ended, and perhaps it was hardly worth while saying anything more about it. With regard to the allusion to the death of Mr. Ernes he thought it was somewhat invidious to state that that gentleman was the "one most to be regretted."

It was explained that the phrase alluded was a misprint, and that it should have been "*one of the* most to be regretted."

*The President* thought it was nothing more than the Council ought to have said with reference to a gentleman who had been associated with the institution from the commencement—one who by his industry, labour, skill and intelligence had been largely instrumental in obtaining the charter.

*Mr. Helmore* moved the adoption of the report, which he said he thought was one of the most satisfactory reports ever presented at their Annual Meetings.

*Mr. G. A. Lepper* seconded the motion, which was unanimously adopted.

Mr. Thomas Colley and Mr. Joseph M. Parker were then appointed scrutineers to examine the votes for the election of seven members of council to fill the vacancies occasioned by the retirement of six members, and the death of Mr. Ernes.

The following gentlemen were proposed as members of the Council:—

Mr. M. E. Naylor, proposed by Mr. Coates.		
„ B. Cartledge	„	„ Field.
„ J. R. Cox	„	„ Silvester.
„ W. T. Mayer	„	„ Owles.
„ G. Armatage	„	„ Burrell.
„ J. C. Broad	„	„ Fleming.
„ G. Morgan	„	„ Greaves.
„ F. R. Silvester	„	„ Wm. Pritchard.
Prof. Simonds	„	„ Cartledge.
Mr. Lowe	„	„ Woodger.
Prof. Brown	„	„ Gowing.
Mr. G. Balls	„	„ Clark.
„ Burrell	„	„ Stanley.

The return presented by the scrutineers was as follows:—

Prof. Simonds . . .	50	votes
Mr. Silvester . . .	45	„
„ J. C. Broad . . .	34	„
„ Burrell . . .	33	„
„ Cartledge . . .	28	„
„ Armatage . . .	24	„
„ G. Balls . . .	23	„
Prof. Brown . . .	21	„
Mr. G. Morgan . . .	19	„
„ C. Lowe . . .	19	„
„ Mayer . . .	14	„
„ Cox . . .	7	„
„ Naylor . . .	6	„

*The President* stated that the first seven names were those of the successful candidates, namely, Prof. Simonds, Mr. Silvester, Mr. J. C. Broad, Mr. Burrell, Mr. Cartledge, Mr. Armatage, and Mr. Balls. It was then decided by lot that Mr. Cartledge should take the place of Mr. Ernes.

*Mr. Armatage* proposed a vote of thanks to the President.

*Mr. Woodger* seconded the motion, which was unanimously adopted.

*The President*: I beg to thank you for your kind vote. I have only to say that I have tried to do my best in the position I have the honour to hold. I think we have made some progress. At present I do not see anything looming before us of any very great importance, except that one matter from which we have suffered materially for so long a time, namely, the want of union. I am in hopes, however, that better counsels are prevailing, and that by and by instead of ours being a divided profession it will be united, and we shall then be in a position to call upon the Government to adopt the needful measures for improving the status of the profession.

## ROYAL COLLEGE OF VETERINARY SURGEONS.

MEETING OF THE COUNCIL HELD APRIL 24TH, 1871.

The President, Mr. Wilkinson, in the Chair.

PRESENT—The President; Professor Brown; Messrs. Coates, Cowie, Field, jun., Harpley, Pritchard, sen., Pritchard, jun., Moon, and Sylvester.

The Chair was taken at Five o'clock.

The minutes of the last meeting were read and confirmed.

*The Secretary* announced that letters had been received from Messrs. Fleming, Cartwright, Naylor, and Dray, regretting their inability to attend the present meeting.

A letter from Dr. Dunsmore was read, dated 20th April, enclosing a cheque for £118 4s. 1d., the balance of the fees received from the candidates for the diploma of the Royal College, and vouchers for the money expended.

*Mr. Cowie* said he might mention, in reference to this letter, that the Examiners were quite willing when there were any students over the twelve in Edinburgh, to let them go on for Glasgow, so as to make up the twelve there if there

should be a deficiency ; but Professor Williams said he would not for a moment hearken to such a proposal ; that it was to be presumed, especially since the practical examinations had been instituted, that Professor McCall would have his pupils well up to the mark, but that was not the case. It was agreed to examine two or three of the pupils the next morning, without extra charge.

*Professor Brown* said there had been a sort of compromise. The examiners agreed to take what should be given to them, on the understanding that the whole subject should be considered by the Council before the next examination.

*The President* said he entirely agreed with what Mr. Cowie had said, but he was quite sure that Professor M'Call, if the examinations began in Glasgow instead of Edinburgh, would have no objection to send any odd number of his pupils to Edinburgh to be examined there ; and, with reference to what Professor Brown had said, it must be clear to the memory of every member of the Council that at the time the arrangement was made for the practical examinations, it was contemplated that the twelve candidates should pass the practical examination on the day preceding the oral one, but by the resolution which was subsequently passed in this Council, it was arranged that the practical examinations should commence on the same day as the oral one, so that on the first day the examiners got six guineas for their day's work, and the usual three guineas afterwards.

*Mr. Cowie* said they had nothing for the next. The Secretary had not given any special instructions to Dr. Dunsmure.

*The Secretary* read his letter to Dr. Dunsmure.

*The President* observed that the remuneration was for the extra day, and not for the addition of the practical duty to the usual work. He thought that was not contemplated.

*Mr. Cowie* remarked that the Examiners were engaged from 10 o'clock till 6 at Glasgow.

*The President* asked if Mr. Cowie had any resolution to propose upon the subject. He considered, however, that this was not a meeting to take the matter into consideration, with the view of making an alteration in the law.

*Mr. Cowie* said his statement was merely explanatory.

*The President* thought it would not be well to move in the matter at present. He should suggest that it be postponed for future consideration. The Secretary would make a note of it in order that it might be brought before the Council before the next examination.

*Mr. Cowie* said it would be too late if the subject were deferred until just before the next examination, but there would be plenty of time to discuss it before then.

*The President* stated that at the past examination, amongst the candidates for the diploma was Dr. Ellis, of St. Pancras. He came before the Board as having been educated at the Veterinary College. He (the President) was not aware that any of the Examiners were acquainted with the nature of the circumstances which induced him to come before them for examination, and for a diploma. It unfortunately occurred that the Board did not consider that Dr. Ellis was sufficiently acquainted with the subjects connected with the veterinary profession to justify them in awarding him a diploma. Subsequently, on the following day the Chairman of the Board of Examiners received a letter from Dr. Ellis (which the Secretary would presently read), explaining his view of the subject. So far as the Examining Board were concerned, they were not prepared for any of the circumstances which seemed to have been brought to bear upon the examination. If it was merely intended by this gentleman that he should be made an honorary member of the Royal College of Veterinary Surgeons, some intimation should have been given of it, and then it would have rested with the Council, and not with the Examiners, to say whether his wish to become an honorary member should be acceded to or not. The Examiners had it not in their power to recommend that a diploma should be granted to any individual who was not acquainted with veterinary surgery.

*The Secretary* read two letters which had been received from Dr. James Ellis, and stated that he had written to say that the matter would be laid before the Council at this meeting.

*The President* said it had been discussed at the Examining Board, and it was resolved that a letter should be drawn up and sent to Dr. Ellis.

(A copy of this letter was read.)

The Twenty-eighth Annual Report for 1871 was then laid upon the table.

After it had been read by the Secretary—

*Professor Brown* said there were certain points in the report which he wished to bring before the notice of the Council, but, in order that he might speak on those subjects freely, and that the alterations which were necessary might be made, he should propose in the first place "That the

Council resolve itself into a committee for the purpose of considering the report.”

*The President* said he presumed the object of Professor Brown's motion was to suspend the office of the reporter for the time being.

*Professor Brown* replied affirmatively.

*Mr. Silvester* seconded the proposition.

*The President* (upon the motion being agreed to) intimated to the Reporter that he was not to take notice of anything that occurred throughout the discussion which might arise upon the report.

A discussion of considerable length then took place with regard to certain alterations in the report, and it was finally agreed “that the report as altered be printed.”

The next matter brought before the Council was the auditor's report.

*The President* said (previously to this report being read) he wished to make a statement with reference to the special examinations. Special examinations had been held with the view of admitting into the body corporate such as had obtained the certificate of the Highland and Agricultural Society of Scotland by an examination, the nature of which was fully discussed at the time, which amounted to this, that if they were abroad they should be allowed to pass a written examination, and that the papers, when they were returned to the Council, should be submitted to a Board appointed by the Council, to determine whether they were satisfactory or not. It was quite within the memory of the members of the Council that at the time this was intended to be considered as a mere nominal examination to fulfil the laws of the Charter and the by-laws. The by-laws were suspended for the purpose of admitting these gentlemen on those terms, and were still suspended. Some gentlemen in India had had papers sent to them, and the papers came back for examination. At a meeting of the Board, on Friday, an *ex officio* member demanded to know what the nature of the examination was, and claimed to take a part in it. Now he, being an *ex officio* member of the Examining Board, the Chairman of that Examining Board (himself the President) did not think it competent for the Board to go on with the examination, if it was not to be carried on in accordance with the custom which had been established by the Council, and he therefore adjourned the examination in order that he might submit the question to the Council, whether the examinations should be carried on according to the custom which had been established since the suspension of

the by-laws, or whether (as had been hinted at, but never thoroughly discussed) *ex officio* members of the Examining Board should be entitled to take part in the examinations. He thought that was a very important question, and should be considered by the Council, but it could not be determined upon at the present meeting, inasmuch as no notice had been given of it, and the meeting was not a full one. It involved a fundamental principle. The question he wished now to ask was this, without expressing any opinion, whether the Council would sanction the examination of the papers now waiting to be examined in the usual way, according to the custom which had been established under their authority. If that were their pleasure the duty could be performed after the present meeting, so that no delay might take place. There were four examiners present, who could deal with the matter in a very few minutes, as it was a mere formal proceeding.

*Professor Brown* said, as one of the Examiners, he could not move in the matter; but if the course suggested by the President were adopted, it would leave the general question still open. He thought it was usual for *ex officio* members of bodies not to vote. He had never tried the experiment, because it always occurred to him that that was the usage; but the matter would have to be brought before the Council on a future occasion.

*The President* said that he more than once placed his resignation in the hands of the Council, as an elected member of the Examining Board; but he did it on this understanding, that he should not consider himself eligible to examine or vote by virtue of his office as President of the Veterinary Society if he were merely an *ex officio* member. He might attend the examinations as an ordinary member, with the view of seeing which candidates were best suited for the army, but not to take any part in the examinations himself.

*Professor Brown* said he did not think it was necessary to move a resolution, but probably the Council would tacitly permit the examinations of the gentlemen in question to be conducted in the usual mode, leaving the matter, as regarded the principle, open to be discussed at a future time.

*The President* said that, with that understanding, that the Council were not binding themselves to any opinion, he would take it that the examinations which had been adjourned might take place.

The auditors' report and statement of accounts having been read, the adoption thereof was moved by *Mr. Cowie*, secondee by *Professor Brown*, and agreed to.

*Mr. Silvester* said he received a letter from the Secretary, stating that he was appointed on the Dinner Committee. He thought he ought to have had earlier intimation of it. To take care that they should be provided with a dinner, he wrote to the manager of the "Albion," to secure the large room, and to-day he and *Mr. Cowie* had been there, and ordered the dinner for the next annual meeting.

*The President* thought the Council was indebted to *Mr. Silvester* for having taken the trouble he had. There seemed to have been some irregularity.

*Mr. Silvester* thought the Committee ought to have been called together to decide upon what course should be taken. The 1st of May was a very important day in London. There were a great many meetings; and probably if the thing had been left a little longer, they would not have had a room to go into.

The proceedings then terminated.

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SPECIAL MEETING OF THE COUNCIL, HELD MAY 23<sup>RD</sup>, 1871.

PRESENT—Deputy Professor Pritchard; Messrs. Armatage, Balls, Burrell, Cartledge, Cartwright, Cowie, Field, Fleming, Greaves, Harpley, Hunt, Robinson, Silvester, Withers, and the Secretary.

It was moved by *Mr. Silvester* and seconded by *Mr Harpley*—

"That *Mr. Robinson* take the Chair."—Carried.

*Mr. Robinson* having taken the Chair—

A letter was read, dated May 22<sup>ND</sup>, from *J. Wilkinson*, Esq., Banbridge, Ireland, expressing his regret that he would be unable to attend the meeting.

The election of President was then proceeded with.

It was moved by *Mr. Greaves* that *Benjamin Cartledge*, Esq., of Sheffield, be elected President for the ensuing year.

On the ballot being taken,

*Benjamin Cartledge*, Esq., was declared to be unanimously elected.

The election of six Vice-Presidents was then proceeded with.

The following gentlemen were proposed :—

Professor Brown,	proposed by	Mr. Harpley.
Mr. A. J. Owles	„	„ Fleming.
„ M. E. Naylor	„	„ Cartledge.
„ Clement Lowe	„	„ Armatage.
Prof. Williams	„	„ Field.
„ McCall	„	„ Cowie.
Mr. G. Morgan	„	„ Greaves.
„ J. R. Cox	„	„ Silvester.

On the ballot being taken, it was found that there were for—

Prof. Brown . . .	14 votes.
Mr. A. J. Owles . . .	14 „
„ M. E. Naylor . . .	10 „
„ Clement Lowe . . .	10 „
Prof. Williams . . .	9 „
„ McCall . . .	8 „
Mr. G. Morgan . . .	8 „
„ J. R. Cox . . .	8 „

On the further ballot being taken for Professor McCall, Messrs. Morgan and Cox,

It was found that there were for Professor McCall, 7 ; Mr. Cox, 6 ; and Mr. Morgan, 2.

The election was declared to have fallen upon Professor Brown, Messrs. Owles, Naylor, Lowe, Professors Williams and McCall.

The election of Secretary was then proceeded with.

*Mr. Silvester* proposed—

“That Mr. Coates be re-elected Secretary.”

On the ballot being taken, Mr. Coates was declared to be unanimously elected.

*The President* elect then proposed—

“That a vote of thanks be given to the late President, J. Wilkinson, Esq., for his arduous undertakings during the past year.”—Carried unanimously.

## CENTRAL VETERINARY MEDICAL SOCIETY.

(OFFICIAL REPORT.)

THE monthly meeting of this Association was held on May 4th, the President, G. Fleming, Esq., F.R.G.S., M.R.C.V.S., in the chair.

The proceedings of the meeting were commenced by the nomination of three candidates for Fellowship, after which the Secretary presented, for examination and description, a new form of instrument for drenching domestic animals, as invented by Mr. H. Dalziel, of Birmingham. Also an improved valve for ventilating stables, after his own design.

*The President* afterwards submitted the liver of a dog, upon one of the lobes of which a large tumour had formed, supposed to be the result of injury. In addition to so much alteration of structure of the organ, great displacement of others had taken place, as the tumour had become so large as to occupy nearly the whole of the cavity of the abdomen, which, in consequence, was preternaturally large, and gave rise to an impression that much fluid was present. Contemporaneous with the enlargement, fits of epileptiform convulsions commenced, and, at times, succeeded each other rapidly, particularly towards the last. They also grew more intense and prolonged, and, at length, the animal died during an attack of more than ordinary duration and severity.

Considerable interest was manifested in the morbid specimen, and an animated discussion followed, in which the principal features were profitably dwelt upon.

*The President* then left the chair, which was delegated to Mr. F. J. Mavor, and proceeded to address the meeting on the subject of laminitis, with an exposition of a rational mode of treatment, based upon observations of the morbid changes which the structures that are involved, necessarily undergo in the disease.

*Mr. Fleming* said he felt some hesitation in introducing the subject, inasmuch, by the title which had been given to it, more might be expected than he was prepared to advance. The explanation was due from him, in order to avoid confusion, that his remarks would be confined—not to the acute, but to sub-acute form of laminitis. He, however, felt that his hesitation was somewhat removed by the presence of Mr. Broad (of Bath), who had raised himself to the standard of an authority on the question, by the amount of investigation and promulgation of facts he had made in connexion with it. He had to admit his experience of the malady is much more limited now, than formerly. It is rarely witnessed among the horses of military regiments, and army veterinary surgeons see but little of the diseases of hard-worked horses, and his position as one is no exception to the rule. His observations were principally confined to laminitis as seen among the animals rapidly driven, and ridden over the streets and hard roads, among which

many opportunities present themselves in common with other features of defective horse management generally.

The morbid changes, Mr. Fleming continues, are witnessed chiefly in the alteration of the form of the hoof outwardly. The wall, instead of remaining as before, in an unbroken, even, oblique line down the front, exhibits a depression or constriction midway, and below this a mass of horn extends forward in a round, bulging manner. The sole likewise exhibits a change—it becomes convex, particularly towards the toe, and a degree of lameness exists which is often very much aggravated by the effects of improper treatment, and thereby destroying the usefulness of the animal. Internally we observe the causes of these changes. It appears that the true seat of the disease is the anterior lower surface of the *os pedis*, and here the results of the process of inflammation are accumulated. These are false horn tissue, blood, lymph, and debris of the morbid action. Among the more active or acute forms, the succeeding stages are suppuration, or formation of abscess, attended with more or less destruction of surrounding structures, and ultimate evacuation. In the subacute form, the effused fluids being chiefly lymph or serum, absorption is effected, and after their removal, an amount of false horn tissue is left, which is not capable of being absorbed, but continues to accumulate, and, by gradual increase from secretion, pushes back the bone, the point of which causes an elevation of the sole. He thought there could scarcely be a stronger argument than this fact against the assumption that the sensitive laminæ are secreted by the horny laminæ. A pulpy mass, consisting of cells or scales, are thrown off for an important purpose—the formation of the white zone—which, at the junction of wall and sole, is an aggregation of the proceeds of the secretion. In disease, and actuated by morbid action, this secretion is considerably augmented, and, instead of ending in the formation of horny laminæ, constitutes a homogeneous mass, filling up the space between wall and coffin bone in front.

In the ordinary system of shoeing such feet, it is the practice of attaching an iron armature, the outer edge of which is very thick, the under or ground surface broad, and the foot surface hollowed or dished to form an exact counterpart of the sole, under the belief that pressure (weight) cannot be sustained by any other part than the wall. In such a method, there is no attempt to restore the hoof to its original or pristine condition, but measures are calculated to effect the very opposite by fostering causes which bring about great aggravation and increase of morbid action. His method of treatment may be termed a very bold one, for the object sought is to relieve the wall from pressure, and cause the sole to sustain it. This has the effect of removing all mechanical agency in maintaining a degree of separation of structures. As the hoof grows downwards, a sound and healthy connection is contemporaneous, and continued eventually to the bottom. Heavy shoes are discarded; those having sufficient width to pass over, and receive a portion of the sole, and being thin, or rounded off, or curved at the heels, giving pressure to

the frog, are necessary. The toe is excised as far as possible backwards, and thus leverage is diminished, which greatly promotes healthy union. The belief that the flexor tendon exerts a degree of tension in drawing backwards the coffin bone is erroneous, and supported by no fact in anatomy or physiology. In his opinion, those shoes having a rounded inferior or ground surface are prejudicial, and have a tendency to induce pressure on parts which require relief. Heavy shoes, he also considered, are unsuited, on account of the great waste of muscular power which is occasioned by them. Mr. Fleming concluded by quoting illustrative cases in which his treatment had succeeded after failure under other methods, and particularly pointed out the necessity for using blisters to the coronet at occasional intervals, and avoiding the use of nails at or near the toe, rather making choice of the heels and other portions of the wall, where greater substance and integrity exists for maintaining a firm hold.

*Mr. T. D. Broad*, Bath, submitted a number of specimens which he had collected, each bearing a date and number, in order to attest their various conditions. He maintained that the separation spoken of is *not* caused by mechanical agency, as the interposition of horn substance and *débris* of the process of inflammation. The filling up of the space is due to subsequent action, and the separation is primarily occasioned by the inflammation which suspends nutrition and destroys the bond of union. He quite agreed with Mr. Fleming as to the desirability of removing the excess of horn from the toe, in order to avoid unnatural strain, and also as to the essential pressure on the sole, by shoes suitably fitted for the purpose. By following these plans, and promoting the growth of hoof, perfect restoration to soundness is effected, together with proper formation of hoof.

*Mr. J. Rowe, jun.*, agreed with the previous speakers in the general tenor of their remarks, but felt there is a great difficulty existing throughout a metropolitan practice in the want of time to carry out these principles. Owners are usually averse to their animals being off work, and rarely submit to necessary lengthened treatment.

*Mr. W. Hunting* agreed mainly with the indications of cure, and considered it necessary to avoid pressure when or where its results are manifest in greater separation. He, however, could not admit the assertions against the use of the so-called "dished" or "bason-shaped" shoes in all cases. Certain states of disease may be benefited by the treatment propounded by the essayist, but there are forms which would be improved by no other than the "dished shoe," properly adjusted. He could understand that, when the heels and wall are defective, an unequal amount of pressure would ensue, but thought if the quarters are left full and the shoe properly adjusted, those conditions would be equivalent to shortening the toe. He considered Mr. Fleming's shoe inapplicable, as the bearing surface is not even, and, as is well known, from unequal pressure, lameness always follows. A convex sole requires a con-

cave shoe, which should be properly adjusted (fitted), bearing equally on sole and wall alike.

*Mr. T. W. Gowing*, sen., after recapitulation of the conditions attendant upon laminitis, said the secretion of horn is usually deficient, and, in consequence, the sole is thin, in many instances being worn through. In others, the reverse may occur, and, therefore, different states called for appropriate methods of shoeing. Some animals might travel with narrow shoes, but others could not be caused to move without broad ones.

*Mr. Thomas Burrell*, jun., said the object of the veterinary surgeon is not only to cure the laminitis, but to restore the foot to its former healthy condition. He thought that cases should be treated as they are found. When the soles are thin, and the animal cannot bear weight upon a plain surface, he cannot therefore endure the shoe proposed by Mr. Fleming. Sole pressure is doubtless required, but many cases at the outset will not admit of it.

*The Secretary* (G. Armatage) supported the recommendation for sole pressure, and abscision of the superfluous horn at the toe, and stated the results which had attended the practice during previous years, not only in his own experience, but in that of others from whom he had received it.

*Mr. Fleming*, in reply, said he was pleased to find that, notwithstanding the amount of apparent dissension, there existed a great unanimity of opinion upon the general principles to be embraced in combating the disease. In shortening the toe, he considered a great amount of mechanical pressure is neutralised, and still farther by causing the sole to take a part. This is a necessary proceeding in the treatment. One of the specimens advanced by Mr. Broad exhibited a large concavity in the front of the toe of the coffin bone, which he contended was the result of abscess, and the depression of the coffin bone, in the absence of deposit, must be an evidence of mechanical causes entirely. The treatment of animals under disease, it was said, is descending into a matter of £ s. d., and it behoves the veterinary practitioner to restore them to health as quickly as possible, therefore the best means must be studied to effect that purpose. The system of nailing had attracted little attention. The common plan is to insert them round the toe, where the pressure to be avoided is considerably increased. His principle is to place them at the quarters or heels where sound horn is to be obtained. Removal of horn at the toe is absolutely necessary, in order to reduce leverage or pressure. When the soles are thin, he contended, it is due to an absurd system of reduction by the knife of the smith, rather than as the result of non-secretion, and as such it is a prolific source of descent of the coffin bone. Various results are brought about by the different terminations of disease. In the acute stages suppuration is established, and consequently removal of substance is effected; but in the subacute stages the absorption of effused fluid takes place, and subsequently ensues the accumulation of false horn with the debris of the morbid process; meanwhile, however, the mal-position of the coffin bone is induced by mechanical

pressure, and perfected by the accumulation of natural deposit. When the sole is thin, an artificial cushion should be provided, pressure is required by the sole, and when properly maintained, no fear need be felt as to the consequences.

Mr. F. J. Mavor (President, *pro. tem.*) said it was remarkable how similar were the ideas of each speaker on the question. He thought the question of separation is due to the variety of effusion. In the acute stages, the formation of matter leads to the death of parts and loss of substance. When serum only is effused, the disease subsides into a sub-acute form—no suppuration is established, and the spaces are filled by *debris* and process of inflammation. As to the injurious effects of pressure on the sole, he thought it impossible, by the shoe advocated by Mr. Fleming, to injure the pedal bone. A broader shoe might produce disease, but the narrow one would avoid it. He was inclined to support the views in favour of an artificial wall, as the results had been favourable in many instances in his experience, particularly where the sole was thin, and by the use of a seated shoe.

Mr. Joseph Woodger, sen., exhibited a valuable specimen showing disease of the bones of the feet, bearing on the question before the meeting.

A vote of thanks to the Essayist and Chairman respectively, terminated the interesting proceedings.

## YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE usual quarterly meeting was held at the Queen's Hotel, Leeds, on Thursday, April 27th, at 12.30. The President, Mr. Nicholson, in the chair.

The following members were also present, viz. Messrs. Naylor, Dray, Jas. Freeman, Anderton, Fallding, Patterson, Bale, Edmundson, Walker, Cuthbert, Fearnley, Ferguson, and the Secretary.

Apologies for non-attendance were received from Messrs. Greaves, Pratt, Jno. Schofield, W. G. Schofield, Josh. and Jno. Freeman, Faulkner, and P. Smith.

The minutes of the previous meeting were read and confirmed.

Mr. Cuthbert was unanimously elected a *Life Governor of the Veterinary Benevolent Fund*.

Mr. Freeman nominated Mr. Alfred May, of Hull, as a member.

In consequence of the absence of Mr. Taylor, the further discussion of his paper was unavoidably postponed.

Mr. Bale then read a paper upon "Dropping after Calving," \* expressing at the outset his regret that so little seems to be known

\* Nothing can be more absurd than the adoption of the term "Puerperal Fever," which so many veterinary surgeons will persist in employing when speaking of this disease. Puerperal has its root in *puer*, a boy, and *pario*, to bring forth. Besides, no two diseases can differ more from each other than Dropping after Calving—*Parturient Apoplexy*—and Puerperal Fever.

of the true pathology of this disease, and of the causes why the great majority of cases still bid defiance to all the veterinary surgeon's skill. Mr. Bale detailed the supposed causes, symptoms, *post-mortem* appearances, and treatment of this disease. With regard to treatment, he thought that a small bloodletting in the early stage, provided the pulse warranted it, was beneficial; and also the exhibition of a powerful dose of cathartic medicine, conjoined with carbonate of ammonia. This medicine he would repeat every six hours, if necessary, and in the intervals give Sp. Æth. Nitratis et Liq. Ammon. Acet., to act as a febrifuge and diaphoretic. He would also apply blankets dipped in hot water to the loins. If tympany existed, he would puncture the rumen and keep the patient upon her chest as much as possible. He also thought that the patient should be turned from side to side frequently, in order to favour the action of the bowels.

In the discussion which ensued, the topic principally dwelt upon was the treatment of the disease.

*Messrs. Nicholson and Edmundson* advocated the exhibition of aconite, in doses of eight to ten minims, every four hours, and the use of stimulating liniments to the loins. They were also of opinion that preventive measures might be used with success in many instances.

*Mr. Edmundson* said that he had made several *post-mortem* examinations, and found softening of and effusion into the medulla spinalis, congestion of the plexus choroides, and effusion into the lateral ventricles of the brain.

*Messrs. Freeman, Anderton, Broughton, and Fearnley*, were in favour of exhibiting a bold purgative and stimulant as early as possible, to be followed up with doses of carbonate of ammonia and brandy or whiskey.

*Mr. Freeman* advocated the use of carbonate of ammonia, ginger, and gentian, every hour, with plenty of thin gruel. He would also give Ol. Ricini to relieve flatulency.

*Mr. Anderton* would exhibit Chlor. Sodium with Sp. Ammon. comp. frequently, and relieve the bladder morning and evening, if necessary.

*Messrs. Cuthbert and Walker* relied upon stimulants entirely. They thought the application of counter-irritants to the loins of little use.

*Mr. Dray and Mr. Ferguson* advocated aperients with stimulants, and also the exhibition of Ol. Lini and Ol. Ricini.

*Mr. Naylor* thought that the paralysis which existed in this affection was secondary, being induced from a diseased condition of the stomachs, through the medium of the pneumogastric nerves. He had seen cases both at the first and second time of parturition. He was also of opinion that the complex structure and functions of the stomachs might be regarded as predisposing causes of the disease. It was also to be remembered that cows frequently injured themselves in stepping off the "gripp." He would recommend that all medicines be given with the stomach-pump, as

soon as it was evident that the power of deglutition was lost. The patient should also be moved from side to side at least every two hours.

*Mr. Bale*, in replying to the observations of the different speakers, incidentally stated that he had occasionally seen inflammatory rheumatism of the joints supervene upon an attack of this disease, which generally resulted in the vital powers of the cow becoming gradually exhausted.

*Mr. Dray* moved, and *Mr. Naylor* seconded, a cordial vote of thanks to the essayist, which was carried unanimously.

It was arranged that the next meeting of the Society should be held in July, when *Mr. Thos. Greaves*, of Manchester, had promised to read a paper on "The Proper Education of the Veterinary Student."

## WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

THE West of Scotland Veterinary Medical Association held its first quarterly meeting for the year 1871 at Glasgow, within the Athole Arms Hotel, Dundas Street, on Wednesday, the 22nd March last, at 2 o'clock.

The President, Professor Williams, occupied the chair.

Present: Professors Fordie and Wilson, Glasgow Veterinary College; Messrs. Anderson, sen., Anderson, jun., and Robb, of Glasgow; Robinson, Greenock; Bryce, Stirling; Laing, Falkirk; Sharpe, Hamilton; Pollock, Coatbridge; Barr, Dalry; Pottie, Renfrew; Spreull, Milngavie; and the Secretary.

After the minutes of last meeting had been read and finally approved of, *Mr. Bryce* proposed that *Mr. James Gillespie*, veterinary surgeon, of Alloa, be elected a member of this Association, which proposal was seconded by *Mr. Robinson*, and carried unanimously.

*The Secretary* stated that, considering *Mr. Donaldson, sen.*, had retired from the profession, he begged to propose that his membership be transferred to the honorary list, which was also carried unanimously, having been seconded by *Professor Williams*.

After some discussion the Association approved of the £1 1s. given by the Treasurer to the widow of the late *Mr. Bunnell, V.S.*, of Abergele, who had been left in very destitute circumstances; but it was to be distinctly understood that, as the Society's funds were not intended for charitable purposes, this act was not to form a precedent.

*Mr. Robinson* related a curious case of spasm of the muscles of the inferior cervical region, the patient being unable to raise her head; terminated favorably, in as rapid a manner as attacked.

### PHRENETIC DISEASE.

*Mr. Robb* described a patient of his suffering from what he

believed to be phrenetic disease. Circumstances prevented him making a *post-mortem* examination, so he was unable to arrive at a correct conclusion as to its true nature. The animal's appetite was not impaired; when made to move, kept turning to the near side, and never could be induced to turn in an opposite direction; afterwards experienced great difficulty in going backwards, staggered, fell, and made ineffectual efforts to rise; pain was evinced on pressing the right side of the head, accompanied by amaurosis and the usual concomitant symptoms of cerebral affections. Bleeding, purging, and local remedial measures were applied, but they were of no avail.

*Professor Williams* gave the history of a similar case, having at first a severe attack of colic, which caused the animal to plunge about in the box. After this subsided cerebral symptoms supervened. The patient had little power to masticate his food, due to debility of the muscles of mastication; the pulse was 69 in number, and very feeble, in fact nearly imperceptible; moved with a staggering gait, and kept crossing his legs in walking. His opinion was that concussion of the brain existed, accompanied by rupture of some small cerebral blood-vessel and pressure on the brain by a blood-clot. The case, after the usual treatment, ultimately recovered.

*Mr. Maclean* had a troop-horse of the Royal Artillery similarly affected. After lengthened treatment the animal was destroyed, and the *post-mortem* examination revealed calcareous deposits in the ventricles, running through the Sylvian fissure, the tumours having all the appearance of being connected to each other.

#### PUERPERAL FEVER.

*Mr. Pottie* found lately puerperal fever to be very prevalent in his district, and, from the number of cases he had met with, his ideas as to the nature of this affection and its treatment had somewhat altered. He believed the disease would run its course, and that the old system of treatment was entirely erroneous. His previous practice was to dose with purgatives and stimulants, and he was satisfied in his own mind that he had produced bronchitis on more than one occasion, as the muscles of deglutition were frequently paralysed, particularly in the comatosed stage. He now found that to do little was better than to do much, and the more simple the treatment the more successful he had been. His treatment was to administer treacle  $2\frac{1}{2}$  lbs., chloride of sodium  $\zeta ij$  to  $\zeta iij$ , every six hours during the day, only if the patient took it without much difficulty; propping up the patient on to her brisket, &c., was a great desideratum, for if the cow lay on her side hoven was liable to set in. Bloodletting, in the earlier stages, might be recommended, but in latter stages it ought to be strongly condemned. Quietude was indispensable.

*Professor Williams* condemned purgatives in this disease, as the intestines were only in a paralysed condition, and would right themselves in time. Had seen it before parturition; recommended bloodletting in the first stage, but to bleed in the latter stage was most

unscientific, because the cause of death was usually extravasation on to the brain.

*Professor Fordie* had found the administration of large doses of Liquor Ammoniaë Fort. to be successful when the patient was comatose and required to be stimulated; the medicine should be introduced into the rumen by means of the canula; he did not adopt the common practice of diluting the ammonia to any great extent; he simply mixed it with an equal quantity of water, and found that the mucous membrane was *not* corroded, as many supposed, the non-corrosion being due to the evaporating action of the ammonia as a diffusible stimulant.

*Messrs. Robinson* and *Robb* had found hot water, cloths, and the administration of common whiskey, to be suited to their practice.

#### TETANUS.

*Mr. Barr* described a case of tetanus which ended fatally, the result of a wound to the occiput, caused by falling over when rearing.

*The President* thought that this was a very difficult disease to treat successfully; recommended Calabar bean began by giving small doses, gradually increasing the doses to as much as twenty beans, and found this remedy to answer.

*Mr. Robinson* thought quietude and slings were the remedies.

#### PURPURA HÆMORRHAGICA.

*Mr. Anderson, jun.*, since the Association's last meeting, had met with a severe case of purpura hæmorrhagica, following common catarrh, accompanied by extensive sloughing of the cutaneous structures, &c., of the chest, abdomen, and extremities, these parts being completely denuded of skin. A large wound existed behind the near knee, which discharged very offensive putrid pus; intense pain was evinced on pressure, also attended with very great lameness. Gave tincture of the perchloride of iron, 30 drops twice per diem, whiskey, &c., internally, and applied locally carbolic acid liniment, &c.

The Association thought that the intense lameness was due to sloughing into the deeper-seated parts.

#### SPLenic APOPLEXY.

*Professor Williams* had lately four horses as patients affected with a disease very similar to splenic apoplexy in horned cattle, which terminated fatally. He was of opinion that apoplexy of the spleen, or that condition of the blood which produced it, was not confined solely to cattle. He entered fully into the symptoms, &c., and said that he was making a series of investigations, both chemical and microscopic, which had led to very interesting results, but these were as yet incomplete.

The Association were greatly indebted to the able way he had described the experiments made, and hoped by the next meeting that

he would complete them and bring the subject again to their notice.

*Mr. Anderson, jun.*, consented to bring forward a paper to be read at the Society's next meeting.

D. MACLEAN, *Hon. Sec.*

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## Veterinary Jurisprudence.

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### CHARGE OF FALSE PRETENCES ARISING OUT OF THE SALE OF A HORSE.

AT the Leeds Town Hall—before Mr. Bruce—William Wood, landlord of the Rose and Crown Inn, Aberford, was summoned for having obtained under false pretences the sum of £22 10s. from Mr. Robert Turner Land, surgeon, Leopold Street, New Leeds.

Mr. Middleton, barrister (instructed by Mr. Thomas Turner, solicitor), appeared for the prosecution, and Mr. Pullan for the defence.

On the afternoon of Sunday, the 19th February last, Mr. Land, accompanied by Mr. Turner (the solicitor in the case) drove over to Garforth. On the way they stopped at defendant's house, and had some conversation with him about a horse which he had for sale. He said it had belonged to Col. Markham, of Becca Hall, who had always considered it to be the best horse in his stable, for when out for a run he could make up ground faster than any other horse in his (the colonel's) stable. Defendant said the price of the horse was £35. Mr. Turner characterised this price as ridiculous. Defendant then showed the horse to Mr. Land and Mr. Turner, and the animal was walked once quietly up and down. Mr. Turner asked the defendant if there was anything the matter with the horse except his wind and his age. Defendant said there was not; there was a little stiffness about the horse when he started upon a journey, but that it went off after going a mile or two. Mr. Land, who occasionally hunts, had seen the horse once for a few minutes ridden on soft ground in the hunting field by Mr. Arthur Bloom, of Aberford, and before making the purchase he called upon that gentleman and made inquiries. Relying on the truth of defendant's statement, he ultimately bought the horse for £22 10s. The horse was delivered and the money paid on the following Tuesday.

On the Thursday following Mr. Land rode the horse to Harewood. At starting the horse went lame. He got no better as he grew warm, and Mr. Land had to walk him back, finding great difficulty in getting home. He had him examined by Mr. Fearnley, veterinary surgeon, and it was found that the lameness arose from permanent disease.

Defendant refused to return the purchase-money, and hence this charge. It was stated that the horse had a lump on the near fore

fetlock at the time of the purchase, but both Mr. Land and Mr. Turner said they did not observe it at the time.

Mr. Pullan said the question whether this transaction having been on the Sunday it did not come under the provisions of the Sunday Trading Act. Mr. Bruce pointed out that the Act provided that a man should not pursue his ordinary calling on the Sunday. That could not apply in this case, for Mr. Land's "ordinary calling" was physicking people. (Laughter.)

It was proved that the defendant, about the middle of January, had sold the horse to Mr. James Binns, horse dealer, North Street, Leeds, who had returned him because he was lame. Binns' son, however, who rode the horse home, said the horse went perfectly sound the whole way.

Mr. Broughton and Mr. Fearnley, veterinary surgeons, both stated that the horse would remain permanently lame from injury which had been done to the outer suspensory ligament, and also from the existence of a callosity which interfered with the movement of the fetlock-joint. Mr. Bruce held that the lump on the fetlock was a patent defect, and supposing the defendant had warranted the horse as sound from lameness, this being a patent defect he would not have been liable to a civil action. Therefore, if he were not liable to a civil action, he thought it was a harsh proceeding to deal with him criminally, and feeling thus he declined to commit.

On the application of Mr. Middleton, the prosecutor was bound over to prefer an indictment at the ensuing borough sessions against the defendant, under the Vexatious Indictments Act.

## NEW MEMBERS OF THE PROFESSION.

At a special meeting of the Veterinary Board of Examiners, held in London, on April 24th, in accordance with the resolution of the Council for the admission of candidates holding the Highland and Agricultural Society's certificates, the following gentlemen received the diploma of the College.

Mr. Graham Mitchell . . . . . Calcutta.  
 ,, John Sherriff . . . . . Ditto.

## ARMY APPOINTMENTS.

Royal Artillery.—Acting Veterinary Surgeon James Findlay to be Veterinary Surgeon, *vice* W. Capes, who resigns that appointment.

Veterinary Department.—Herbert Rangeley, gent., to be Acting Veterinary Surgeon, *vice* James Findlay, appointed to the Royal Artillery.

WAR OFFICE, PALL MALL; *May 16th.*

13th Hussars.—Acting Veterinary Surgeon Frank Garratt to be

Veterinary Surgeon, *vice* Veterinary Surgeon, First Class, William Varley, transferred to Royal Engineers.

Royal Engineers.—Veterinary Surgeon, First Class, William Varley, from the 13th Hussars, to be Veterinary Surgeon, *vice* Veterinary Surgeon, First Class, Thomas Walton Mayer, placed on the Retired List, in accordance with Clause 415 of the Royal Warrant of the 27th of December, 1870.

## MISCELLANEA.

### ANTI-VACCINATORS.

A ROUGH remark in our last issue has, says the *Spectator*, brought down on our heads a storm of objurgations. We said that vaccination was decried by two or three scoundrels and a good many fools, whereupon we are asked whether we class Mr. Newman among the scoundrels or the late Dr. Bedford among the fools, what we mean by publishing such falsehoods, why we are deluding the people, and all manner of amenities. The letters we could stand up against, but the deluge of tracts is too much, and so we give in, the more readily because the expression was inartistic. We beg, therefore, to declare that people who denounce vaccination in order to sell nostrums are not scoundrels, but only persons who risk human lives for gain; and that people who denounce vaccination from philanthropic motives are not fools, but only persons devoid of the faculty of weighing evidence.

## OBITUARY.

WE have to record the following deaths, viz.—Mr. William Johnson, Inspecting V.S., Bengal Army; diploma dated June 4th, 1845. On February 28th, Mr. William Powell, of Newton Longville, Bucks; diploma dated April 29th, 1858. Mr. Wm. Smith, of Tewkesbury; diploma dated March 31st, 1807. Mr. T. W. Bretherton, of New York; diploma dated May 9th, 1837. Mr. J. F. Wilson, late Bootle; diploma dated July 17th, 1817. Mr. T. Waters, of Northampton; diploma dated January 13th, 1810. Mr. John Bright, late Brixton; diploma dated 1814. Mr. Wm. Bonsor, of America; diploma dated May 8th, 1823. Mr. R. W. Curtis, of Brooklyn, New York; diploma dated July 9th, 1833; Mr. R. H. Haslam, of Baltimore, U.S.; diploma dated July 21st, 1829. And Mr. John Scott, of Philadelphia; diploma dated February 21st, 1828. Suddenly of disease of the heart, Mr. James Kirkman, of Blackburn and Accrington; diploma dated April 30th, 1858.



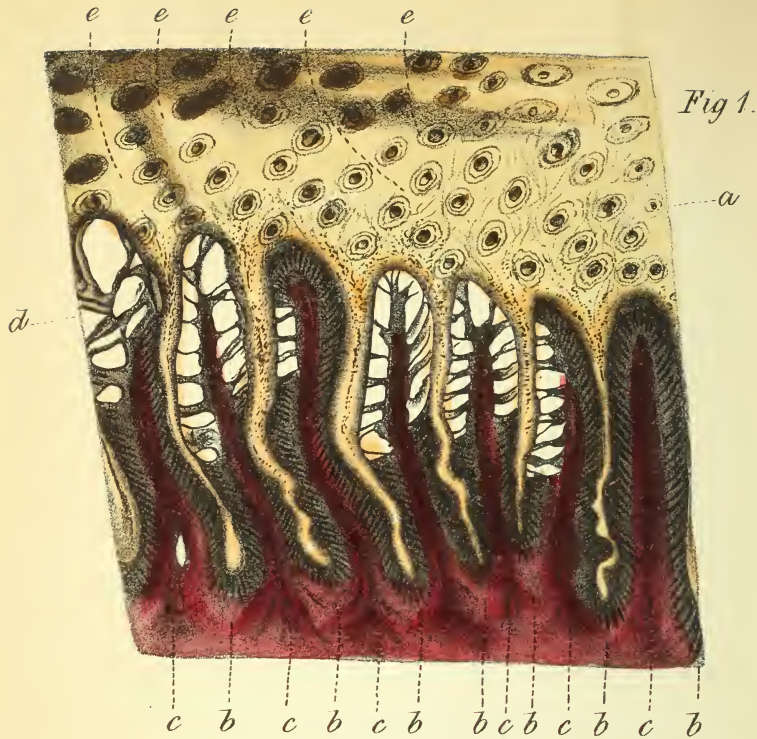
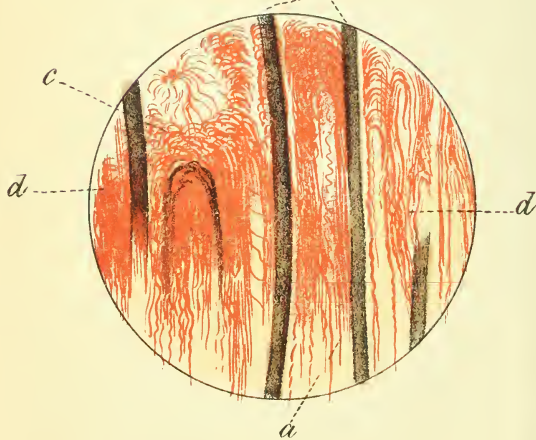


Fig 1.

Fig 2.



g1. Transverse Section of Horny and Vascular laminae, showing the reciprocal interdigitation of these leaves, and their laminellæ. a. Wall and its horn fibres white, brown, and black horn. b. Horny laminae, and their laminellæ. c. Vascular laminae with their laminellæ. d. Manner in which the laminellæ shrivel and break on section. e. e. Origin of the laminae from the wall. moderately magnified.

g2. Vertical Section of Periople, with injected Vessels, a. outside. b. Shafts of Hairs. c. Capillaries of sebaceous glands. d. Villi penetrating its semi-horny substance, moderately magnified.



it is not possible for additional horny material to be introduced into the midst of its substance when it has reached a certain stage of growth. The number of tubes or fibres is as great at the top as the bottom of the wall, except in those instances which appear to me quite exceptional, where the anterior vascular laminae give off papillae towards the inferior portion of their free border; but these may only secrete the projecting ridge of horn we have designated as the "toe stay." The greater compactness of the lower part of the wall seems to me to be due to the longer continued pressure and corneous transformation its cells have sustained, than have those which are recently formed; and also, in all probability, to the contents of the tubes having become more solidified and resisting.

The horny laminae form an integral portion of the wall, from which they cannot be separated by any of the artifices employed to disunite the sole from the wall or the frog from the sole and wall. Neither does the microscope or chemical reagents in my hands demonstrate that the horny laminae are secreted independently of, or have any other origin than from the same source as, the wall of the hoof. As shown in the drawings (Plate II, fig. 1), they are projected from the horny tissue on the inner face of the wall towards the vascular laminae, between which they form the most intimate reciprocal connection possible. Indeed, I have already observed, when describing the general features of the cutigeral cavity, that the origin of these laminae in the wall can be traced by narrow lines across nearly the whole of its thickness towards the heels, but in front for a less distance, corresponding, in fact, to the imprint of the coronary zone. And a fine transverse section of the wall, with one or more horny laminae, will show that both are one. If the horn be dark coloured, we can see the pigment-granules passing in an uninterrupted manner from the wall into the laminae to their extremity, and the polariscope testifies that they and the wall are indivisible. The only difference between the structure of the wall and the laminae is the absence of tubular fibres. Caustic potash, by expanding and loosening the cells, demonstrates, in the clearest manner, that these horny leaves are formed by the interfibrous horizontal cells, which pass from between the fibres, and which appear to be arranged for this purpose. Before leaving the wall these cells present the appearance already indicated, being horizontally disposed and loosely aggregated one upon another; on entering between the lamina they commence to look compressed laterally, and are more densely packed together, though they always

exhibit the nucleus they contain. Soon, however, they become greatly elongated and fusiform, a feature which is all the more marked as we examine them towards the termination or free margin of the lamina.

On making a vertical section of the wall and horn leaf, so as to obtain a side view of the latter, this horizontal disposition of the cells is yet more apparent in the striated aspect the lamina offers, and which gives it somewhat the appearance of conjunctival tissue. Treated with potash, this arrangement is made manifest (fig. 17). We see the long, fusiform corpuscles lying closely, one above another, destitute of fibres, and terminating rather uniformly at the edge of the leaf; so elongated and narrow are they from every point of view, that they present nearly the same shape in a vertical as they do in a horizontal section. A peculiarity in their arrangement consists in their leaving the fibrous texture of the wall at a marked angle, inclining downwards in a plane nearly, if not quite, parallel with the lowest face of the coronary cushion.

If the horn of the lamina has any tendency to a dark colour, pigment-granules will be found disseminated among the fusiform-like cells.

This horizontal stratification of the cells of the keraphylous tissue, together with the absence of intersecting continuous fibres,\* as in the wall, accounts for the tendency of

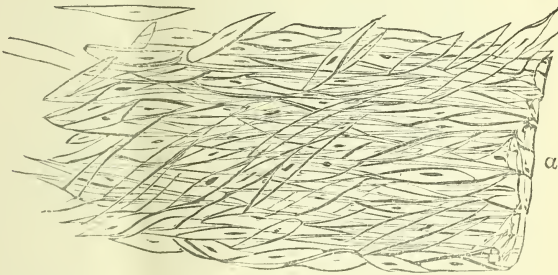


FIG. 17.—Lateral view of lamina (horny), showing horizontal stratified disposition of fusiform cells, after boiling in caustic potash. Magnified 350 diameters. *a*. Free margin.

the laminae to split in the direction of the strata when they have lost their moisture. I have often remarked that a dried lamina bears a close resemblance in some of its characters to the dermo-skeleton or cutaneous covering of the Colcoptera

\* In one horny lamina I examined I found a fibre or tube in the middle of its substance, proceeding from its upper to its lower extremity. This would appear, however, to be a very exceptional circumstance.

and crustaceous animals. The skin of these creatures, as is well known, is more or less horny in its texture, and is further strengthened or consolidated by the peculiar animal substance named *chitine*. The desiccated lamina, in colour and consistence, is not unlike this epidermic carapace of beetles; and the horizontally stratified arrangement of its fusiform cells, always running in the same direction, adds to this resemblance. This chitinisation of the epidermic cells of the Coleoptera and other creatures, we must remember, not only confers strength and rigidity on the thin epidermis, but also endows it with a great amount of elasticity; indeed, some histologists, and among them Leydig, have not hesitated to assert that the chitinated conjunctival tissue of the invertebrata should be placed on the same footing with the elastic tissue of vertebrata.

In describing the horny and vascular laminæ, when speaking of the anatomy of the foot, I referred to the existence of lateral laminellæ or lamellæ on these, and mentioned that I first observed them in 1858.\* The presence of these beautiful appendages is easily verified by making a thin transverse section of the horny and vascular laminæ from any part of the front of the foot. I usually prepare the foot, in order more readily to obtain good sections, by steeping it, when in the fresh state, in a moderately strong solution of carbolic acid, and afterwards thoroughly drying it. In making the section the ends of the horny laminæ generally become a little distorted, while the extremities of the vascular leaves at the base of the horny ones often tear in places. Such has been the case in Plate II.

With a low magnifying power they appear as in this

\* Mr. Armatage, M.R.C.V.S., has informed me, since the above was written, that the late Professor Barlow, of the Edinburgh Veterinary School, mentioned and showed these lamellæ to his private histological class so early as 1851. I was not previously aware of this, probably in consequence of my not having attended the special class while at the Edinburgh School a short period after this date. They were also alluded to in a paper on the "Structure of the Horse's Hoof" ("Osservazioni . . . intorno all'organo Keratogene") by Professor Ercolani, of Turin, in the veterinary journal of that city, in 1861. About the same period they were also noticed by Professor Rawitz, of St. Petersburg, who published a paper on the subject in the *Magazin de Gurlt*. Professor Gourdon makes no allusion to them in his series of papers on the "Corne du Sabot du Cheval," published in the *Journal du Midi*, for 1865; indeed, they do not appear to have been observed in France until Professor Colin, of Alfort, indicated their existence in a communication to the Central Veterinary Society of Paris in 1867 (*Recueil de Méd. Vétérinaire*). The late Dr. Hepworth, of Croftsbank, Manchester, to whom, several years previously, I had given my 1858 preparation showing these lamellæ, published a description of them in the *Microscopical Journal* for 1865, designating them as the "laminellæ of Fleming."

drawing, which represents five entire and the sides of two other horny laminae, as well as seven vascular ones—all *in situ*. It will be observed that each horny lamina looks like the frond of a fern, a feather with its barbules, or the branchial processes of the gill of the eel. The number of these lamellae on each side of a lamina varies considerably. I have counted more than fifty. They appear to be formed by the divergence, at certain intervals, of the compressed or fusiform cells composing the lamina and the cells on the inner aspect of the wall in the interlamellar spaces. These are thrown out at an angle more or less acute, and receive between them similar processes or leaflets from the vascular laminae. If the extremity of a transverse section of a horny lamina be examined by a high magnifying power it will be found to offer an appearance like that shown in fig. 18, which is drawn from the actual object.

The delicate leaflets on the keraphyllous tissue are composed as stated, of epidermic cells, and often show pigment-granules; they comport themselves by polarised light like the other horny parts of the foot, though not so strikingly, probably from their

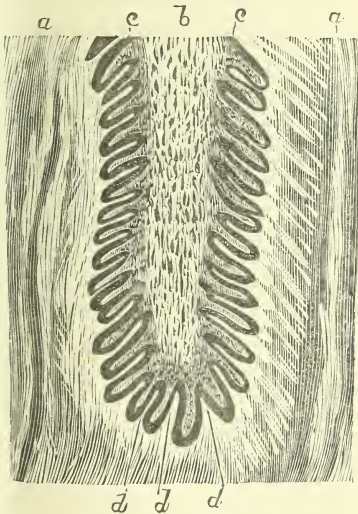


FIG. 18.—Termination of a horny lamina between two vascular ones. *a, a.* Vascular laminae. *b.* Horny lamina. *c, c.* Horny lamellae. *d, d.* Lamellae of the vascular laminae. Highly magnified.

extreme tenuity. The carmine fluid slightly stains their margins, and, of course, deeply tinges the processes and body of each vascular lamina. In the fresh state, between

the horny and living or vascular (if we may use the term when no blood-vessels are discernible) leaflets, there appears to be a cellular material, composed of one or more layers of soft diaphanous cells, containing a nucleus, and even a nucleolus. These cells offer a high degree of permeability to the carmine fluid.

Such, then, are the relations between the keraphyllous and podophyllous tissues of the horse's foot. The dovetailing or *engrenure*, it will be understood, is of the most complicated, but, at the same time, most wonderful description, and presents features which were never dreamt of by those who, even in recent times, had made this organ their particular study.

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## STRANGULATION OF THE INTESTINES IN A HORSE, CAUSED BY CARCINOMA IN THE MESENTERY.

By M. J. ROBERTS, M.R.C.V.S., Ackworth, near Pontefract.

HAVING had rather a singular case brought to my notice last April, I send you a brief history of it, thinking it may be interesting to the readers of the *Veterinarian*. On Thursday, the 27th April, I was requested to attend at Mr. Ellison's, Cawthorne. On arriving there 8.30 p.m., I found my patient to be a brown mare, aged. I was told she had been apparently well up to that morning, when she had refused all food, and since 12 a.m. had been much pained. The following symptoms were present:—Animal suffering great pain, looking eagerly at her abdomen, and always on the near side; respiration hurried; extremities and surface of the body at the natural heat; pulse 60, and rather full; visible mucous membranes of a yellow hue, but not injected. When the rectum was explored she strained immensely, but nothing was found in it. I gave aloes Barb.  $\zeta$ v cum colic. haust.: applied hot fomentations to the abdomen, and threw up enemas.

April 28.—Pain not relieved; pulse 72, harder, and not so full; ears and extremities rather cold; urine scanty and high coloured; visible mucous membranes slightly injected. I again backraked the animal, and only found a piece of dung the size of a walnut. Constantly severe straining, with anxious looks at the abdomen, still existed. Stimulating liniment was applied to the abdomen, and enemas thrown

up by a force pump,—little or none of the liquid returned. Sedatives with anti-spasmodics were given, and by 3 p.m. the animal became easier. By 6 p.m. the pulse went up to 82 and became much weaker. When the animal was down she rested on her hinder parts, but sat up with her fore legs, so that her head was level with manger. There was a moan occasionally, and she sometimes raised herself partly up.

I had been suspicious for some hours that there was a stoppage in the bowels (volvulus or intussusception), and I now felt confident on the matter, and therefore told the owner that there was little or no chance of recovery. The owner seemed desirous of having everything done that could be, and was especially desirous of having the tube of the force pump inserted the whole length, and an enema given while in position, thinking if the twist was within reach, it would straighten it. This was accordingly done, and sedatives and anodynes given at the same time.

29th.—Animal very dull, extremities cold, straining very hard at intervals; pulse 90, weak and fluttering; abdomen slightly distended. She now for the first time since the attack had commenced drank a little water. About 4 p.m. she was taken with severe pains, and died in a few minutes. This they told me; I was not present.

*Post-mortem appearances.*—Circulatory system quite healthy. Lungs healthy; liver, spleen, kidneys, and bladder the same. After the large intestines had been rolled on one side, I found the small intestines were very loose; and on careful examination I found the mesenteric attachment to be destroyed. I next observed a cancerous tumour to be situated in the left epigastric region; it was hard and granular, about the size of a walnut. The ligaments or bands supporting it divided as they progressed, and then joined again, causing a retiform appearance. The structures around were much attenuated. At short distances from the tumour other formations of a similar appearance were developing on the ligaments of the cancer; these ligaments were attached to the left side of the diaphragm, and others to the curvature of the colon, spleen, and omentum. From the carcinomatous deposit ran a fleshy fibrinous band, about the thickness of my little finger, which I found to be composed of attenuated mesentery, adipose tissue, and fibrinous bands. This cord seemed to be attached to the spine, but I unfortunately ruptured it before I reached its termination. The jejunum was twisted round this cord. The mesentery when spread out was very thin, and in some places like tissue paper; towards the end of the ilium it became thicker. The

stomach, duodenum, and part of the jejunum were distended with fluid, but the rest of the small intestines were empty. The cæcum had a little alimentary matter in it, with a reasonable quantity of fluid. The colon at its commencement had some alimentary matter, but under the usual amount; it was chiefly composed of grass and a little hay. The rest of the intestines were empty. The veins of the stomach and small intestines very much distended, and the latter was slightly inflamed. When I applied the least pressure to the mesentery along its attachment to the duodenum, jejunum, and part of ilium, it ruptured.

A medical gentleman who was present during the greater part of the *post-mortem* examination, at once recognised the disease as a cancer. A surgeon in the district placed part of the tissue surrounding the growth under his microscope (mine being out of repair), and he pronounced it to be decidedly a cancerous formation. His opinion has been verified by several medical men who have seen the specimen I have preserved in spirit. I have done this because there has been a little dispute as to the existence of such growths in the horse.

Being fully aware of the malignancy, intractability, and slow progress of carcinoma, it must have existed for some time. It is possible, however, that her going out to grass, which she had done for a week previously, might have favoured its development; the grass causing increased peristaltic action, which with the mesentery in that attenuated state, may have helped to produce the lesions. The mare had also had a brisk trot on the previous day to a market town, which I think is also worthy of notice.

My object in this communication is rather to give a brief history of the case than to offer any speculative ideas of my own.

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## A FEW REMARKS UPON ACONITE AS A SEDATIVE AND MEDICINAL AGENT IN TETANUS.

By J. W. HILL, M.R.C.V.S., Wolverhampton.

AFTER perusing the twelve cases of tetanus recorded by Mr. Simpson in your journal of this month, and his ideas as to the treatment of this disease, together with the mention of my name in connection therewith, I feel that I cannot do otherwise than offer a few observations upon the use of the drug I employed in the case named.

In the first place, I may state that it was my first trial with aconite as a medicinal agent in tetanus, and certainly if the opportunity presents itself again it shall not be the last. From Mr. Simpson's remarks, I should infer he considered the dose given too small to do either good or harm. But, on the contrary, I contend that the preparation, if good (and none better than Fleming's), will act well and sufficiently in ten minim doses. I will even go a step further by stating I consider Fleming's tonic aconite in the quantity just named will act sedatively (if I may so express myself), as well as the generally prescribed dose of hydrocyanic acid, viz. ʒij. I know, as I have previously remarked, that aconite in veterinary medicine has but few friends; in fact, I have heard an eminent member of our profession say that ʒj of the tincture might be given at one dose without doing any harm. (I should question the quality of the drug, as my experience with it has taught me very differently.) Mr. Simpson tells us that the only marked effect he ever noticed belonging to aconite, whether given in large or small doses, was that it gave the animal much trouble from the tingling sensation it produced in the mouth. I would ask, is that all that a powerful sedative does? And I think it cannot be denied that aconite is such an one. Is there no marked effect on the pulse, breathing, and general state of the patient? Unquestionably there is. To prove that it does influence the heart's action, I may state that I have repeatedly given it in enteritis, and in instances where the pulse has numbered 100 per minute. After the administration of ten minims of Fleming's Tinct. Aconite, the pulse has in less than five minutes dropped to 70. This surely is something more than frothy saliva from the mouth, and I should imagine could scarcely fail to attract the notice of the professional attendant. My object, however, in recording the case in question and its treatment, was not, neither are these remarks now intended, to push into notice any novel treatment for the disease, but because I believed the case an interesting one, and also that aconite as a sedative was deserving of more attention than it at present gets. Hitherto, hydrocyanic acid has been my favourite medicine in tetanus, and I still think most highly of it. Be, however, the drug hydrochloric acid or aconite, it is evident at all events, so far as our present knowledge goes, that the use of sedatives in the majority of cases of tetanus is indispensable. Until, therefore, more light is thrown upon this all-important disease, we must be content to adopt such measures (and those that are calculated to answer our purpose best), as are within our reach.

## TETANUS AND ACONITE.

By ALEX. E. MACGILLIVRAY, Vet. Surgeon, Banff, N.B.

THE fatality attending cases of tetanus is so well known to the profession, that I am certain its successful treatment by Mr. Andrew Simpson, as recorded in the *Veterinarian* for June, will strike many of my professional brethren as something very remarkable. I have always found, and always seen, its treatment to be extremely difficult, and most unsatisfactory. In fact, until my arrival here, some six years ago, I never saw, either in my college or student practice, a successfully treated case of tetanus; and during the last six years, I have only managed to bring through three cases.

On reading Mr. J. W. Hill's treatment of a case of tetanus, as recorded in the *Veterinarian* for April last, I considered it so very rational and well carried out, that I resolved to adopt a like course on the first opportunity. This was not long in presenting itself. On the seventeenth of same month of April I was asked to look at a very handsome four-year-old black cart-mare (the property of A. Simpson, Esq., Colleonard Cottage, near this town), which was said to have gone wrong about the hind legs, and to have a difficulty in eating. Quite a cursory look at the mare explained to me what was the actual state of matters. It was a distinctly marked case of *idiopathic tetanus*, for no lesion of any size or description could on the most minute search be discovered. I need not enter into detailed minutiae of all the too well-known symptoms. The poor mare was excessively nervous. On giving her the slightest tip with the hand below the lower jaw, she nearly fell backwards. On the slightest noise or irritation her breathing became seriously affected, &c. I succeeded in getting a good strong laxative dose over her tongue, which operated freely next day. On the second day I applied a fresh sheepskin over her whole back, and commenced giving three times a day *twelve* drops of Fleming's tincture of aconite. This course of aconite was continued for about a fortnight. A second fresh sheepskin was applied on the third day, after discarding which three woollen rugs were put loosely on. Within forty-eight hours the jaws became so much locked, that the mare could of herself take no meat of any kind; she was, however, fed by hand with a softened mixture of oatmeal and bran, of which she always partook greedily. The doses of aconite were either administered in cold water, which she managed to suck up out

of a pail, or on a little fresh grass, which was pushed into her mouth at the interdental space. I may mention that a week after I first saw her I had her slung, as I considered she would soon go down through sheer weakness. Just a fortnight after my first visit the power of deglutition began to return; eating and drinking were soon performed with comparative ease, but extreme weakness prevailed. The aconite was now discontinued, and about the end of the third week I commenced a course of arsenic—five grains morning and evening for the first three days, after which I ordered the same three times daily in bran mash. About a week subsequently I took the mare out of the slings, after being six weeks slung.

I may just mention that the only medicine *forcibly* administered in this case was the laxative at the commencement, all the rest was either sucked up by the patient herself, or pushed into her mouth an inch or two, and subsequently disposed of by herself. The irritation attending the operation of forcibly drenching a tetanic patient is very antagonistic to the abatement of the symptoms, so that if at all possible, as Mr. Andrew Simpson observes, let the patient take the medicine *per se*. If this cannot be accomplished, I fear the case is rather a hopeless one.

It seems that authorities differ as to whether idiopathic or traumatic tetanus is the most virulent and fatal. I confess my own opinion to have been that idiopathic tetanus was the most tractable and the least deadly; it would appear, however, that Mr. Andrew Simpson's practical experience teaches him otherwise, for he finds that where the affection is *traumatic*, the causative root of the whole matter is quite obvious and easily grappled with. This is, no doubt, very plausible, and very self-satisfactory; medical experience, however, and records prove the reverse, and with as good reason, as will be seen if we inquire into the several causes of *idiopathic* tetanus, such as exposure alternately to extreme heats and colds, the presence of intestinal worms, &c. Any of these causes can surely be more easily combated than the extreme nervous irritation produced by local lesion of perhaps a trifling extent, but yet sufficient to cause tetanic spasms of varying degrees of intensity.

I should much like some of the higher veterinary authorities to detail their experience of this disease.

## POISONING OF A DONKEY BY "EMERALD" GREEN PAPER.

By S. BEESON, M.R.C.V.S., Chalfont St. Peter.

THE subject of this case was a donkey about eight or nine years of age, the property of a lady in this neighbourhood. The animal was in good health and condition, doing but a moderate amount of work and having, together with two ponies and some cows, a good range of pasturage.

My first acquaintance with the circumstances of the case was on Monday morning, May 8th, when a messenger arrived requesting my attendance to make a *post-mortem* examination of the animal, which had died very suddenly on the previous Sunday afternoon.

On my arrival, I found the animal lying on his side, some few yards from where he had died, the carcase having been removed from contact with the other animals in the field. The head was thrown back on to the shoulder, from which the hair had been detached as if in agony, and the legs were stretched out.

I was told that the animal was observed to be feeding as usual at 3 o'clock p.m. on Sunday, but at 6 o'clock was found dead, and in the position above described, the grass upon the spot being literally torn up by the painful struggles of the animal.

The viscera of the abdomen presented externally an extremely healthy appearance, as, indeed, they did internally with the exception of the stomach, where the cause of the mischief was readily recognised. The major part of the contents of this viscus was of a light brown colour, but near the cardiac orifice about a pint of food largely mixed with imperfectly masticated paper was found, the whole being of a bright green colour. On manipulating this ingesta with a scalpel, the blade quickly became tinged with copper.

The cuticular coat of the stomach was of a natural colour; but the villous coat showed the rose-coloured tint of arsenical poisoning, and was evidently highly inflamed.

The presence of the paper prompting further search, attention was directed to a small heap of rubbish in the meadow, which had been placed there within the last day or two. Mixed with odd pieces of brick, &c., in this heap was some paper which corresponded with that found in the stomach. This paper was composed of a white ground ornamented with green flowers, covering not more than one sixth of the surface ;

consequently, the amount of green surface was somewhat small, plainly showing the large amount of arsenic employed in making the colour.

The application of Reinsch's process showed the presence of arsenic in both the green contents of the stomach and the paper found in the heap of rubbish.

The heart, lungs, and all the other organs were quite healthy.

A peculiarity of this case is the short time the animal lived after partaking of the poison, which in all probability was not more than a few hours, and this is rendered more interesting from the small quantity taken.

Cases are recorded in the *Veterinarian* (June and July, 1865), in which the animals lived twelve hours, and others recovered, profuse diarrhœa being a leading symptom. In my case, the time the animal lived did not allow of this taking place.

## THE PRINCIPLES OF BOTANY.

By PROFESSOR JAMES BUCKMAN, F.G.S., F.L.S., &c. &c.

(Continued from p. 340.)

THE *Narcissales*, which have next to be considered, form on the whole a most natural alliance, related to the *Stratiotes*, or water soldier, by the simple tripetaloideous flowers of the *Bromeliaceæ* and *Taccads*, and gaining a higher pitch of beauty in form, colour, and variety in the *Amaryllids* and *Irids*, in which latter, especially, the flowers are hexapetaloideous, by reason of two sets of petals arranged in threes, the nature of which arrangement may be studied by examining any of the forms of iris of the garden, or the common wild yellow iris, *I. Pseud-acorus* of our rivers and ponds.

THE NARCISSALES, *Narcissal Alliance*, consist of epigynous petaloid endogens, with symmetrical flowers, three or six stamens, and albuminous seeds.

### THE NATURAL ORDERS OF NARCISSALES.

*Bromeliaceæ*.—Flowers tripetaloideous, six leaved, imbricated.

*Taccaceæ*.—Flowers half tripetaloideous, tubular.

*Hæmodoraceæ*.—Flowers hexapetaloideous, tubular, scarcely imbricated.

*Hypoxidaceæ*.—Flowers hexapetaloideous, much imbricated, stamens six, anthers turned outwards.

*Amaryllidaceæ*.—Flowers hexapetaloideous, much imbricated, stamens six or more, anthers turned inwards.

*Iridaceæ*.—Flowers hexapetaloideous, stamens three, opposite the petals.

The significance of the gradations in the floral envelopes

of these six natural orders can only be adequately represented in this place by a series of diagrams, but it will be even better if the student can examine a few living representatives.

Viewing the alliance as a whole, it may be stated that it contains many handsome and useful plants. Many of them have acrid juices, which in some species almost, if not quite, render them poisonous; at the same time both fruits and roots of some of the genera are used as food, and one of the most delicious of fruits, when properly grown, will be found in the first order.

*Bromeliaceæ*.—The most important representative of this natural order will be found in the genus *Ananas*, pine-apple. Its fruit, as one of the grandest results of gardening skill, is well known. There are few feasts of importance at which the "British pine" does not appear as one of the handsomest and most luscious of fruits, and though a native of the West Indies, it seems only to be grown in England to its highest perfection. The favour in which it is held, and the pains taken in its cultivation, may be gathered from the fact that in the 'Guide to the Orchard and Kitchen Garden,' by George Lindley, published in 1831, more than seventy varieties are tabulated, and they have been much increased since. Professor Lindley states that "in its wild state, however, and unripe, its fruit is excessively acid, burning the gums." Some of this quality is found in too many of the West Indian pines, which are now so common as to be hawked about the streets. This acidity is probably due to the fact that, in order to their passage, they had been gathered before being fully ripe, otherwise many would decay. Even incipient decay shows that they are riper than their fellows; in which state, that is, when the flaw is only slight, we recommend our friends to choose them. The leaves of the pine-apple may, doubtless, be employed in paper-making; even "fine muslin," according to Professor Lindley, "has been manufactured from the fibres of the common pine-apple."

Passing over the next two natural orders for want of practical interest in their limited genera, we come next to

The AMARYLLIDS.—In these we have a large generic list represented by the beautiful genus narcissus, of our fields and gardens; the still more showy amaryllis of the conservatory, and the grand agave, the *A. Americana*, American aloe, which is one of the noblest of horticultural favorites.

In speaking of the distribution of members of the order, Professor Lindley says:

"A very few only are found in the north of Europe and

the same parallel; these are plants of the genera *narcissus* and *galanthus*. As we proceed south they increase. *Panocratium* appears on the shores of the Mediterranean; *crinums* and *pancratiums* abound in the West and East Indies; *hæmanthus* is found for the first time with some of the latter on the Gold Coast; *hippeastra* show themselves in countless numbers in Brazil, and across the whole of the continent of South America; and, finally, at the Cape of Good Hope the maximum of the order is beheld in all the beauty of *hæmanthus*, *crinum*, *clivia*, *cyrtanthus*, and *brunsvigia*. the most remarkable of which is *doryanthes*."—'Vegetable Kingdom,' p. 156.

Our native representatives of the order are sufficiently interesting to deserve a passing notice here.

The genus *Narcissus* owes its name to the enamoured youth of that ilk, who drowned himself in that earliest of looking-glasses a pool of water. Under the name of daffodil, or daffydowndilley, it is known to most people. Dr. Syme says: "Our present species, daffodil, has simply the old English name *affo dyle*, which signified 'that which cometh early,' and it was long before the word was corrupted into daffodil."

This author goes on to say that "the root, and to some extent the whole plant, is poisonous; yet a useful spirit has been distilled from it, which is sometimes used as an embrocation, and is also given as a medicine." We know of no instance of its employment, but from its nature we should feel it necessary to be cautious that children, who will eat anything of attractive hue, did not partake of its flowers.

The common wild single daffodil is very abundant in the orchards and about the hedgerows in Devon.

The *N. poeticus*, the "narcissus" or "sissy" of our gardens, is a very handsome flower, possessing a most agreeable odour, but so strong when in quantity in a confined room as to sometimes cause serious mischief. Mrs. Lancaster tells us that the Chinese regard the narcissus as worthy of a place in the decorations of the shrines of their household gods, and place large china dishes of its blossoms before them on the first day of the new year, for which purpose the roots are planted in pots filled with pebbles and water, just in time to cause them to blow for this festival.

The snowdrop, *Galanthus nivalis*, gets all its names from its snow-white flowers. The gardens possess of this flower a double form, but we think it not at all comparable to the single bells of the wilder examples. It is doubtful whether this is a truly aboriginal species in this country, as it is

usually found in meadows or orchards, but its white "snow-bells" may well remind us of Mrs. Barbauld's lines—

"As Flora's breath, by some transforming power,  
Had changed an icicle into a flower."

The mucilaginous root is said to be nutritious, and it has been suggested that salep may be made from it; but it would be difficult to get it in sufficient quantity to render it of any commercial value, except for garden decoration, for which purpose its bulbs are sold in thousands.

The IRIDS are represented by many very showy garden flowers, as the gladiolus, sparaxis, ixia, and the many species of garden iris; but we prefer directing attention to two native genera, iris and crocus, as representatives of the order.

The genus *Iris* is well known by its two native illustrations, namely, *I. pseud-acorus*, the yellow-water iris or yellow flag, and *I. fœtidissima*, the fœtid or stinking iris. These forms, as well as the foreign ones, have thickened *rhizomes*, and it is this part which forms the well-known *I. Florentina*, the Florentine iris, so much used in perfumery, the powder of which, from its perfume, getting the name of violet powder. In commerce this is termed "orris root."

The root of the yellow flag is said to possess errhine qualities, and it is sometimes chewed for toothache.

It was much used in ancient times as a medicine, as Gerarde observes that "it doth mightilie and vehementlie draw forth choler." It is not now so employed; indeed, we never heard of its use even in rustic practice.

The *Iris fœtidissima*, or stinking iris, is a common wild plant near the sea. It is also found in several stations now remote from the sea, as far up on banks now retired from the present River Severn, in Gloucester—high up on the banks of the Yeo, in Dorsetshire; in these and other like stations it forms a part of the evidence which goes to prove that the older rivers were within the reach of the tide, miles further up than is the case at present. It is remarkable for the bright orange-coloured seeds. The seeds of the *I. pseud-acorus* are green, and roasted as coffee are said to be good and wholesome. The *I. fœtidissima* "is remarkable," as stated by Dr. Syme, "for a very peculiar scent, and has been employed in medicine as a powerful cathartic; it is very powerful and cathartic. It is very acrid and violent in its action, and not to be recommended. A common English name given to the plant is that of 'the roast-beef plant,' owing to the smell, which is said by the peasantry to resemble roast beef. Linnæus, when he gave the plant its present specific name, must have had a very different idea of its savoury odour."

It is proverbial that "there is no accounting for taste;" but we cannot help thinking that we have smelt some fungi like this iris, and fungi in the cooked state are, some of them, not unlike cooked meat.

The genus *crocus*, though represented in Britain, according to the Floras, by as many as four different species, is probably only a naturalised plant. Bentham says it is "a small South European and West Asiatic genus, a few species extending into Central Europe; and several, long since cultivated for ornament, or for saffron collected from their stigmas, have established themselves in a few localities further north." ('Handbook of the British Flora,' pp. 517—18.)

Saffron gives a name to a parish; thus, Saffron Walden in Essex is said to be the place where the plant was cultivated as early as Edward III, when it was introduced to Walden, which got the prefix of Saffron thereafter.

Saffron was formerly highly esteemed for many purposes, probably partly on account of its being an expensive product, for, consisting wholly of the stigmas of a small flower, it must always have been costly.

Saffron is still employed in the pharmacopœia, and forms part of the compound known as "aromatic confection," a preparation which, with rhubarb and laudanum, we have this year found to be of great service in checking that often fatal complaint, diarrhœa in lambs.

Saffron was formerly extensively used to colour Easter cakes. Mrs. Lancaster tells us that, "during Lent saffron was at one time largely used in cookery, it is said for the purpose of keeping up the 'animal spirits,' which long-continued fasting considerably affected. Probably, on the doctrine of signatures, it was so used on account of the sallowness of skin occasioned by too much abstinence; and it was doubtless for this reason that saffron was once a favorite remedy for yellow jaundice and skin diseases in general, and for which it was once used in the "yellows" of cattle. But, alas! alas! in these faithless days—days, too, of inquiry and sophistication—turmeric does the duty of saffron in the hot cross bun. Saffron has also long been a favorite remedy with the rustic in drinks for "yollors," as "ruddle" is for red water. There is, however, no doubt but that saffron is an agreeable stimulant; but in these days of *reasoning*, its colour has not the reassuring character it once had.

The *crocus* was dedicated to St. Valentine, probably in allusion to the golden hues with which a lover invests everything around.

## CASES OF RABIES IN THE DOG AND SHEEP.

By S. LOMAS, M.R.C.V.S., Disley, near Stockport.

I FORWARD you the particulars of an outbreak of rabies which has occurred in the vicinity of Disley and Marple, in Cheshire.

I have gathered the following information with respect to its introduction in this neighbourhood, which was about the 14th of March last, when a bull-terrier dog suddenly appeared in a farm-yard at Stanley Hall, Disley, and bit a sheep dog. The terrier then went through the village of Disley and bit two other dogs, which were subsequently destroyed, exhibiting all the symptoms of rabies. He then appears to have left the neighbourhood of Disley, and gone through Lyme to Windlehurst, in Marple, where a flock of twenty sheep were attacked by him, and nearly all bitten. Thirteen of the number bore very evident traces of being bitten about the head and neck. Two of them were sadly torn; one had a large piece bitten from its cheek, and the other had its lips lacerated to a great extent. The dog was killed soon afterwards in Windlehurst.

About the 15th of April several of the sheep were observed to be strange in their habits, and especially to exhibit pugnacious symptoms, by butting at each other. They gradually became worse up to the 18th, when four died. On the 19th eight more were destroyed, and on the 20th my brother was called in to make an examination of the flock and report to the police.

He made a *post-mortem* examination of some of those which had died, and found the usual appearances of rabies, which, together with the history of the sheep and the symptoms described as observed by the owners and others, conclusively proved the nature of the disease. At the time of my brother's attendance another of the same flock was found to present symptoms which, in his opinion, were indicative of the commencement of the disease. It died two days afterwards. At the present time there are only five sheep left of this flock.

The sheep dog at Stanley Hall appeared "strange in his habits," as the farmer said, about a fortnight after being bitten, at which time he unfortunately broke loose from his kennel and bit another dog in the village. He then went through Hazel Grove and Bramhill to Cheadle Hulme, where he was destroyed.

On Easter Sunday a rabid harrier also made its appearance in this village, and, after a very exciting chase of three hours' duration, was shot at Strines. He bit four other dogs, all of which were at once destroyed. He also came in contact with two or three more dogs, but as there were no indications of their having been bitten they were not destroyed. One of the last mentioned was a large and valuable mastiff, which, on the approach of the harrier, "picked him up and shook him." In about three weeks after this occurrence the mastiff appeared to be quite altered in his usual habits, which induced the owner to administer a dose of laxative medicine. He is now, to all external appearances healthy; but while he was suffering from the indisposition another dog (a retriever) began to play with him, and this retriever has since been destroyed, having exhibited some of the usual characteristic symptoms of rabies. I had ample opportunity of observing these symptoms, and as such will describe a few of them. Before doing so, however, I should state that there appears to be a doubt whether this retriever derived the infectious matter from the mastiff or from a black-and-tan dog which bit him a few weeks previously.

I can get no clue where the black-and-tan dog came from, but it is certain that the retriever was bitten by him. The black-and-tan then began to run some hens about which were in the yard at the time, but the owner, having seen him bite the retriever, shot him.

My attention was drawn to the retriever on May 21st, when I was told that he had been playing with the mastiff and had been bitten by the other dog.

The day previously to the one on which I saw him he had been very dull at work, and had partaken of no food. I was informed also that he had been barking and howling hideously at intervals all night.

*Symptoms.*—On my arrival he was howling, until the woods in the vicinity echoed with the sound; but it was quite different from the howling we commonly hear. He would first give indications of being about to vomit, which were accompanied with a peculiar guttural sound; then he would begin to howl. His bark was quite altered; it was not of the usual deep resonant sound, but was husky and short. A copious discharge of saliva flowed from his mouth. As he was quite under command, and would obey when spoken to, he was loosed, and taken down to a small rivulet. On the way down he occasionally depressed his head towards the left side. He also staggered a little in his walk, and from time to time began to bite savagely at the grass. He went into

the brook and laid down in it and tried to lap some water, but could not succeed in his attempts to swallow any. After quitting the brook he laid down on the bank, as if exhausted, but suddenly seeing a hare at a short distance from him he vainly attempted to give chase to it. After making this effort he became decidedly worse. He would also attempt "to set" something in the grass, and, retracting the angles of his lips, would dart very energetically at it. When put into a loose box he bit at the straw and litter very viciously, and would also snap at the air. I ordered him to be destroyed.

Doubtless you have read the report in the paper I sent of the cases of rabies in two dogs, one from Werneth and the other from near Glossop, in Derbyshire; but if you deem this description of these additional cases of sufficient importance for insertion in the *Veterinarian*, I place it entirely at your disposal.

## Pathological Contributions.

### CATTLE PLAGUE.

OUR information from the Continent with regard to the cattle plague is to the effect that the malady still prevails in several circles in Galicia, especial in the district of Tarnopol. The plague has also been reintroduced into Lower Austria, and has broken out in two villages near to Vienna. According to the latest information it was hoped that the disease had been effectually exterminated in Bavaria, where it had recently made its appearance. From France the information is not sufficiently precise to enable us to say what the true state of things is in that country. There are, however, reasons to fear that the disease, although less prevalent in some districts, is very far from being exterminated in the northern and eastern provinces.

By an Order of Council, dated June 10th, Belgian cattle—the importation of which had been prohibited—are again to be admitted, and dealt with as animals coming from a scheduled country.

### PLEURO-PNEUMONIA.

PLEURO-PNEUMONIA still prevails in many parts of the

country, and within the last month some rather serious outbreaks have taken place in the home-counties, and also in the western and northern parts of the kingdom. In our last month's report we stated that an increase in the number of infected counties existed as compared with the corresponding period of the previous month. We have again to notice another, although slight, increase. The infected counties in Great Britain now number forty-four, and forty-five fresh centres of infection have been added to those previously existing.

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### FOOT AND MOUTH DISEASE.

VERY little alteration has taken place with regard to the prevalence of this disease during the past month. Forty-nine counties are reported as infected, having a total number of centres of the disease amounting to 403. In the corresponding week of last year fifty-five counties were infected, and the centres then numbered 967.

Foot and mouth disease continues to prevail on the Continent, and to assume, in many districts, a malignant type. Besides this, the malady is reported to have spread over the whole of the agricultural provinces of Chili north of the Biobio. The losses are described as small, in consequence of the mild nature of the attack. Stringent measures have, however, been taken to prevent the meat and milk of diseased cattle being disposed of for consumption.

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### BLACK-LEG IN YOUNG CATTLE— HÆMATOSEPSIS.

THAT remarkable blood affection, known commonly as "black-leg," has again appeared in a sporadic form in several parts of the country, and under circumstances apparently the very opposite of each other. A correspondent in Norfolk writes us, "I have just been called to a lot—twenty-two in number—of home-breds, whose ages vary from six to twelve or fourteen months, among which '*the murrain*' has broken out in a severe form. Seven are dead, and I fear others will die, notwithstanding that all of them have been bled and setoned, as is our usual practice. My fear is increased by the circumstance that *three* have died since the treatment was commenced." Similar reports have reached us from

other sources, some of which clearly show that the disease was evidently due to an improper use of highly stimulating food.

The forcing system requires far more supervision on the part of the owner of animals than it often receives. Too much is left to the herdsman, who rarely fails to daily cram the animals to an extent far beyond what the organism can assimilate. The eye and the better knowledge of the master would often prove efficacious in preventing disease, were they more generally brought into use. The old aphorism, "'Tis the last ounce which breaks the camel's back," should be ever before his mind in its practical application. If this were so, his complaints of losses would be far fewer than they often are.

Curative measures have been found to have but little influence in arresting blood diseases, nor is it to be expected they ever will be very efficacious. Almost before any ordinary symptoms of disease are observed, the vital fluid has passed into a condition which no known medicinal agents can at once restore. Blood poisoning and death frequently succeed each other with a rapidity that few persons can understand, except the scientific pathologist. Although no sure reliance can be placed on curative measures, the same cannot be said of preventive means. These are of the greatest value, and often are found to act with a rapidity and power which are really surprising. Antiseptic agents stand foremost in this class, and among them the alkaline sulphites, conjoined with the spirituous tinctures of bark, ginger, gentian, pimento, &c., commonly known as diffusible stimulants, are to be preferred.

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### PARASITIC "WARBLES" IN HORSES.

THE long-continued hot and dry weather of last year seems to have proved exceedingly favourable to the development and preservation of every variety of the gad or breeze fly, and hence not only have sheep suffered this season to an unusual extent, as explained in our last issue, from larvæ of the fly within the frontal sinuses, but horses and cattle have been affected with "warbles" far beyond what is generally observed. Numerous cases of these parasitic productions have been brought to our notice in horses, and one correspondent, Mr. Steele of Sheffield, has sent us some very good specimens of larvæ from the horse. We have not yet, however, been enabled to obtain any larvæ which were sufficiently matured to assume the perfect chrysalis form, and hence we are likely to remain without specimens of the horse "warble-fly." Can any of our

readers supply this deficiency? They would not only confer a personal favour on us, but would assist materially in settling some imperfectly known peculiarities in the several varieties of the breeze-fly. Warbles on the backs of bullocks are common enough, but it is only occasionally that they exist, and then to a limited extent, on horses in this country. The larva of the ox greatly exceeds in size that of the horse, and changes earlier from a white to a brown or black colour. Essentially, however, their natural development is the same in both animals.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

“RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of May, 1871, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	NUMBER OF ANIMALS AFFECTED.					DISPOSAL.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered at place of landing.
Rotterdam	London	Pleuro-Pneumonia	1	...	...	...	1	1
Total . . .			1	...	...	...	1	1

“ALEXANDER WILLIAMS,

Secretary.

“Privy Council Office,  
“Veterinary Department, 12th June, 1871.”

### Facts and Observations.

**THE MEAT SUPPLY OF THE UNITED KINGDOM.**—The live-stock census in 1870 gave us 9,235,052 cattle of all ages, 32,786,783 sheep of all ages, and 3,650,730 pigs of all ages, representing, according to the estimate adopted, a production of 659,646 tons of beef and veal, 409,834 tons of mutton and lamb, and 151,145 tons of pork and bacon, or a total of 1,220,625 tons of meat.

The imports in 1870 were 202,172 cattle and calves, 669,905 sheep and lambs, and 95,624 pigs; or, in other words, 45,127 tons of beef and veal, 14,953 tons of mutton and lamb, and 3842 tons of pork and bacon, making a total live importation of 63,922 tons. The dead, salted, and preserved meat received from abroad in the same year was 57,743 tons.

Thus the meat supply of the United Kingdom last year amounted to 1,342,290 tons (including 5825 tons of British and Irish beef, pork, bacon, and hams, and 1147 tons of foreign and colonial bacon and hams exported), of which 63,922 tons, or  $4\frac{3}{4}$  per cent., were imported as live animals.—*Chamber of Agriculture Journal.*

**IMPORTATION OF PRESERVED MEAT FROM AUSTRALIA.**—The value of the imports of Australian preserved meat during the past year has, it is said, reached the amount of £200,000, being an enormous increase over that of 1869, when meat to the value of something over £80,000 was imported. It is stated that in 1866 only £321 worth reached this country, this being the first year that any satisfactory shipments were made. Only about one fourth of the meat consists of beef, the rest being mutton. Unfortunately, we have no means of ascertaining how much preserved meat has been disposed of for consumption, or how much remains in stock; nor have we any information as to the quantity which has been found unfitted for food.

**DECREASE OF PERMANENT PASTURE.**—According to the agricultural returns of Great Britain, 1870, a decrease of permanent pasture was found to have taken place in England, as compared with 1869, to the extent of upwards of 400,000 acres; the county of Rutland being the only one in which any increase existed. In Wales a decrease of about 100,000 acres, and in Scotland of 157,000, had taken place. A slight increase existed in the counties of Aberdeen, Berwick, Fife, Forfar, Haddington, Nairn, and Orkney. With these

exceptions, the returns show a decrease in all the other counties of England and Scotland, and in every county of Wales.

**SALE OF HORSES IN RUSSIA.**—From a report lately published at St. Petersburg by M. Mörder, on the breeding of horses in Russia, it appears that the number of horse fairs held in 356 towns and villages is 1071 every year. The number of horses sold at these fairs is upwards of 300,000, at an average price of £9 each. The total number of horses in European Russia amounts to 19,226,667, or one to every three inhabitants.

**THE SHARPEY MEMORIAL.**—The sub-committee of the Sharpey Memorial announce that they have received very nearly £1900; of this £1600 will be disposable as a first instalment of the Endowment Fund for establishing the "Sharpey Physiological Scholarship" in University College. The conditions of election to, and the tenure of, that scholarship, proposed by the sub-committee, are now under the consideration of the Council of the College. It is hoped that from time to time additions may be made to the Endowment Fund. Besides providing for the scholarship, the sub-committee have secured the services of Mr. J. P. Knight, R.A., to paint a half-length portrait, already begun, of Dr. Sharpey, for the Sharpey Library in the College. A bust of the doctor, moreover, excellent in likeness and execution, has been modelled by Mr. Thorneycroft, jun., and it is proposed to have this executed in marble for presentation to the College, and also to have reduced copies of it for those who wish to possess one. By supplying these copies at the rate of one guinea each, the expenses will be met without trenching on the Memorial Fund. The Honorary Secretaries to the Fund, Mr. Marshall and Dr. Reynolds, will be glad to receive the names of subscribers for the reduced bust.—*Lancet*.

**OWENS COLLEGE, MANCHESTER.**—Miss Brackenbury, of Manchester, has signified her intention to give £10,000 for the establishment of a medical school in connection with the College, being £5000 for the erection of suitable buildings, and £5000 by way of endowment for the support of the department. It is suggested that, as the father of Miss Brackenbury was in the medical profession, it would be a graceful recognition for the governors to endow a Brackenbury professor.

## THE VETERINARIAN, JULY 1, 1871.

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Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

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### THE CONTAGIOUS DISEASES (ANIMALS) ACT AND THE VETERINARY PROFESSION.

HITHERTO we have refrained from offering any comments upon the working of the Act relating to the diseases of animals, so far, at least, as it affects the members of the veterinary profession. We have adopted this course advisedly, and find no reason to regret having done so, as the expression of opinion on the part of the members of the profession has been in no way hindered by our silence.

From the various discussions which have taken place at meetings of veterinary societies, and from the statements which have been published by veterinary surgeons, it is quite apparent that the manner in which the Act has been carried into effect has not been satisfactory to the profession at large. The constitution of the Veterinary Department, the appointment of inspectors, and the fees which have been allowed for professional services, have at different times been made the subject of considerable animadversion.

At the time of the passing of the Act it was doubtless believed that a veterinary surgeon would fill the office of inspector in every district in which a properly qualified practitioner could be found; and when the local authority of one county after another selected police constables, in the stead of professional men, as cattle inspectors, it was anticipated that veterinary surgeons would protest against these proceedings, and even far more emphatically than they were found to do. Had veterinary surgeons as a body offered a calm remonstrance against the steps which were taken to supersede their functions, their case would have met with consideration, and there is no reason to doubt that

something would have been advanced in reply. All the objections which we have seen urged, however, have taken the form of personal complaints, and not unfrequently the Government has been blamed for permitting what it really had no power to prevent. The appointment of inspectors in every district rests entirely, under the Act, with the local authority, and so long as the inspector does not conduct himself in a culpable manner, the Government cannot require his removal. If the clause referring to the appointment of inspectors had specified Members of the Royal College of Veterinary Surgeons, the authorities would have had no choice in the matter; but we, as a profession, have not been able to obtain this privilege, nor, indeed, other privileges, which we have learned to consider of much higher importance than the exclusive right to hold inspectorships, and we have failed, not on account of want of efforts, but in spite thereof.

It is much to be regretted that misconception should prevail among veterinary surgeons respecting the powers which the Act confers upon the authorities who are charged with its execution, because complaints which are based on such misapprehensions are inevitably disregarded.

Respecting the formation of the Veterinary Department much comment has been indulged in by writers and speakers whose opinion would have been considerably modified had they known the exact circumstances of the case under discussion; for example, a writer in last month's *Veterinarian* gave utterance to an expression of regret that the most lucrative appointment belonging to the veterinary profession is held by a physician, and at the same time suggested that the office of a "cattle inspector" should be considered as beneath the dignity of a medical man. It ought to be well known by this time that the Secretary of the Department, although he is a medical man, is not a cattle inspector, that his duties have no concern with those of an inspector, and that, in short, he has no medical functions whatever.

A veterinary surgeon might possess the necessary administrative ability in an equal degree with a Doctor of

Medicine, M.D., or a B.A. ; but it is this ability which alone constitutes the qualification for the office of secretary, and not any special medical knowledge which he may chance to possess.

We entertain no wish to interfere with the full discussion of questions in the solution of which the members of the veterinary profession have an interest, and it is for this reason that we venture to suggest that absolute accuracy in all matters of fact is very essential to the success of an argument, which, however good in its general aspect, suffers seriously from incorrectness in any of the details.

What we should like most of all to see, is the expression of a determination on the part of the profession to take the lead in all matters relating to the sanitary condition of stock, not merely because there exist certain considerations of expediency, which impel the members to manifest a regard for animal health, but even more from that pure love of the art which alone fits them to carry on a war of extermination against disease in every one of its forms.

It is urged sometimes by agriculturists seeking advice in difficulty, that veterinary surgeons in general do not trouble themselves about cattle and sheep ; and the farmers show the sincerity of their belief by blundering efforts to treat the diseases of these animals, while they fly to the veterinary surgeon for advice as soon as one of the farm horses has an attack of even ordinary spasmodic colic.

This prejudice, however unfounded, exists, and it is due to the profession that every member should set to work to remove it. Let it be understood that veterinary surgeons are as competent to advise in the treatment and general management of cattle, sheep, and pigs, as they are in the case of horses, and we may hope that there will no longer exist any doubt as to the selection of proper persons to act as veterinary inspectors.

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### THE VACANT CHAIRS AT THE EDINBURGH COLLEGE.

It would appear that for the future vacant professional chairs at the Edinburgh Veterinary College are only to be filled by successful candidates at a competitive examination, as we learn that at a recent meeting of the Edinburgh Town Council, acting as trustees of the late Professor Dick, the following gentlemen were nominated as examiners of the candidates for the Chairs of ANATOMY and CATTLE PATHOLOGY now vacant at the Veterinary College, viz., Mr. Turner, Professor of Anatomy in the Edinburgh University; Dr. Dumbreck, one of the Examiners in that University; Mr. Robertson, M.R.C.V.S., Kelso, an Examiner for the Royal College of Veterinary Surgeons, and Mr. Williams, Principal of the Edinburgh Veterinary College.

We believe that this arrangement has been adopted, not only with a view to ensure the selection of competent teachers; but as a guarantee that such selection will be made solely on the ground of merit, and without any reference whatever to party or personal interest or feeling.

### Extracts from British and Foreign Journals.

#### THE DISTRIBUTION OF ANIMALS AND PLANTS.

Mr. J. E. TAYLOR, F.G.S., Secretary of the Norwich Geological Society, recently delivered a lecture on "The Geographical Distribution of Animals and Plants," from which we make the following extract :

"Mr. Taylor said that the philosophical naturalist found it impossible wholly to separate the past from the present. Geology has now established itself as one of the positive sciences. It had been removed from the regions of pure speculation into those of practical, matter-of-fact, and every-day application. Nevertheless, it had lost none of its romance,

for its old world creation of animals and plants were as startling now as ever they were. There were many people who regarded these extinct forms as something monstrous and abnormal; whereas he should have to show them that they were so connected with living animals and plants as to have a common bond of unity conjoining them. For instance, all the great divisions of kingdoms, orders, and classes now comprehending animal and vegetable forms, would equally comprehend those forms which had existed in the youth of the world. In fact, properly to understand the Divine plan concerning the organic creations of our globe, we must look upon the whole series of life forms, past and present, living and extinct, as constituting one grand whole. There were many people who were willing to accept the broad teachings of geology, who yet looked upon the present flora and fauna of our globe as a distinct creation separated from any that had gone before, and created specially to accommodate the needs or requirements of man. Those who held such a doctrine found themselves constantly travelling through bogs and quagmires. The animals and plants now in existence had come into being at various times. They did not form a distinct creation any more than as they existed together at present. They made their *début* at distinct periods, although they were now all playing their several parts in the great drama of physical life. As an illustration, one species of mollusc found fossilized in our Norwich chalk beds was still living in the deeper parts of the British seas. Since its introduction the whole of the Tertiary beds had been deposited in various parts of the world, to the thickness of many thousands of feet. This particular life-form had been obliged to shift its residence on account of alternate depressions and upheaval of areas, and yet it had existed through all these changing circumstances, and the living object was so like the fossil one, that the most experienced naturalist could detect no difference. It was to Tertiary geology that we had to look for the appearance of those life-forms which now lived on the surface of the earth. Many of the audience would be aware that the past history of our globe was divided into three great divisions of time. The first of these was named the Palæozoic, or 'ancient life' division; the second was termed Mesozoic, or 'middle life;' and the third Cainozoic, or 'recent life.' What did these three terms mean? Simply that that great division of rocks termed the Primary included the fossils of a distinct type, and, generally speaking, utterly unlike those now in existence. In fact, the further we went back in time the more unlike were the organic forms, and *vice versâ*. The

Secondary rocks included a vast assortment of fossils whose general appearance was more like recent forms. This great division of time was terminated by the deposition of our upper chalk beds. Then came the third or last great division of time in which recent forms made their appearance. With the exception of several lowly-organised animalculæ and the one species of shell-fish he had mentioned, none of the secondary life-forms were now in existence. But when we came to the Tertiary period the case was different. Shell-fish then made their appearance, and were now found fossilized, which undoubtedly belonged to existing species. Taking the several stages of this great division of time, uaturalists found that in proportion as they neared the human epoch the per-centage of living species was largely increased. One of the last of the stages of this epoch was that when our own Bramerton crag was deposited, and any of them would have been seen from the shells in that neighbourhood how like they were to those they might pick up on the sea-beach. To establish a more scientific analysis of the same shells it was found that out of more than a hundred species all were still in existence with the exception of two or three. And yet this Norwich crag, as it was termed, must have been formed scores of thousands of years before man made his appearance. All the thick beds of sand, gravel, and clay of Great Britain had been formed along the bottom of the sea which had covered nearly the whole of the British islands since then. It was when we compared the different fossils in the recent strata that we were struck with their near affinity to living forms elsewhere. The oldest warm-blooded animals termed Marsupials made their appearance in the early part of the Secondary Period. For ages they swarmed over what was then Europe and other portions of the globe. At length they became successively extinct, and the only members of the class now in existence were living in America and Australia. Their widely severed geographical areas indicated the time this group had been in existence, for the Australian continent had become isolated in the mean time. Then, again, one of the earliest mammals in the Tertiary epoch was nearly allied to the modern tapir. These, like the preceding, had had more or less of a cosmopolitan distribution. They were now limited to two species living in South America, and one in the Malay Archipelago. Their present isolation was accepted as a proof of a former land connection, for the most orthodox stickler for special creations would never contend for a creation of the same species in two different parts of the world. The geographical distribution of some animals told a most

marvellous tale of the physical changes which had taken place in various parts of the world since they came into existence. As an instance, the lecturer mentioned that the series of islands, great and small, extending from the Malay peninsula to New Guinea and Australia, looked like a series of natural stepping-stones. There was no truth more frequently forced upon the mind of the geological student than the doctrine of alternate upheavals and submergencies. All the islands in the sea were but the tops of submarine mountains and indicated sunken land. Frequently the animals and plants on the larger islands enabled us to get at the approximate time when the submergence had taken place. This was the case with the islands of the Malay Archipelago. As far as Borneo and Flores all the islands had an Indian flora and fauna. On some of the larger islands there existed the elephant, rhinoceros, and tapir, of the same species as those inhabiting the neighbouring Indian continent. Now, these animals could not have swum across; they must, therefore, have existed over the area before the more extended peninsula had been broken up into islands. It had been ascertained by soundings that these islands were connected by a shallow sea, not more than two hundred feet in depth, so that an upheaval to that amount would again attach them to the Indian continent, as continued dry land. But when we came to the islands beyond Flores, and which the casual eye looking upon a map would believe to be a continuance of these stepping-stones, naturalists found quite a distinct fauna and flora. The distance between these two groups of islands was only fifteen miles, and yet the animals and plants of each group were as distinct in their character as those of the old and new worlds. How was this? The Straits of Celebes and Lombok had running through them a very swift current, so that animals could not pass from one group to the other. It had been ascertained that the water in these straits was more than 600 feet in depth. It shallowed again as they approached Australia and New Guinea, so that an upheaval of 200 feet would connect these islands with Australia as a previous one had done with India. All the animals and plants in this second group of islands were of Australian affinities. Such birds as the cockatoo and the lorries, and such animals as marsupials, abounded. The reason, therefore, of the difference between these two groups of islands was to be ascribed to the fact that long before they were insulated by the depression of the two areas into their present form the greater Australian and Indian continents were still separated by the deep water in the Strait of Celebes, so that their fauna and flora had been distinctly

preserved. The study of the fossils of the latter Tertiary deposits led us to some singular conclusions. In Greenland there was a lignate bed of Miocene age. It abounded in fossil plants, many of them belonging to species still in existence. But where were these species living? In such widely discovered areas as South Carolina, Japan, the Cape of Good Hope, and even Australia. Then, again, they found that our modern titles of old and new worlds were quite the opposite of the truth. During the Tertiary period the flora of Europe was made up of species now principally living in America, so that the new world in this respect was really the old. The fossil plants in Greenland indicated a warm temperature, so that the great ice-cap which covered the whole of the Arctic region had not then been formed. Its formation was of a later date, and the lecturer here produced abundant evidence to show how, after this ice-cap had been formed, it increased to such a degree that Great Britain laboured under an Arctic climature. The whole of the northern hemisphere underwent a long rigorous winter of many scores of thousands of years. They would see that, as this rigorous climate advanced over temperate regions, animals and plants unsuitable to the cold would have to migrate before it. This was the reason why hundreds of plants of Arctic species—*i.e.* of the same kinds as those now living in the lowlands of Scandinavia, Lapland, and even Spitzbergen—were now found on the tops of our highest English and Scottish mountains, as well as on the higher parts of the Swiss Alps and the Pyrenees. One very important illustration of the increased cold over temperate latitudes during the glacial epoch was the occurrence of seals in the Caspian Sea and in Lake Baikal, the latter situated in the very centre of the Asiatic continent. The Caspian Sea was completely isolated, and its waters had only one third the saline properties of ordinary sea-water. Baikal was purely a fresh-water lake, and yet the two species of seals living in these isolated waters belonged one of them to the same species as that frequenting the northern coasts of Britain, and the other to a species exceedingly abundant in the North Atlantic. How had they become isolated? A knowledge of physical geography showed us that a depression of 500 feet would bring the Arctic Sea once more over the areas of the Caspian Sea and Lake Baikal, as it had once spread there. The fact was that subsequent to this extension of the Arctic Ocean the whole of Asia was raised to its present position, and the lowest hollows had become occupied by water in which these two species of seals had become shut off from their oceanic fellows, their habits being gradually accommo-

dated to their new circumstances. The six great natural history regions show how such natural barriers as high mountain chains and wide or deep seas had isolated them. The facts he had laid before them showed how natural science, out of the tangled skein of creation, had been enabled to discover the plan and purpose of the Creator in His works. They should remember that Infinity and Eternity were His characteristic attributes, and should, therefore, be prepared to expect the same qualities in His works. Surely, such a broad ground on which to study His omnipotence and omnipresence was a better, more reverent, and, therefore, a more religious view than the narrow conceptions which a limited knowledge had hitherto caused them to hold. Simplicity of plan and unity of design, like silver threads, ran through and connected the whole universe of God.—*Mark Lane Express and Agricultural Journal*.

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ON SEWAGE AND PARASITES, ESPECIALLY IN RELATION  
TO THE DISPERSION AND VITALITY OF THE GERMS  
OF ENTOZOA.

By T. SPENCER COBBOLD, M.D., &c.

(Continued from p. 359.)

OMITTING, purposely, a multitude of interesting details, I am bound to add some other particulars; the more so, perhaps, because the results were so much at variance with my expectations. Thus, the strength and vigour of the escaped larvæ appeared to depend upon the relative quantity and purity of the water in which the larvæ were immersed. In weakly diluted urine they soon perished, and even also in water where only a small quantity of decomposed vegetable or animal matters had been introduced. On August 16th I placed about 1000 eggs in a quart of clean water, in which less than a drachm of urine had been likewise added. In forty-eight hours not a single living embryo could be found. In fact, I subsequently ascertained that I could not keep the embryos alive for twenty-four hours in any water in which I had accidentally or otherwise introduced the smallest trace of mucus, blood-corpuscles, urinary crystals, or decomposing

matter of any kind. All sorts of reagents speedily killed the larvæ. Mere discoloration by carmine solution, or by a drop of permanganate of potash, in the form known as Condy's fluid, instantly caused them to assume grotesque and unnatural shapes—death sooner or later following from the disintegration and resolution of their bodies into minute sarcode masses. Still more rapidly poisonous effects were produced by the addition of a little sherry or alcohol, though the strength of the latter was not more than one part of proof spirit to fifty of water. I will only further add that the development of the larvæ was equally well accomplished in distilled water, and likewise, also, in brackish and sea-water. It may be said, indeed, that the addition of salt water revived the ciliated embryos when they were on the point of expiring in any non-saline medium.

As regards *Bilharzia*, therefore, the above data, now publicly brought forward for the first time, undoubtedly appear to favour the notion that little harm can result from sewage distribution—so far, at least, as parasitism is concerned. For the sake of those who will, perhaps, have derived some comfort in this matter, I am sorry, therefore, to be obliged to add that our experiences with the eggs and larvæ of other parasites placed under similar conditions give results which are in many respects precisely the opposite of those just recorded. For lack of time I cannot possibly do justice to this view of the case, but must content myself by offering the following fragmentary data:—

*Ascarides*.—The eggs of the common round worm, *Ascaris lumbricoides*, have been kept alive by Dr. Davaine for a period of more than five years. I have myself watched their development in fresh water through all the stages of yelk-segmentation up to the stage of an imperfectly organized, coiled, intra-chorionic embryo, and have kept them in the latter condition for a period of three months. Davaine administered some of his five-year-old embryos to rats, and had the satisfaction of finding a few of these eggs in the rodents' fæces, with their embryo still living, but striving to emerge. He also gave eggs to a cow, and introduced others into the stomachs of dogs in small linen-covered flasks. As a general result, it may be said that the embryos escaped their shells, but those eggs in which the yelk-segmentation had not arrived at the early embryonic stage remained undigested.

So far back as 1853, Verloren reared coiled intra-chorionic embryos in the eggs of *Ascaris marginata* within a period of fifteen days, in distilled water. I have also reared the em-

bryos of this species in fresh water, and have kept them alive for a period of nearly a year and a half, at the expiration of which time, and during the warm weather, some few of them succeeded in making their escape.

According to Davaine, and speaking generally, the eggs of many nematode species will readily retain their vitality though long exposed to dryness, but their yolk contents will not go on developing during this period of exposure. In the case of *Ascaris tetraoptera* of the mouse, however, embryonic formation goes on in spite of the absence of external moisture. He has noticed the same thing in the oxyurides of rodents. Dryness does not even destroy the eggs of *Ascaris lumbricoides* and *Tricocephalus dispar*. It would seem, in short, that the eggs of nematodes, which normally take up their residence in cats, dogs, and the carnivora which reside in arid regions or deserts, will develop embryos in ova without a trace of moisture. Davaine thinks it is not necessary that nematode embryos should pass through any intermediary bearer, and he believes that they are often directly transferred to the stomach of their "hosts" whilst adhering in the form of an impalpable dust to the coats of their bearers, whence they are detached by the animals' frequent habit of licking the fur.

With the eggs of the *Ascaris megalocephala* of the horse, I have performed numerous experiments. I have reared the embryos in simple fresh water, and have found them during warm weather escaping before the expiration of five months. I have also succeeded in rearing these larvæ in pond mud, noticing, at the same time, that after their exclusion they grow more or less rapidly up to a certain point, after which they appear to stop. The addition of horses' dung to the soft wet mud in one case, and of cow's dung in another, neither appeared to advance or retard the process of embryonal formation so long as the embryos were enclosed in their shells. On the other hand, when I reared the embryos in simple horse-dung, purposely kept moist, they attained a decidedly higher degree of organisation than those reared in wet mud or water. Having watched hundreds of these particular larvæ under varying conditions, I have come to the conclusion that, after their escape from the egg, their activity, growth, and strength is most marked whilst living on those media which happen to be the most turbid and impure.

One of the most desirable aims experimenters have in view is to get a true conception of the developmental relations of the little threadworm, which, I believe, infests some three millions of the inhabitants of this country. I have experi-

mented largely with this entozoon also, and I have tried in vain to rear it in a monkey. I naturally selected this animal, thinking that the conditions (in view of man's asserted relationship and antecedents) might turn out to be eminently favorable. However, I only obtained negative results; and as regards the rearing experiments, under other conditions I only once succeeded in producing that vermiform stage of embryonal development which, as is now known from Vix and Leuckart's researches, succeeds that of the tadpole-shaped condition. I did not, in short, expose the eggs in water to a sufficient increase of temperature. In this connection, Leuckart remarks ('Die Menschlichen Parasiten,' Band ii, s. 326)—"One only needs to expose the eggs of the human threadworm to the action of the sun's rays in a moistened paper envelope, when already, after the space of five or six hours, the tadpole-shaped embryos become slender, elongated worms, which are not altogether unlike the sexually mature oxyurides in form, displaying under the warmth rather lively movements." Leuckart also finds that, in cases where the eggs have remained for a lengthened period in the intestinal canal, the embryos are capable of developing into this elongated or vermiform stage whilst still in the human bearer. Speaking of these intra-chorionic embryos, he says—"Not only are these elongated embryos found in the fæces, but also in the mucus of the rectum above and around the anus."

To cut the matter short, Leuckart holds, in partial opposition to Vix, that, generally speaking, or under ordinary circumstances, the vermiform larvæ escape from their eggshells when the ova have been swallowed by some new bearer. In other words, we take in the eggs either with food or with drink, or in some other way; and it then follows that, if their embryonic contents have acquired the vermiform stage, the gastric juice, aided by the struggles of the enclosed embryo, will ensure the escape of the larva. For myself, I will only say that, for the ultimate development of the mature worm, I cannot yet follow Davaine and others, and so disallow the necessity either of an intermediary animal or vegetable bearer, or, failing these, the assumption of a higher larval stage, either in moist earth, soft mud, or open waters. The question is by no means settled.

I may here add, parenthetically, as it were, that during my attempts to rear oxyurides in rotten apples and pears, I fell in with two species of *Anguillula*, severally belonging to the genera *Aphelenchus* and *Plectus* established by Dr. Bastian. I allude to them here merely in reference to their extraordi-

nary tenacity of life. Thus, although these free nematode worms were perfectly dried up in portions of fruit which had been kept for several days in a hard and even brittle state, they revived and resumed their wonted activity "after soaking for a few hours in water."

At the risk of doing positive injustice to a truly large and complicated subject, I must now bring these brief and, I fear, somewhat desultory remarks to a close. As regards the tæniæ, it is notorious that they are supplied with remarkably thick egg-shells, and, were this not the case, it is difficult to understand how their enclosed and delicate six-hooked embryos could long survive their expulsion from the host and from the proglottids. How long they are able to retain their vitality when disposed by sewage and other means is a point worthy of further inquiry; but, meanwhile, taking into consideration various data derived from indirect sources, I strongly suspect that Küchenmeister was not far wrong when he surmised "that the eggs might lie through the winter in ice and snow, be carried about in the water for months by the stormy weather of spring, and yet at the expiration of this period develop their brood as soon as they have arrived at a suitable intestine." Into cesspools and drains, as he elsewhere says, "the tapeworm of the human subject evacuate their eggs; the eggs are then thrown upon grass, roots, and other vegetable matters, along with liquid manure, and they are swallowed by pigs, which wallow in such filth." He might, also, have added that, on sewage farms, the cattle likewise must needs come in for their share of these measly-meat producing germs.

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#### PARLIAMENTARY REPORT ON VACCINATION.

THE Select Committee appointed to inquire into the operation of the Vaccination Act (1867), and to report whether such Act should be amended, have considered the matter referred to them, and have agreed on the following Report:

"Eight sittings of your committee have been occupied in hearing the evidence of persons who assert that vaccination is useless and injurious, and who, therefore, object to its enforcement and encouragement by the law.

"After careful consideration of this evidence, and of medical and other evidence given in reply, your committee agree with the general opinion—

"That the cow-pox affords, if not an absolute, yet a very

great protection against an attack of smallpox, and an almost absolute protection against death from that disease.

“That if the operation be performed with due regard to the health of the person vaccinated, and with proper precautions in obtaining and using the vaccine lymph, there need be no apprehension that vaccination will injure health or communicate any disease.

“That smallpox, unchecked by vaccination, is one of the most terrible and destructive of diseases as regards the danger of infection, the proportion of deaths among those attacked, and the permanent injury to the survivors; and, therefore,

“That it is the duty of the State to endeavour to secure the careful vaccination of the whole population.

“Your committee have no doubt that the almost universal opinion of medical science and authority is in accordance with Dr. Gull when he states that ‘vaccination is as protective against smallpox as smallpox itself;’ with Dr. West, when he gives as the result of his experience as Physician to the Children’s Hospital in Great Ormond Street, and as having had charge of between 50,000 and 60,000 children since 1835, that ‘he does not think that vaccination does produce disease;’ and with Sir William Jenner, when he says, ‘I should think myself wicked, and really guilty of a crime, if I did not recommend every parent to have his child vaccinated early in life.’

“Against this evidence in favour of vaccination, the prevalence of the present smallpox epidemic, especially in the metropolis, has been alleged.

“Your committee, however, believe that, on the one hand, if vaccination had not been general, this epidemic might have become a pestilence as destructive as smallpox has often been where the population has been unprotected; and that, on the other hand, if this preventive had been universal, the epidemic could not have approached its present extent.

“Vaccination is generally believed to require repetition about the age of puberty; but, as it is almost impossible to enforce re-vaccination, it is most important that all children should be vaccinated, both for their own sakes and that of the community, to prevent their catching and spreading disease.

“There are three classes of children who being, by the conduct of their parents, left unvaccinated, are themselves in great danger, and may become centres of infection to others:—1. There are the children who are utterly neglected by their parents. 2. There is the much larger number of

children of parents who, while not denying their duty or desiring to disregard it, postpone its fulfilment, and who from carelessness or forgetfulness delay to protect their children until driven to the vaccine station by the panic fear of an epidemic. 3. There are the children of those parents, very few in proportion to the whole population, who assert that vaccination will do harm.

“With regard to the first and second of these classes, there can hardly be any objection to the principle of a compulsory law, though there may be practical difficulties in its application; but in dealing with the third class, it becomes necessary to weigh the claims of the parent to control as he thinks fit the medical treatment of an infant child, as against the duty of the State to protect the health of the community, and to save the child itself from a dreadful disease.

“While weighing these conflicting claims, your committee have had to consider the effect of the change in the law introduced by the Act of 1867, which, contrary to the provisions of the previous English or present Irish Acts, makes the parent liable to repeated convictions and penalties for not allowing his child to be vaccinated.

“There appear to have been several cases of infliction of more than one fine or imprisonment in regard to the same child; and your committee, though by no means admitting the right of the parent to expose his child or his neighbours to the risk of smallpox, must express great doubt whether the object of the law is gained by thus continuing a long contest with the convictions of the parent.

“The public opinion of the neighbourhood may sympathise with a person thus prosecuted, and may in consequence be excited against the law; and, after all, though the parent be fined or imprisoned, the child may remain unvaccinated. In such a case the law can only triumph by the forcible vaccination of the child.

“In enactments of this nature, when the State, in attempting to fulfil the duty, finds it necessary to disregard the wish of the parent, it is most important to secure the support of public opinion; and as your committee cannot recommend that a policeman should be empowered to take a baby from its mother to the vaccine station, a measure which could only be justified by an extreme necessity, they would recommend that whenever in any case two penalties or one full penalty have been imposed upon a parent, the magistrate should not impose any further penalty in respect of the same child.

“It has been suggested that the parent’s declaration of

belief that vaccination is injurious might be pleaded against any penalty, but your committee believe that if the law were thus changed it would become a dead letter. Prosecutions would soon cease, and the children of the many apathetic and neglectful parents would be left unvaccinated, as well as the children of the few opponents of vaccination.

“Your committee are glad to find that wherever the Guardians endeavour to carry out the law it is very generally and, indeed, almost universally enforced; but there are some amendments by which they think the Act referred to them might be made more efficient.

“By section 28 the Guardians of any parish may appoint an officer to promote vaccination and to prosecute persons offending against the Act; and it appears that in the majority of the unions such officers have been appointed, and that the law in consequence is more efficiently administered. Your committee recommend that this appointment be made obligatory on the Guardians.

“They are also strongly of opinion that the registration of vaccination should be simplified; that the vaccination officer should keep the vaccination register, and therefore that the certificates under the Act should be sent to him; and also that the registrar of the district should forward to him a monthly return of births and of the infants that have died.

“The suggestion has been made that a considerable proportion of the expenses of working the Act should be contributed from moneys to be voted by Parliament. Your committee believe that efficient working would be promoted by such contribution. Without doubt, local agency must be relied on for administration, but central inspection and control are also needed, and would be much more powerful if a payment towards the expenses could be withdrawn in cases of maladministration.

“Your committee cannot conclude without expressing their opinions on two questions beyond the scope of the Act referred to them, though not of the subject of their inquiry.

“A compulsory registration of births, such as exists in Scotland and Ireland, is needed, as the non-registered children are those most likely to escape the notice of the vaccinators.

“There also appear to be disadvantages in the present division of sanitary responsibility between the departments of the Government. The Medical Department of the Privy Council inspects the vaccination of every union, and advises the Poor Law Board in regard to the arrangement proposed

by Guardians, which arrangements are then approved or disapproved by the Poor Law Board.

“This division of duties cannot but tend to delay and to non-efficiency, and though your committee do not pretend to decide to which of these departments the duty of administering the law should be intrusted, they do not think such duty should be shared between two offices, and they believe that one and the same department should advise, inspect, approve, and control.

“*May 23, 1871.*”

#### ON ATTRACTION CAUSED BY VIBRATIONS OF THE AIR.

PROFESSOR CHALLIS has communicated to the *Philosophical Magazine* a paper, in which he maintains that the condensation in waves propagated from a centre will vary inversely as the distance, and that the rate of diminution of the condensation or rarefaction with distance from the centre will be continually changed from the law of the inverse square of the distance to that of the simple inverse of the distance, provided there be alternate condensations and rarefactions, as seems to be inevitable; for it is contrary to known hydrodynamical laws to suppose the possibility of a solitary wave of condensation. The above-mentioned velocity gives rise to a continual flow from the rarefied into the condensed parts, and just in the proportion required for altering the law of diminution with the distance from the inverse square to the simple inverse. Professor Challis believes that the attraction of magnetism is caused by vibration, to which he might have added the attraction of gravity—a doctrine long since propounded by Robert Hooke, and of which an account is given in his posthumous works. In the revolving grate erected by Boulton and Watt beneath a steam-boiler at the Bank of England, the coal was fed by a scoop moved by a cam, which advanced the scoop gradually over an orifice, carrying coal with it, and then suddenly drew back the scoop, when the coal, by its inertia, remaining behind it, fell upon the fire. In this case we have a backward and forward motion causing bodies subjected to it to travel in a certain direction; and if we suppose a similar motion to exist in the particles of bodies, an attraction like that of gravity will be the result.—*Journal of the Society of Arts.*

## Analysis of Continental Journals.

By G. FLEMING, M.R.C.V.S., Royal Engineers.

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EXPERIMENTAL RESEARCHES ON THE ALTERATIONS OF NUTRITION WHICH ARISE IN VARIOUS TISSUES AFTER SECTION AND LIGATURE OF THE NERVES AND SECTION OF THE SPINAL CORD.

By Drs. LABORDE AND LEVEN.

*Recueil de Méd. Vét., August, 1870.*

*Lesions of Nutrition consequent on the Section of a Mixed Nerve—the Sciatic.*

At a recent meeting of the Bibliological Society of Paris, Drs. Laborde and Leven detailed some interesting experiments they had instituted, with the intention of ascertaining the influence of nervous power—or rather the loss of nervous power—on nutrition. To render this *exposé* more facile and comprehensible, as they say, we will from the commencement establish the following division:—

We will consider apart the tissues other than the *muscular tissue*.

The state of the muscles will be noticed separately, and we will give to this important study all the importance, according to the species, that it merits. Lastly, we will elucidate the results of our researches on the experimental modifications of the nervous tissue itself.

### *Section of the Nerve.*

1. *Temperature*.—The study of the modifications of temperature in the alterations of nutrition is most important, and we have not neglected it. Nevertheless we have not carried it so far as could have been desired, for want of a suitable instrument, which, in our opinion, is a requirement yet to be attended to in experimental physiology, and which we hope to be able to supply. But we think that we have obtained some results, which, imperfect as they are, will not be without interest, and certainly deserve to be related.

Section of the *right sciatic nerve* in an adult vigorous guinea-pig, on May 9th, 1869:—

Temperature before the operation . . . 36° (Centigrade) in the mass of  
the muscles.  
,, immediately after . . . . 36°, idem.

Eight days after the division, May 16th :—

Right side . . . 38° in the muscles of the thigh.  
Left side . . . 37°, idem.

Twenty-one days after, May 30th :—

Right side . . . . 36°, 8.  
Left side . . . . 37°, 6.

Thirty days after, June 10th :—

Right side . . . . 36°, 3.

A glance at this table is sufficient to show the excessive modifications in the temperature occurring from the moment the nerve was divided. At another time we will deduce from it the information it conveys, with regard to the study of the experimental lesion to which it is related.

2. Examination of the other tissues besides the muscles, comprising the skin and its appendages, vessels, bones, &c.

A. *The Skin in general.*—One of the first modifications produced by division of the sciatic nerve, is that which is easily noted in the skin of the sole of the corresponding foot. This modification consisted essentially—at first, in a change of colour—relative paleness, more or less pronounced; then *dryness, roughness*, and the formation of scales which were easily detached by slight scratching. These scales also became detached spontaneously, and left exposed small bleeding excoriations. In a short time these superficial alterations were succeeded by a true ulcerative condition; the period between the section of the nerve and the manifestation of these alterations was from six to eight days, though a practised eye could detect them from the fifth day.

B. *Hair, Horn, Tissue.*—With the tegumentary tissue there coincided alterations in the hair which did not differ materially from those observed and described by M. Brown-Séguard. The hairs at the extremity of the paw lost their *gloss* and *smoothness*; they became brittle, and often broke spontaneously towards their root, becoming reduced by fragments, but not altogether disappearing; while other hairs were shed integrally, leaving denuded patches on the skin.

The hair-roots offered alterations which were doubtless connected with the spontaneous destruction of the hairs. We shall again refer to the changes in the deeper layers of the skin and its vessels, but for the present we must confess that we have not been able to determine satisfactorily the lesions occurring in the hair-bulbs.

The claw in its turn disappeared towards its extremity; its destruction was molecular and continuous; the horny tissue became, like the hairs, very brittle, and a slight scratching on the surface of a spontaneous fracture, which was always at the extremity of the claw, was sufficient to detach it in large pieces. The nail gradually disappeared completely,\* and the ulceration of the skin which ensued was produced in a *circular* manner, and with more or less rapidity. The precise periods will be given at another time.

c. Afterwards the bones of the phalanges became *denuded*, and in a short time nothing was left but the skeleton of the paw, which assumed, particularly in the rabbit, the appearance of a crooked claw. But the bones were not only denuded, for they became the seat of an ascending *ulcerative process*, which was nothing else than a *dry molecular necrosis*, with partial destruction of the bone tissue.

d. The vessels of the affected limb participated in this morbid condition, which, from its real nature, must be evidently classed amongst those kinds of alterations called *necrobiotic*. The vessels participated in two ways: In the first place, parallel to the skin they submitted to an ascending ulceration which was the commencement of trifling hæmorrhages on the surface of the wound, but which did not continue long, and were more especially noted during the initial period of the alteration. In the second place, a little above the point where the lesion ought to have ceased, and where definitive cicatrisation should have begun, the vessels when dissected and carefully studied were found to be completely obliterated internally, either by *coagula* more or less recent, or by an adhesion of their walls, which would appear to testify to previous irritation. In our complete memoir we shall give at greater length all the details of these peculiarities, which can only be presented here in outline.

It may be added, relative to the vessels, that, in the cases of nerve section, hæmorrhage is readily induced, and therefore very serious. The rabbit already referred to, and in which a small artery above the hock was cut by mistake when removing a shred of muscle for examination, would really have died of hæmorrhage had not the vessel been properly ligatured

It may also be stated that the vascular alterations affect the vessels distributed among the muscles, as well as those connected with the branches of the cut nerve; these altera-

\* In certain cases, instead of undergoing this process of partial destruction, the claw is shed at once, as took place in the rabbit which was shown to the Society, and whose sciatic nerve was divided by M. Brown-Sequard.

tions, we may at present mention, are characterised by *granulo-adipose* degeneration of the wall of the vessel.

The evolution of this morbid state having been accomplished, cicatrisation begins; but at first it is very imperfect and difficult, and it is only completed after great efforts and sudden changes.

There is to be remarked an important fact which affords its own explanation: the period of definitive cicatrisation coincides with the manifestations of the following phenomena:—*partial return of sensibility in the affected limb; period of reparation of the muscular and nervous tissue, and the cessation of epileptiform attacks, when there are any.*

The following are the marked periods of the principal phases in the alterations which have been alluded to:—

The commencement, as we have said, was clearly manifested from the fifth to the eighth day. In a guinea-pig, the section of the sciatic nerve having been made on the 9th May, the general necrobiotic process was completed on the 3rd July, when it was shown to the Society; but the alteration was already very marked in the second half of June. Cicatrisation, which began in August, was achieved on the 18th September. So that in this instance the entire period was four months.

M. Brown-Séguard's rabbit had the sciatic nerve divided on the 25th February, 1869. On the 7th August, when it was sent to us, we noticed very apparent modifications of the cutaneous and pilous systems; and, in addition, the commencement of separation of the extremity of the large toe. On the 22nd there was complete amputation of this toe; the small toe was attacked and the claw almost destroyed, and there was inter-digital ulceration. September 11th, all the toes were denuded, and the phalanges exposed; there was also osseous necrosis, and circular and ascending ulceration; the wound was easily made to bleed. On the 20th September the foot was a veritable claw (*griffe*). From October, efforts at cicatrisation, which are still in operation. In this animal, then, we observed the change after the fourth month, but in our opinion it had begun before that period; it had reached its apogee in the course of the sixth month, and was in process of cicatrisation in the seventh. There was a real difference in point of time with the guinea-pigs, but this is easily explained by the dissimilarity in the strength and constitutional vigour of these animals.

In a future paper we will study, comparatively, the same alterations in cases of *ligature* of this nerve and section of the *spinal cord*.

## CENTRAL CHAMBER OF AGRICULTURE.

## IMPORTATION OF CATTLE.

At the ordinary monthly meeting of the Council, held June 6th, at the Salisbury Hotel, Sir Massey Lopes, M.P., President of the Chamber, in the chair, the Secretary read communications from various chambers of agriculture respecting the importation of foreign cattle, which viewed with alarm the Order of Council abolishing the safeguard against the importation of foreign cattle from districts known to be infected by pleuro-pneumonia.

Mr. T. Wilson moved, and Mr. Masfen seconded the following resolution:—"That this council views with alarm the recent Order of Council by which cattle direct from Russia are taken to the Metropolitan Market, and by which also cattle from Holland, where pleuro-pneumonia now extensively exists, are permitted free access to any part of the United Kingdom after undergoing a detention of only twelve hours."

## CENTRAL VETERINARY MEDICAL SOCIETY.

## [OFFICIAL REPORT.]

THE monthly meeting of this Society was held on June 1st, the President, G. Fleming, Esq., F.R.G.S., M.R.C.V.S., &c., in the chair.

Messrs. H. Stanley, W. Helmore, J. Broderick, and T. Hetherington, were present for the first time since their election, and duly apprised of their admission.

## ANTIDOTES FOR STRYCHNINE.

*Mr. F. J. Mavor* read a paper on "The effects of Atropine and Morphine in neutralising the action of Strychnine," detailing a number of experiments performed by him to determine the results of the action of these remedies singly, and in combination with each other. From the observations recorded by Mr. Mavor, there appears abundant reason for confirming the assertions of previous investigators, that substances of the narcotic class possess a remarkable power of controlling the violent tonic spasms occasioned by the effects of strychnia on the nervous system. Such observations, when perfected by additional investigation under other and modified influences, will doubtless prove of great service in advancing the success of treatment in poisoning by the alkaloid, and also in

extending its value as a remedial agent in many diseases where, at the present time, the barrier to its general use is the transient and uncertain nature of its effects.

In the discussion which followed the reading of the paper, the Fellows generally corroborated the views held by Mr. Mavor, and supported him in the belief that valuable results may be anticipated by persistent and accurate observations on the subject of treatment by subcutaneous injection—not only therapeutically, but in a toxicological point of view.

#### TRACHEOTOMY.

*Mr. T. W. Gowing* next read a paper on the operation of "Tracheotomy as had recourse to in the Lower Animals," illustrating his subject by numerous and important facts derived from his extensive experience as spread over a lengthened practice. Numerous instruments were produced, and among them a new vulcanite tube, designed to overcome some of the inconveniences and difficulties connected with the operation. The various methods of giving relief to the patient in the operation were tersely reviewed, and the attention of the junior practitioners drawn to the disadvantages under which the operator has often to labour in emergencies, which admit of little or no time for thought, or opportunity for choice of principles.

In the short space of time allotted for debate, owing to other important business before the Society, ample justice was scarcely done to the subject. The thanks of the meeting were conveyed to Mr. Mavor and Mr. Gowing, respectively, for the introduction of subjects of such great importance to the profession.

#### VETERINARY EDUCATION.

*Mr. Greaves*, of Manchester, who had kindly attended by request, afterwards read an exhaustive paper on the question of the "Education of the Veterinary Student." The views of the meeting were fully and freely expressed on this all-important subject; but as the Central Veterinary Medical Society, by the provisions of its bye-laws and regulations, could not include the matter in its proceedings, no report was made. An opportunity, however, will shortly be given for Mr. Greaves' sentiments to be fully known, as the paper is to be reproduced before one or more of the Veterinary Associations.

The meeting was numerously attended, many of the most eminent Veterinary Practitioners from a distance being present.

## NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE twenty-eighth quarterly meeting of this Society was held at Mr. Gray's, Adelphi Hotel, Newcastle-on-Tyne, on Friday, 16th June, 1871, at three o'clock in the afternoon.

The members present were:—Messrs. R. Brydon (President); D. Dudgeon, Sunderland; R. Hall, Stockton; J. Gofton, North Shields; H. Hunter, Newcastle-on-Tyne; C. Hunting, South Hetton; D. Macgregor, Bedlington; C. Stephenson, Newcastle-on-Tyne; M. Hedley, Darlington; and the Honorary Secretary.

D. Maclean, Esq., of the Royal Artillery, Newcastle, attended as a visitor.

The minutes of the preceding minutes were read and confirmed. Letters were read by the Hon. Sec. from J. E. Peele, Durham; T. Foreman, Blackhill; W. Marshall, Glanton; and H. Peele, Hartlepool, regretting their inability to attend the meeting.

The Treasurer read his annual report, and stated the funds of the association to be in a prosperous condition.

*Mr. Hunting* proposed that Mr. George Elphick be admitted a member of this Society. This was seconded by *Mr. Stephenson*, and carried unanimously.

*Mr. Stephenson* moved that Mr. Maclean be admitted an honorary member of this Society, which being seconded by *Mr. Hunting*, was carried with acclamation.

The President then delivered the following inaugural address.

GENTLEMEN,—According to rule, a meeting of this Society ought to have been held in January last, but the gradual decreasing attendance at recent gatherings induced me, with the sanction of the Council, to try, by way of experiment, a longer interval between the meetings, in the hope that a better attendance would thus be ensured.

The declining popularity of our Association I ascribe to the same cause which has been, and still is, the great stumbling-block to progress in the veterinary profession, namely, want of union among its members. That the want of union has debarred our profession from many advantages which otherwise it would have long since enjoyed, few I think will deny who have watched with interest our struggling fortunes.

Why, then, does this want of union exist? from what source does it spring? and how can we best counteract its baneful effects? are questions the solution of which every veterinarian who has the welfare of his profession at heart should earnestly attempt.

There are, doubtless, many causes of this disunion, and there are not a few of us, perhaps, who are not in some degree more or less responsible for some of them. But the chief source of disunion resides, I believe, in our governing body, namely, the Council of the Royal College of Veterinary Surgeons. This at first sight may seem absurd when we look at the eminent men of whom it is composed, and the carefully framed charter and bye-laws under which they act. But if we look at the way in which the members of the Council are elected it alters the case. Theoretically every member of the veterinary profession has an equal voice in the choice of the Council; but practically the privilege is only enjoyed by a small minority.

The election of the Council takes place in London once a year, and

to take part in it, it is necessary to attend the annual May meeting. This, I daresay, is pleasant enough to members of the profession residing within a reasonable distance of the metropolis; but what is the case with those who are placed in distant provinces, such as Scotland, Ireland, or even the north of England? Why, gentlemen, they are practically debarred from taking any part in the election at all, unless they choose to undertake a long journey entailing great expense and loss of time, neither of which perhaps can be conveniently spared.

Now, hundreds of worthy members of our profession are placed in this predicament—the Council is elected year by year, and they feel and see they have practically no voice in the matter. This state of things is productive of a twofold result. First and most evident, the bulk of the Council are members of the profession residing in the metropolis or near it; a few are resident in the midland counties of England, but rarely do any of them belong to places north of this. Secondly, it tends to generate in the minds of those who are situated in distant parts of the kingdom feelings of carelessness and indifference as to the sayings and doings of the Council, knowing they are in no way responsible for them.

Do not for a moment, gentlemen, suppose that I am casting any slur on the Council; on the contrary, as a body I admire them, and for the majority of its members I entertain the highest respect, and for the manner in which they perform their arduous and, too often, thankless duties they are worthy of the highest praise. Nevertheless, the mode of election is productive of the results to which I have alluded, and if there is any force in our motto, "Union is strength," the sooner a remedy is devised and applied, the better for the wellbeing of the profession at large.

Now, I ask, Could the Council not be elected by voting papers? and if not, why not? Perhaps the charter confers no such power, but surely the power might be obtained. Members of Parliament for universities are elected on this principle, and ours seems to be a parallel case.

If some such plan as this is not adopted both the Scotch and Irish will soon be demanding charters of their own, and under present arrangements they cannot be much blamed for doing so. The Scotch, as you are aware, have already made the attempt, and although it resulted in failure, you may rely upon it the feelings which prompted them to try before are keenly alive still, and unless concessions are made attempt will follow attempt until success crowns their efforts.

Now, gentlemen, I may be wrong, but my firm conviction is the majority of Scotch members would be fully satisfied if voting papers were introduced; and when we consider it as an act of simple justice, without in any way detracting from the rights or privileges of more fortunately placed members, no time should be lost in making the concession.

Another prolific source of disunion I believe to be the veterinary certificate granted by the Highland and Agricultural Society of

Scotland. This certificate, besides being illegal, is entirely anti-union in its effects, and has done the Royal College much harm. I am glad to observe, however, that the members who hold the Highland certificates, and who afterwards come forward for examination before the board of the Royal College, yearly increase; and I would fain hope that as education advances, and the objects of our charter are more generally understood, the Royal College diploma will be considered indispensable.

The Highland Society grant their certificate under the impression that they are conferring a direct benefit on veterinary science. Now I have long thought that if the conditions and objects of our charter were fully explained to the directors and members of the Highland Society, whether by circular or otherwise, they would see it to be their duty to discontinue the issue of the certificate altogether, as it must be evident to men of sense that though competition in teaching schools can only be beneficial, it is equally evident that competition in boards for granting diplomas must have quite a contrary effect. I am well aware an abortive attempt has been made in this direction already, but that is no reason why it should not be repeated, and I am sure were the Society once convinced of the propriety of ceasing to grant their certificate, they would be equally ready to support the Royal College of Veterinary Surgeons by every means in their power, as their sole object is to further the true interest of the veterinary profession.

I now wish to say a few words respecting veterinary medical associations such as this, which are now very generally established all over the kingdom, and justly so, as they are most admirable institutions; and while I frankly admit the great amount of good they have done and are doing, I think, at the same time, their utility might be greatly extended by having some system of united action, something similar to that adopted by Chambers of Agriculture.

The advantages which would be derived from a system of this sort are most apparent. Suppose any important subject was under deliberation by our governing body, or any sudden outbreak of a contagious disease had taken place, or any measures affecting our profession were in progress through Parliament, the subject could at once be taken up by every association in the kingdom, and resolutions passed and forwarded to Parliament or our governing body, as the case might be, the opinion of the entire profession being thus obtained with little more than a week's notice. At present the associations meet all over the country, generally to discuss some subject fixed three months previously, and while one or two may discuss and pass resolutions on some important current event, the chances are that nine or ten other associations take no notice of it whatever; whereas if resolutions were forwarded from each of the associations, it would bring to bear a pressure and power either on Parliament or on the Council of the Royal College which could not fail to be felt and acted upon.

Do not think, gentlemen, that I in the least underrate the value of discussions such as we have at present on particular diseases; but I

do think our associations should be used less exclusively for this purpose, and that arrangements should be made for holding meetings at any time occasion may require, instead of at stated periods as at present.

Another subject to which I would wish to direct your attention is the establishment of a weekly paper—not instead of the *Veterinarian*, but supplementary to it. This is a desideratum which is becoming more and more felt every year, and it seems most astonishing how a large body of men engaged in a scientific calling can get on without it. Why, almost every trade has a paper especially devoted to its interests, and though the *Veterinarian*, as a journal, is unexceptionable, a month is much too long to wait for important information in these telegraphic days. I am aware attempts in this direction have hitherto failed, but that is no reason why they should not be repeated, and if no better arrangement can be made, surely there is nothing to hinder the *Veterinarian* being issued in weekly parts, though, of course, an independent paper would be more satisfactory, as it would allow of the continuation of the *Veterinarian* in its present form.

The subject of veterinary education has of late years received much attention, and great and gratifying progress has been made. Both preliminary and practical examinations may now be considered firmly established, and their value and importance can scarcely be over estimated. The usual period of study at college, however, might with great propriety be lengthened, as it is too short for any student, whatever his abilities may be, to become thoroughly proficient in so many different branches: the subjects of histology and botany should also receive much more attention than has hitherto been devoted to them. I hope our governing body will see the necessity of doing something in this direction, and that the different teaching schools will cordially co-operate with them in attaining so desirable an end. The independent attitude assumed by the London Veterinary College towards the Royal College of Veterinary Surgeons on matters relating to the preliminary and practical examinations is much to be regretted, as it forms a dangerous precedent, and is quite contrary to the charter which gives the Royal College full power and control over the different teaching schools in such matters. I trust, however, we will see no more of this, and as the Council only seek to advance the true interests of the profession, it is evident that no measure for attaining this end can be detrimental to the interests of any of the teaching schools.

Before concluding, gentlemen, allow me sincerely to thank you for the great honour you have done me in electing me your President. I cannot promise to discharge the duties in the admirable manner which you have been accustomed to see done by my predecessors; but I will do the best I can to further the interests of this Association during the few remaining months I shall be in office. I can rely on our worthy Secretary ably seconding me in this, and if the members will only co-operate with us, we will make up for the bad beginning for which your President, and he only, is to blame.

*Mr. Dudgeon* moved that the discussion on the President's address be adjourned till the 14th July, as it contained several important questions which required to be freely and fully considered. This was seconded by *J. Gofton*, and carried.

*Mr. Stephenson* proposed that a vote of thanks be awarded to the President for his very able address, and that the Secretary be instructed to send it for insertion in the *Veterinarian*, which was seconded by *Mr. Hedley*, and carried unanimously.

The members afterwards sat down to a sumptuous repast, and spent one of the happiest meetings they had ever enjoyed.

JOHN MEIKLE, *Hon. Sec.*

## LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE twenty-eighth quarterly meeting of the Liverpool Veterinary Medical Association was held on the 12th of May, in the Medical Hall, Hope Street.

The chair was taken at 7.30 by *Mr. R. S. Reynolds*. Shortly afterwards a telegram was received from the President, *Mr. James Storrar*, expressing regret at his unavoidable absence.

Present—Messrs. Reynolds, Morgan, Ackroyd, Kenny, Elam, Harwood, Robinson, Liverpool; Thomas Greaves, Manchester; and the Secretary.

Letters of apology were read from Messrs. Hunting, Cartwright, T. D. Broad, Wm. Robinson, David Rowland, Carless and Son, W. G. Naylor, James Taylor, W. A. Taylor, Barnes, and G. Fleming.

*Mr. Morgan* proposed, and the *Secretary* seconded, that *Mr. James Kenny* and *Mr. Roger Charles Parke* be elected members of this Association, which was carried.

*Mr. Reynolds* proposed, and *Mr. Morgan* seconded, the election of Messrs. George Fleming and T. D. Broad, as Honorary Associates, which was carried.

*Mr. Morgan* proposed, and *Mr. Harwood* seconded, that the Secretary bring forward at the next meeting a revised list of rules for the Association, which was carried.

*Mr. Greaves* proposed that *Mr. George Morgan* be elected the Life Governor to the Benevolent Fund from this Association, which was seconded by *Mr. Richard Reynolds*, and carried unanimously.

A letter was read from *Mr. M'Donald* (accompanying the Essay to be read), stating the inability of the Essayist, *Mr. R. C. Parke*, to attend in consequence of severe illness. The duty therefore of reading the essay, entitled "The Physiological Phenomena of Reproduction and the various modes of it," devolved on the Secretary. At the conclusion a lively discussion ensued, *Mr. Greaves* proposing, and the *Chairman* seconding, a vote of thanks to the author for his able and instructive Essay.

Owing to the unavoidable absence of so many members interested

in the shoeing question, it was proposed and seconded by *Messrs. Greaves and Kenny* respectively, that Messrs. Elam, Leather, Harwood, Ackroyd, and the Secretary, with power to add to their number, be requested to act as a Committee to investigate this subject, and report thereon at the next general meeting, which was carried.

The twenty-ninth meeting of the Association will be held in the same place on Friday, 11th August, at 6 p.m.

In concluding this report, I deeply regret to have to record, that the illness of the Essayist, Mr. Roger Charles Parke, terminated fatally two days after the meeting.

WM. C. LAWSON,  
*Honorary Secretary.*

## PARLIAMENTARY INTELLIGENCE.

### CONTAGIOUS DISEASES (ANIMALS) ACT.—*June 2nd.*

*Mr. Read* rose to call attention to the operation of this Act and to the recent orders relating to foreign stock, and to move for a Select Committee to inquire into the cost, constitution, and working of the Veterinary Department of the Privy Council. Since he had given notice of his motion he had slightly altered its terms in consequence of the evidence given before the Sanitary Commissioners, and also in consequence of the returns moved for in February last by the hon. member for North Staffordshire not having been presented to the House. He begged in the first place to offer an apology to Dr. Williams for having spoken of him as the secretary instead of the director of a defunct company, and to state his belief that he was a well educated gentleman who was well fitted to hold his present post, although he had received no special training for it. In August, 1865, the present Veterinary Department of the Privy Council was established under the name of the Cattle Plague Department, and Dr. Williams was appointed secretary to it. In its earlier days that department was renowned for its expensiveness and for its injustice in attempting to kill the cattle of the farmers without awarding them any compensation. In the same year Dr. Williams was replaced by Colonel Harness, and the business that the department had to get through then was very heavy, there being 5000 or 6000 cases of cattle plague weekly at that time. At the end of the year 1866, Colonel Harness was promoted to some other office, and Dr. Williams again became the secretary of the department. For the next two or three years the office had very little to do, and of the 1500 letters a day, which Mr. Helps stated were received then, nearly 1000 contained "*nil*" returns from inspectors. The Cattle Plague Report, which he knew had been nearly completed in 1867, was not presented to that House until 1870, by which time it had lost all interest, people having then almost forgotten the existence of the cattle plague. During that period but few cases of compensation had to be determined by the department, but an immense amount of trouble was occasioned by the difficulty of forcing a small modicum of justice from it. A certain number of statistical papers had been prepared by the Department at his suggestion for the use of the Metropolitan Cattle Markets Committee which sat in 1868, and since then the Cattle Diseases (Animals) Act had been passed, and it might now be taken that the department was a permanent Government office. Although it had been stated that the department was not to be regarded as a permanent one, it appeared that within the last few months the secretary and three or four of the clerks in

it had been placed upon the permanent civil list with, he supposed, a claim to pension and compensation in the event of their office being abolished. Now, he asked, what had this department done for the kingdom? It had not made a single suggestion for getting rid of the cattle plague, except the rude ones of isolation and slaughter. It had certainly prepared one report in three years, but it had not even solved the problem of inoculation as a remedy. The *maximum* inconvenience was inflicted upon the owners of stock with the *minimum* of good results. They had to collect the statistics of the metropolitan markets, but that was done already by the clerks of the market, and appeared weekly in *The Times*. They had also to record the landing of foreign stock, but that was already done by the Customs, to whom, and not to this department of the Privy Council, was due the credit of keeping out the rinderpest, if it had been kept out. They had certainly sent out to the local authorities forms to be filled up where any cases of pleuro-pneumonia, foot-and-mouth disease, or scab had occurred; but if he might judge by his own experience last year, when he moved for a return of these cases, they did not appear even to be tabulated by the department, though they occasioned the country great expense. Now he had heard, and he hoped it was not true, that the law officer of the Crown had received 1000*l.* a year for drawing up these orders. If that were so the duties must be pretty well a sinecure. [Mr. Forster was understood to intimate that no such payment was made.] Last evening they voted in Committee 12,000*l.* towards the expenses of this department, which, exclusive of law, stationery, and printing, had cost something like 75,000*l.*, or about 100,000*l.* in all. The secretary was stated in the Estimates to receive 800*l.* a year, but a footnote would show that he really received 1000*l.*, 200*l.* additional being given him for "personal allowance." The chief clerk, who a short time since had been in receipt of 200*l.*, rising by 20*l.* a year, had made a sudden jump to 600*l.* Of this he did not complain, for the gentleman, as he knew, was a very good fellow, and one who, having married a relative of his, he was glad to be able to congratulate upon the possession of a good berth. (A laugh.) But he maintained that Professor Simonds at the head of the office, and with a staff of ten clerks under him, would have done the work much better, and have commanded the confidence of the public. His right hon. friend had, no doubt, made the best he could with the establishment, but he was astonished that the Chancellor of the Exchequer of an economical Government had not laid his hand upon it, and saved 5000*l.* or 6000*l.* a year out of the sum voted for the expenses—a thing he might easily have done without impairing its efficiency. It was, he contended, utterly absurd to have included the foot-and-mouth disease in the Contagious Diseases (Animals) Act. Such a course would never, he felt sure, have been recommended by Professor Simonds, and it could only have been done by the department, for had it not been included, their occupation would have been gone. After the cessation of the cattle plague the Veterinary Department sent out complex forms to the different inspectors, accompanied by books full of instructions, but they did not take the trouble, and they had not the courtesy, to tell the local authorities what they had done. For some four weeks the veterinary surgeons worked away and incurred expense in searching for cases of foot-and-mouth disease, but to this day they had never been paid, for the first act of the quarter sessions was to cancel their appointments, and to send them for their remuneration to the department that had sent the instructions. The veterinary surgeons, however, had never received anything for what they had done. There could be no doubt that the foot-and-mouth disease had been a costly thing to the nation, and ruinous to the farmer. For two or three years after the disappearance of the cattle plague we saw none of it, and we began to hope that we should manage to keep

free, but in 1869 sheep in the foreign cattle market known to be afflicted with foot-and-mouth disease were allowed to be dispersed throughout the country, and the effects became very soon apparent. The cost of foot-and-mouth disease could not be put at less than 1*l.* per head, and it must have amounted to 100,000*l.* in the case of the Norfolk farmers alone. He did not go with Mr. J. Stuart Mill and others, who held that farmers would be recouped by the increased price; farmers would rather have moderate prices if they could only retain their stock. (Hear.) His right hon. friend would tell him that when the Contagious Diseases (Animals) Bill was under discussion he advocated stringent home restrictions. So he did, but that was on condition that foreign cattle should be killed at the port of landing. On the 10th of February a case of pleuro-pneumonia occurred in a herd of forty cattle. Six were attacked within a fortnight, and were entirely separated from the rest. All recovered except one, which had a chronic attack, lasting to the end of May. But the unfortunate farmer would not be permitted to remove his stock, because the farm was said to be an infected spot. Let his right hon. friend calculate how much that bullock which would not die and would not recover, and which its owner would not kill (a laugh), cost the county of Norfolk. But foreign stock might and did mix with diseased animals on the other side. He said so, because in May there were two cases of pleuro-pneumonia in different ships, and so advanced was the disease that the authorities had the carcasses of the animals destroyed. A recent order said the stock from Holland might come over here, and, after twelve hours' quarantine, might go over the whole country. His right hon. friend might say that since the relaxation of the orders there had been an immense importation from Holland. But the reason was because Holland was suffering from a cold spring, the farmers there had no hay, therefore they were sending over here an immense quantity of store stock. His right hon. friend might say that he had appointed an inspector at the other side of the water, but the inspector could not detect infection in its incubation. His right hon. friend had said the other day that Holland was free from disease, meaning, no doubt, the cattle plague, for he could not have meant pleuro-pneumonia. In North Holland alone, from the 19th of March to the 22nd of April, 45 cattle died of this last disease, 206 affected by it were killed, 138 recovered, and 94 were left ill, making a total of 483 in that small province, from which we were to receive our store stock. Mr. Kilby, of Yorkshire, had sent out 4000 circulars to the principal agriculturists of this country asking for their experiences of the loss of stock during the last thirty years, and had also applied to some gentlemen in Wales and Scotland. He found that in some of the northern districts of Scotland and the remote counties of Wales they had no case whatever of the foot and mouth disease, or of pleuro-pneumonia. Did not that show most distinctly that these were foreign diseases, because there was the same atmosphere in one part of the country as in another, and the cattle received, if anything, more severe treatment in the remote districts? In the breeding counties Mr. Kilby found that the losses were 25 per cent. from lung disease and 33 per cent. from foot-and-mouth disease, while in the grazing counties the losses were—from lung disease 90, and from foot-and-mouth disease 78 per cent., or 168 per cent. in all, showing that it was by the transit and mixing of cattle these dangerous diseases were propagated. In 1868 we had 3,769,000 cattle, worth about £56,000,000. Well, the losses in thirty years amounted to £83,000,000, or nearly once and a half the worth of the whole stock in 1868. So that a man in England during the last thirty years who had twenty head of stock lost the value of one every twelve months. As regards Norfolk, that was considerably under the mark, and his own losses had been very much more. Now, for the sake of

184,000 head of stock, which was the average importation of the last four years, we exposed 9,000,000 of cattle in this country to foreign diseases; and for 560,000 head of sheep, the average importation of the last four years, we exposed 34,000,000 of our sheep to foreign disorders. The consequence was that the price of meat to the consumers had been greatly increased. Whatever might be the case with corn, the consumers of meat in this country had to look to the home supplies. According to the official returns of the Board of Trade the total home supplies of meat in towns for the years 1867, 1868, 1869, and 1870 were 4,856,000 tons, or on an average per year 1,214,000 tons. The foreign supplies for the same period were—of live stock 56,000 tons, and of dead meat almost exactly the same amount, or 56,724 tons. The per-centage of the home supply, therefore, was  $91\frac{1}{2}$  as against  $4\frac{1}{4}$  of live stock and  $4\frac{1}{2}$  of dead meat from foreign countries. (Hear.) He could not understand why Belgium, where no disease existed, was scheduled, and why the right hon. gentleman, on the other hand, allowed the direct importation of cattle from Russia. The other day a cargo of beasts came direct from a Russian port, whence the disease was imported in 1865. It came to the Victoria Docks, and after twelve hours the beasts were sent to the Metropolitan Cattle Market. They mixed with foreign sheep, both at the railway station and in the market, and although he might be told that the latter were not allowed to leave the market alive, he was sure they sometimes did so. Another cargo of beasts came from Hamburg, but they were imported from Russia through Germany. They arrived with some sheep at Brown's-wharf, and these very sheep went into the provinces. The Vice-President of the Council had extemporised a temporary water-side market, and Mr. Odams, who spent £12,000 in fitting it up, had not been very well used by the authorities. He provided a very good and sufficient place, and when more accommodation was wanted he was asked whether he would provide it. Mr. Odams thereupon spent £1200 more in making sheds, &c., but in a fortnight the order was rescinded, and the whole of the stock for which this accommodation had been provided was allowed to go to the Metropolitan Cattle Market. The state of the foreign cattle market which was to arrive at Dead Man's Wharf would, he trusted, receive the attention of his right hon. friend. The Corporation of London, after doing little or nothing hitherto, had now built a wall to separate twenty acres of land from the Victualling Yard, Deptford. If, however, the new market were not ready by January 1, 1872, the Corporation would lose the monopoly of the market, and he hoped the Vice-President would insist on the Corporation keeping to their part of the bargain. He wished the right hon. gentleman had kept to the temporary market, and withdrawn the cordon, so that the inhabitants of Brighton and other places might have the advantage of coming to London and buying their stock. The House ought to encourage the carriage of dead meat for the sake not only of economy but humanity. A sheep might be sent into Staffordshire for 10d., and from London to Manchester for 1s. a head, including the skin and offal. Even lamb, that most perishable meat, he had himself been sending in large quantities to the London market. He believed that, instead of a member of that House going bawling about the country, and calling for economy, it was far better to put his finger in that House upon some item of uneconomical expenditure with which he might be acquainted. He trusted that the House would grant the inquiry for which he asked. It need only be a short one. Three or four sittings of the committee would be sufficient either to prove or disprove his case. The hon. member concluded by moving, "That a Select Committee be appointed to inquire into the cost, constitution, and working of the Veterinary Department of the Privy Council." (Hear, hear.)

*Colonel Corbett*, in seconding the amendment, said he could endorse two statements made by his hon. friend. The first was that a veterinary surgeon ought to be at the head of this department of the Privy Council, and the next was that the foot-and-mouth disease ought not to have been included in the Act. The question of cattle plague contagion was one of equal importance to the consumer and producer. He believed that the losses sustained by the diseases of imported cattle were ascertained, it would be found that the price of meat had been raised in consequence 1d. per lb. to the consumer. He knew that as a breeder of cattle he would rather sell at 2d. per lb. less than receive the present high prices. It was the exceedingly small stock of cattle in the country which kept up the prices, and nothing but getting rid of the disease would bring down the price of meat to its normal state. Foreign cattle should be killed at waterside markets, and store cattle should be kept out altogether. As to the twelve hours' quarantine it was of no use at all. He could confirm what his hon. friend had said as to the cattle in Wales being free from the disease. If no disease were imported he believed our cattle would be entirely free from the disease.

*Mr. Jacob Bright* was not concerned in defending the Veterinary Department of the Privy Council, but desired to say a few words upon the subject of the importation of cattle, which ought not to be attended with the restrictions at present placed upon it. Many deputations from large towns had waited upon the right hon. gentleman with reference to this subject, and to a certain extent the statement of the right hon. gentleman that these deputations were promoted by the butchers was true. But that circumstance only proved that, in the opinion of the butchers, the restrictions upon the importation of cattle very much diminished the number of cattle for slaughter, and therefore injured their business. What they wanted was to have more meat to sell, and to his mind it was a very significant fact that the butchers were the men to take up this question. That they would be more and more supported by the public at large he felt convinced would be the case in consequence of the high price of meat. If the department felt themselves unable to grant the terms asked, the next thing that these large towns would ask for would be to have free trade permitted with every non-infected country, subject to the best inspection which could be supplied by the Government. The tendency of meat to rise in price went to show that the people of the country grew faster than the cattle, and if that were so the question of these restrictions would have to be discussed hand in hand with the Game Laws, for if we were to have great restrictions placed upon the importation of cattle we ought to reduce our game preserving, and so increase our power of breeding and feeding cattle at home. He hoped the Vice-President would bear in mind that there was throughout the country a demand for greater liberty of importation. Coming from Cheshire, he knew the great burden that had been cast on town populations in consequence of the cattle plague, and while these people were as anxious as the hon. member for Norfolk to prevent the spread of disease, they also desired to obtain that animal food which was to them a necessary of life. If restrictions were carried too far, the result would be that at some time they would be wholly abolished.

*Mr. Beach* could understand that the inhabitants of towns were anxious for the removal of restrictions on the importation of cattle, because they believed that that step would enable them to obtain their meat at cheaper terms. But it should be remembered that the present price of meat was not entirely owing to the restrictions on the importation of animals, since of the present meat supply 91½ per cent. was derived from home sources, 4½ per cent. was the flesh of animals that were imported alive, and the

remaining  $4\frac{1}{4}$  per cent. was imported dead meat. Those who were interested in this matter did not desire to impose any restrictions beyond those that were absolutely necessary, but they asked that whenever there was any suspicion of disease the animals imported should be slaughtered at the port at which they arrived, and such a step they considered necessary as a safeguard. The increased price of meat was partly owing to the fact that during the last two seasons there had not been a good supply of that food which some home stock required.

An *Hon. Member* moved that the House be counted, but exactly forty members, including the Speaker, were found to be present.

*Mr. Beach*, resuming, said that in the county to which he belonged restrictions were at one time relaxed, but it was found necessary to reimpose them as a measure of self-defence, and the local authorities only asked that their acts should not be set aside by it being permitted to import without restriction cattle which came from countries where it was known that disease had prevailed to an alarming extent.

*Mr. Forster* said that although the hon. member for Norfolk had made a severe attack on the department with which he was connected, he did not regret that the subject had been brought before the House, although he could not admit that his hon. friend had made out a case for a committee of inquiry, the appointment of which would imply some degree of censure. Complaint had been made that the department was unnecessarily expensive, and that it had very little to do. When he became responsible for the working of the department, he found there Dr. Williams as the permanent head of that branch to which this amendment related, and if any blame was due it should rather rest on him, who was the Parliamentary head of the department, than on an official whose industry and judgment he had found to be of the greatest service. With respect to the supposition that there was nothing to do, he must point out that shortly after he became Vice-President the Contagious Diseases (Animals) Act was passed with two objects, one being to prevent the importation of diseased animals, the other to take steps against the spread of infection at home. The first object was attempted to be fulfilled to some extent by the previous Government, but no attempt was made to check the home disease. Any interference with the trade concerning a main part of the food of the people was a serious matter, and no one in his position would be able to hold office for a single day without having a responsible and intelligent staff capable of advising and giving information as to the spread of the cattle disease at home and abroad. The attempt to prevent the spread of the home disease was a new duty, and by the agency of 1180 inspectors in England and Wales alone, the central office was brought into daily communication with the local authorities. Day after day pressing cases were brought before him, on which more information was requested, and though the office did not attempt to interpret the law, it was an erroneous notion to suppose that it did not answer general inquiries. Cases were brought under its notice from day to day; the correspondence, independent of returns, was enormous, and the number of letters that came into Colonel Harness's department was more than 30,000. However, he did not think that the objection of his hon. friend was that the office had nothing to do, but that it had better not have done what it has done. It was the duty of a person in his position to consider what was intended to be done when the Act was passed, and what was the best way of carrying that intention out. As regards foreign importation, he understood the principle of the Act was that there should be only such restrictions on the import of foreign cattle as was necessary to prevent the spread of the disease; and that for this purpose cattle coming from a country considered dangerous should be slaughtered at the ports of landing. Consequently, all

Germany, Holland, Russia, and the Eastern Provinces, were scheduled, not so much because the import of cattle reared in those countries was feared, but because it was apprehended that, through them, the disease might be brought from the steppes. The late war on the Continent necessitated an increase of restriction, as France and Germany, in consequence of the march of the armies, became violently infected. It was then determined to put France in the same position as Germany had stood in, and it was also ordered that German cattle should be slaughtered at the waterside; and afterwards an order was issued entirely prohibiting the import from France and Belgium, which order had not yet been entirely relaxed. These orders could not have been issued unless the office had had a responsible department to give information as to the facts of the case; and as the orders necessarily raised the price of food, nothing but a feeling of necessity induced the office to issue them. The war, as far as Germany was concerned, was now entirely over, and that circumstance had enabled the office to put Germany back again into the position in which it stood before the war. In the next place it was thought—and this he believed was the real cause of offence to his hon. friend—that the time had arrived when Dutch cattle might be safely introduced. Last year the import of Dutch cattle was somewhere about 70,000 or 80,000, and of German cattle somewhere about 50,000 or 60,000, and for some time past there had been no cattle plague in Holland, the restrictions to prevent its spreading in that country being well devised; but as there was a danger that steppe cattle might come through Rotterdam, the Dutch Government were told, when they asked that the restrictions on the import of Dutch cattle into this country might be taken off, that there was risk in allowing cattle to be imported from Rotterdam, and the result was that the Dutch passed a law prohibiting the import of sheep and cattle into Holland, and promising to give notice before the law was changed. He did not deny that pleuro-pneumonia was a very fatal or infectious disease, but it was nothing like so fatal or infectious as cattle plague. Still it was a very fatal disease. But pleuro-pneumonia was a known disease, and no restrictions we could put on Dutch cattle would prevent its existence in this country. It was a matter of dispute whether pleuro-pneumonia was or was not introduced from abroad, he only knew it was found here, and he thought it was too much to require that Dutch cattle should be excluded because in Holland, as in England, pleuro-pneumonia was to be found. No doubt there should be stringent regulations with regard to inspection, and that no animals should be allowed to be introduced into this country which came with pleuro-pneumonia. And what were the regulations? The regulations with regard to pleuro-pneumonia were, that if in any ship coming from Holland, or any foreign country, there was any animal affected with the disease, not merely the animal should be killed, but the whole cargo should be slaughtered at once, and not allowed to go to the metropolitan market or into the interior. Foreign cattle, therefore, were liable to even more stringent regulations than home cattle. That was going as far as he thought they were justified in going. It was rather remarkable that soon after this order three cases of pleuro-pneumonia had occurred in two cargoes from Holland. The Dutch Government were immediately communicated with on the subject, and told they should take the greatest precautions to prevent the recurrence of such cases. They had taken the greatest possible precautions, and he believed they had been effectual. The regulations enforced were of the most stringent character. No cattle were allowed to be shipped without previous examination by veterinary surgeons—to be conducted between sunrise and sunset. The General Steam Navigation Company had also taken up the subject, and it was their interest to see that the regulations were strictly enforced; for the trade in cattle between Holland

and this country was a most important one. Still, he did not think they were justified in restricting the Dutch trade in cattle on account of Holland being in the same position as this country with regard to pleuro-pneumonia; while the regulations in force did practically prevent pleuro-pneumonia being introduced by Dutch animals. Then, on the other hand, he was urged by his hon. friend the member for Manchester to let in the German cattle for the benefit of the large towns, as we did the Dutch, under certain regulations. But it would be exceedingly difficult to draw a cordon round those large towns to give the same security as existed in London. Nevertheless, he thought the representations made by the deputation to which his hon. friend had alluded deserved the most careful consideration of the Government, and he acknowledged he had postponed a final decision on that subject, expecting the arrival of Lord De Grey within two or three days, when he should be glad to have his counsel and assistance in the matter. In the meantime he was glad to find that the representations of his hon. friend appeared to have found favour with the hon. member for Norfolk. (Mr. Read.—“No, no.”) At all events, the hon. gentleman did not seem to think that any great danger would result from the adoption of the suggestion. Now, with reference to home diseases, the hon. gentleman seemed to think that all their efforts to check them had been useless. But there had not yet been time fully to test the value of their regulations. He did not think that in a couple of years they could gain statistics that could be of very much value with regard to such a difficult matter as the spread of disease among the cattle of this country. It had taken some weeks or months before the local authorities could thoroughly work the Act. In some places there had been a strenuous endeavour to carry it out; in others there had been apathy and opposition. So far as they could get any information, it was very much in favour of the working of the Act. There had been in twenty-six weeks ending March 6th, 1870, 775 outbreaks of pleuro-pneumonia, and in the corresponding weeks of 1871 the outbreaks were only 514. Of the 47 divisions in England and Wales there were 16 in which, during six months of 1869-70, the outbreaks had been 603, and in the corresponding period of 1870-1 the outbreaks were only 379. In 15 others there was a diminution, and a considerable diminution. There was only one county in which there had been an increase—from 104 to 112—and that was the county of Norfolk, where there had been more opposition to the carrying out of the Act than in any other county. In fact, it was not till November, 1869, that any inspector had been appointed there. Nine were then appointed for the county, and two for the boroughs. Suffolk had forty-two inspectors, selected from the police; the decrease of the disease there had been greater than in Norfolk, and the expense of working had been less—£253, as compared with £841, the cost of working Norfolk. It was found that inspectors taken from the police, assisted by one or two veterinary officers, answered better than a large staff of veterinary inspectors. The case of Mr. Odams had been referred to, but Mr. Odams perfectly well understood that he set up his market as a temporary affair, and that the occasion for it would cease at any moment. He did not think any case had been made out against the department; the regulations now seemed to meet with general approval, and 30 out of the 47 counties had adopted more stringent regulations than the Act required.

*Mr. Bentinck* was remarking upon the fact that the thin attendance of the House showed what little interest members took in a matter which so nearly concerned their constituents, when

An *Hon. Member* noticed that there were not forty members present.

The *Speaker* counted, and finding there were only twenty-one, declared the House adjourned at 20 minutes to 11 o'clock.—*Times*.

## GERMAN CATTLE TRADE.

June 9th.

*Mr. Norwood* asked the Vice-President of the Council whether the Veterinary Department was prepared to relax in any way the restrictions on the circulation of cattle imported from Germany.

*Mr. W. E. Forster* said the Government were not prepared to relax the present restrictions on the circulation of cattle imported from Germany. A very important deputation of butchers from the northern towns had waited upon him some time ago, and asked for permission to remove imported German cattle from the outports to inland towns—for instance, from Hull to Leeds or Manchester, under strict regulations for enforcing slaughter at the railway terminus, so as to prevent the risk of spreading disease. The Government would have been glad to meet the views of that deputation; but, as he had informed them at the time, he much feared they would have been obliged to issue such precise and strict regulations as would have prevented the arrangement from being of much, or perhaps any, advantage to the trade. It was only fair, however, to acknowledge that both the Corporations and the railway companies had shown a great willingness to carry out strict regulations. Independently of that difficulty, the Government had within the last few days received information which convinced them that this was not the time to make any alterations in regard to the importation of German cattle. They learnt from our Minister at Munich that cattle plague had appeared at Bavaria, near Munich, within the last few days, and although it was to be hoped that it would be suppressed by prompt measures, yet it was obvious that Germany had not yet recovered from the effects of the war, and that it would be inexpedient to make any relaxation in respect to German cattle. In the meantime, he was glad to believe that the late order in reference to Dutch imported cattle had been of very considerable advantage both to the northern consumers and the farmers, who were much in want of store cattle; and inquiry only increased his conviction that there was no danger of cattle plague from the Dutch imported cattle, and as little danger of pleuro-pneumonia from the home traffic.

## Veterinary Jurisprudence.

### WIGAN COUNTY COURT.

Before Mr. J. S. T. GREENE, *Judge*.

ANDERTON *v.* WRIGHT.

*Case of "String-halt."*

MR. LEES appeared for the plaintiff; Mr. Ellis for the defendant.

In this case the plaintiff, a smallware dealer carrying on business in Scholes, sought to recover from the defendant, a grocer and horse dealer residing in Wallgate, Wigan, the sum of £8 4s. 10d. for breach of warranty respecting a mare sold by the defendant to the plaintiff, on the 20th of February last, for the sum of £15. On behalf of the plaintiff it was alleged that the mare was sold as "sound and right in every respect;" that she was afterwards found to be suffering from "*string-halt*;" that the defendant refused to take

her back, and that she was afterwards sold for £7 15s. 2d. The present action was to recover the balance of the £15, together with the expenses incurred in keeping the mare.

*Mr. Lees*, after a brief opening statement, proceeded to call witnesses, amongst whom were Mr. Worthington, M.R.C.V.S., of Wigan, and Mr. Harwood, M.R.C.V.S., of Liverpool, both of whom stated that "*string-halt*" constituted unsoundness, and that it was so regarded by the highest authorities in veterinary matters.

*Mr. Ellis* submitted that there had been no warranty at all; that the purchase had been made by the plaintiff on his own responsibility, and that the defendant, when he said he believed that the mare was sound and right, spoke what he really believed to be true. As to the "*string-halt*" he should call Mr. Wood, M.R.C.V.S., Wigan, who would prove that it was a disputed question amongst the members of his profession whether this defect constituted unsoundness or not, and that in this instance the animal was not seriously affected.

The witnesses on behalf of the defendant having been heard, *His Honour* said it was perfectly clear that "*string-halt*" constituted unsoundness. From the evidence he was quite satisfied that the defendant represented the mare as sound; the verdict would therefore be for the plaintiff.

*Mr. Lees* applied for costs, which were allowed.—*Wigan Observer*.

## ARMY APPOINTMENTS.

WAR OFFICE, *June, 9th.*

ROYAL ARTILLERY.—Alfred Adrian Jones to be Veterinary Surgeon.

## REPORT OF THE COUNCIL OF THE ROYAL COLLEGE OF VETERINARY SURGEONS AND THE GLASGOW COLLEGE.

GLASGOW; *June 20th, 1871.*

GENTLEMEN,—I have very carefully perused your Report of the proceedings of the meeting of Council of date 24th April, contained in this month's *Veterinarian*; and as I am at a loss to comprehend what is meant in so far as Mr. Cowie's remarks apply to my pupils, I trouble you for an explanation. Meanwhile, I may be permitted to remark, that the pupils of the Glasgow Veterinary College at the annual examination for diplomas in Edinburgh, have always distinguished themselves; and that this year, being the first occasion on which the Board of Examiners were to honour the College by examining her students on their "own pastures," it was the heartfelt desire of teachers and students alike that all candidates for diplomas should be worthy of the honour.

A practical examination in addition to the oral one being also for the first time instituted, the students felt that the occasion was worthy their highest efforts; and as the Principal of the College, I rejoice to state, they left no stone unturned, and, as can be authenticated, they each and all gained their diplomas with honour. Such being the facts, surely your Report of the proceedings of the Council meeting referred to, in so far as it bears on Mr. Cowie's remarks, must be a misrepresentation; and whether or not, I hope you will agree with me in thinking that a public explanation from Mr. Cowie, or yourselves, is due to

Your obedient servant,

JAMES M'CALL.

*To the Editors of the 'Veterinarian.'*

[In giving insertion to Professor M'Call's letter, it is necessary to state that we, as editors of the *Veterinarian*, are in no way responsible for the statements which appear in any of the Reports of the Council of the Royal College of Veterinary Surgeons. The reports are officially drawn up, and sent to us for publication, after being—we believe—submitted to a Committee.]

## MISCELLANEA.

### INCOME AND EXPENDITURE OF THE METROPOLITAN CATTLE MARKET.

FROM a statement recently presented to the Corporation by the Chamberlain of London it appears that during last year the receipts in respect of the Metropolitan Cattle Market amounted to £31,460. Of this sum £13,453 was received on account of lairage; £3813 of tolls on the animals; £8436 of dues for pens and rails; £3692 of rents in the market; and £1082 of rents in the improved dwellings for the labouring poor. The expenditure was £37,365 in all, leaving a balance against the City of £5905. The principal items were £20,662 for interest on loans and mortgages; £7799 for hay, straw, and forage, purchased for the use of the lairs; £3087 for salaries and weekly wages; £1120 for alterations and repairs; £2054 for rates, taxes, insurance, and police charges; £1036 for gas and water; and £313, being the expense of the industrial dwellings. No works other than general repairs had been executed there during last year.—*Standard.*

### ERRATA.

Page 409, line 7, for "NAYLOR" read "TAYLOR."  
 " " " 8, " "Soughborough" read "Loughborough."  
 " 410, " 34, " "region," read "origin."  
 " " " 37, " "were," " "was."



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Communications and Cases.

OBSERVATIONS ON THE ANATOMY AND  
PHYSIOLOGY OF THE HORSE'S FOOT.

By GEORGE FLEMING, M.R.C.V.S., Royal Engineers.

*Physical and Chemical Properties and Minute Structure  
of the Hoof.*

(Continued from p. 466.)

HISTOLOGICALLY, we find but little difference between the wall and the sole of the hoof. It consists of the same elements arranged in the same manner, *i. e.* epidermic cells ranged vertically in circular strata around villi proceeding from the keratogenous membrane covering the lower face of the os pedis; the whole constituting tubular fibres that run nearly or quite parallel with those of the wall; and interfibrous cells disposed more or less horizontally, and less compactly. Where the villi are most developed—around the margin of the foot, and particularly in front—there of course these fibres are largest; while towards the centre of the sole they are smaller and closer. It is to be observed, however, that the arrangement of the constituent cells, whether fibrous or interfibrous, is not so close and firm as in the wall, and they would appear to possess less cohesiveness; the intra-fibrous cells are also more loosely disposed towards the inferior or ground extremity of the fibre. The fibres throughout the sole are of the same consistency, each of course being softer at its upper or newly-formed extremity than at its lower end; and it is probably owing to these peculiarities that we find the sole exfoliating in flakes, *i. e.* the cells of the fibres losing their cohesiveness, and becoming disunited

when they have attained a certain length; and also, in all likelihood, because we have not here the laminæ which appear to confer such solidity and conglutination among the fibres of the wall that they grow to an indefinite length, carrying the laminæ with them.

The union between the sole and wall is of the most intimate kind, though they are never blended so thoroughly as to be inseparable or indistinct, but may be disunited by maceration, disease, and the action of heat. Their junction takes place at the margin of the sole by what we have termed the "white line"—a narrow space of a lighter coloured and softer horn than either the wall or sole, and which corresponds to the interdigitation of the horny and vascular laminæ. Immediately the border of the sole and the inner face of the wall meet, the lateral laminellæ we have just described cease; they do not proceed beyond the termination of the vascular laminæ in the villous prolongations already noticed. But we have the horny laminæ—now with plane sides and retaining their density and firmness—still projecting inwards, and instead of the vascular laminæ being received within them, as above the sole, there are digitations of horn, composed of fibrous tubes secreted by the tufts of vessels that terminate the ends of the podophyllæ. It is this horn which forms the white line seen by the farrier when paring the sole.

In structure and appearance this white line only differs from the sole in the greatly diminished quantity or even total absence of pigment, should the hoof be ever so dark coloured; showing that the vascular laminæ do not supply colouring matter, and affording us additional evidence to that we will hereafter adduce, that they do not secrete the horny leaves of the wall. The tubes or fibres of the white line are larger and longer than those of the sole, and between the keraphyllæ are usually arranged in a single row—the papillæ terminating the podophyllæ being single; the cells are loosely aggregated, and appear to contain less horny matter than those elsewhere, both in the walls of the tubes and the spaces between them; this gives the line a texture and appearance notably different from that of the sole and wall, and testifies that the secretory faculty of the vascular laminæ is not of the same character as the parts which furnish these two important divisions of the hoof. This white line is easily penetrated by fluids, and is much more readily destroyed by maceration than either the sole or wall; in ordinary wear it becomes fissured more or less from partial solution of its cells, admitting sand and gravel with facility to a certain depth. Its junction or inter-

digitation with the horny laminae is due merely to simple

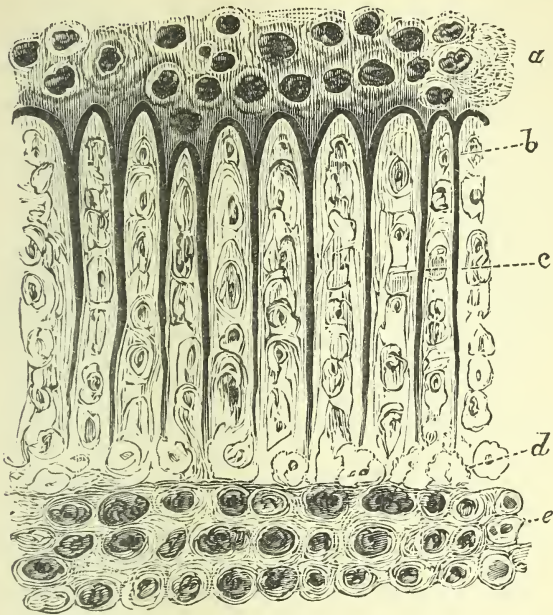


FIG. 19.—Junction of the sole and wall. *a.* Fibres of wall. *b.* Horny laminae. *c.* Interdigitations of white line (*d*). *e.* Commencement of sole. Moderately magnified.

agglutination, not fusion, of their respective surfaces; and it is the destruction of its soft cells that brings about a disunion between the mass of the sole and that of the lower margin of the wall. The white line also adheres to the border of the sole by mere agglutination of its cells.

It may be noted that, through mismanagement or disease, but more frequently as the result of bad shoeing, the fibres composing this white line are altered in their rectilinear direction, and become more or less irregular and undulating; they lose much of their cohesiveness, are greatly increased in size, and at the same time the interfibrous cellular element is largely augmented in quantity. This exaggeration in width of the white line is particularly noticeable in chronic laminitis, and is easily accounted for.

The reason for the interposition of this soft, tough, and semi-elastic horn between the hard wall and the sole around the plantar border of the foot has never been explained, so

far as I am aware ; but it might be suggested that its softness and flexibility must tend to avert disunion between the lower margin of the wall and the border of the sole, or even fracture of these—an accident which would be likely to occur were these two comparatively rigid and dense pieces directly joined to each other without the intervention of the white line of horn. Its presence may also permit that independence and dissimilarity of growth that exists between the sole and wall, and which constitutes so marked a feature in the physiology of this organ.

The “frog,” and what is termed the “periople,” may be said to possess the same histological characters as the other parts of the hoof: they are fibrous in structure, the cells composing them have the same vertical and horizontal directions, the fibres are generally parallel to each other, and on the whole follow the same course as those of the sole and wall. In other respects, however, they are different. The fibres, instead of being quite straight, are, particularly in the frog, more or less wavy and slender, the cells composing them have very delicate walls, and contain little keratin and earthy constituents, but more organic matter than those of the wall and sole; they are very readily acted upon by alkalis, which rapidly dissolve them. Consequently, when treated with caustic potash they do not exhibit the play of colours by the polariscope which the sole or wall similarly acted upon by this reagent, for the same period, would. In Canada balsam or turpentine the only differences to be perceived by polarized light are the fainter tints of the frog and periople, and each fibre, in a transverse section, showing a dark cross not unlike that displayed by the cylinders of rhinoceros horn or whalebone, or starch granules, when viewed by this light. Another peculiarity this soft horn possesses is the facility with which it becomes stained by carmine, when compared with that of the wall and sole, which is extremely refractory to the imbibition of this colouring matter, except the interior of the tubular portion of the fibre in the immediate vicinity of, or immediately in contact with, the villi. By means of the carmine fluid we can trace the presence of the periople in some hoofs at a distance below the middle of the wall, where its presence is otherwise indistinguishable to the naked eye, and nothing is observed but a smooth, glistening, varnish-like appearance, should the hoof not have been tampered with by the farrier's rasp.

The periople (fig. 2, plate II), in several of its features, corresponds to, or rather is the representative of, the inflected skin at the root of the human nail. It commences almost

imperceptibly, some distance above the hoof, before the termination of the hair; indeed, there is at first no difference, microscopically, between it and the epidermis. Immediately before the hairs cease to show themselves, however, slender villi begin to project from the surface of the true skin, and enter what appears to be merely a continuation of the epiderm, and the texture of this at once becomes altered in consequence: the structure, instead of being merely numerous strata of superposed cells laid in one direction, as in the outer skin, assumes a fibrous character, and the cells are arranged as in the wall. The villi are long and narrow, and increase in size after leaving the hair roots until the periopic fissure is reached; here the periople meets the commencement of the wall, and in the fissure the cells on the contiguous surfaces of the two qualities of horn become blended or agglutinated in a very intimate manner, and grow down together. We have already seen that this fissure marks the limit between the soft elastic horn of the periople and the dense, rigid material composing the wall; and that the periople and frog are continuous, and are nearly, if not quite, identical in structure and texture.

It is scarcely necessary to state that the periople does not secrete silex, as has been imagined, or to assert that it is not a secretory organ at all; this will be evident enough to the amateur no less than to the scientific student.

*(To be continued.)*

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## CASE OF LARYNGITIS.

By T. W. B. and E. L. W.

ON Sunday, July 2nd, we were summoned to attend an aged, grey cart-horse, the property of a gentleman, which we found to be suffering from acute inflammation of the larynx. A quantity of serous exudation and purulent fluid was running from his nostrils; the parotid glands, root of the tongue, and the throat in general, were swollen to such an extent that the animal was incapable of swallowing anything, and had been so for the last eighteen hours. The respiration was laboured and accelerated. The pulse numbered 80, and was of a character usually denominated inflammatory. The body was bedewed with a cold clammy sweat; the visible

mucous membranes were highly injected, and the animal's countenance anxious and careworn.

After the animal had been removed into a loose and airy box, and suitable clothing placed on his body, six quarts of blood were taken from the jugular vein, and the following draught was cautiously given and ordered to be repeated every three hours :

℞ Tr. Aconiti, ℥x, gut. ;  
Tr. Belladonnæ, ℥j ;  
Aquæ, Oij.

A nose-bag filled with steaming hops was suspended from his head, with a view to promote the discharge from his nostrils ; and a blister was also applied to the throat, after it had been diligently fomented for several hours.

3rd.—A marked improvement has taken place. The pulse now numbers 63, but still the animal is not inclined to eat or drink. The fæces are not so hard as on the previous day, and urine has been freely passed during the night.

The draughts were discontinued, and a drachm of the extract of belladonna applied to the root of the tongue by means of a spatula. It was ordered to be repeated every six hours. The blister, which had risen considerably, was washed off, and a bran poultice well mixed with lard was applied to the whole course of the throat by means of a many-tailed bandage.

4th.—The animal has drunk a little water, and eaten a few "sow-thistles" which were gathered for the purpose of tempting the appetite. The pulse now numbers 60. The breathing is much relieved and all the other symptoms abated in severity. Ordered the steaming of the nostrils and application of the poultice to the throat to be continued, but the belladonna to be used only twice in the day.

5th.—Pulse 58. A few scalded oats were partaken of. The medicine was discontinued, and also the steaming and poultice, in place of which a flannel bandage was applied to the throat.

6th.—Pulse 54. Oats were partaken of by the animal, and, curious to say, dried clover, in preference to young vetches.

7th.—Pulse 48. Animal eats more and swallows better.

8th.—Pulse 40. Appetite still improving.

10th.—The animal was so far convalescent as to allow of his being turned out to grass. A few days more completed his recovery, and enabled him to resume his work. He continued to go on well.

## MONSTROSITY IN A CALF—PECULIAR PRESENTATION.

By JAS. WATSON, M.R.C.V.S., Douglas, Lanarkshire, N.B.

WITHOUT entering upon unnecessary details respecting the circumstances under which attention was first called to this case of labour, we may state that, on arriving at the farm, we found that the owner and the shepherd of a neighbouring farmer had been vainly endeavouring for upwards of two hours to extract the calf. The cow was standing, and two of the feet of the foetus were protruding from the vagina. An exploration proved that the calf was malformed, from the fact of the heart and intestines being exposed, also from there being a large distended sac on the cranium, as well as from the circumstance of there being three extremities. Both the head and the tail presented themselves in the passage, while the fourth leg, a fore one, was felt doubled up and completely enclosed in a sort of bag. The first thing that was done for the purpose of assisting delivery was to introduce a trochar and puncture the distended sac on the cranium. Next the confined limb was set free by making an incision into the bag containing it; then after attaching cords to two of the legs and trying in vain to bring the foetus into an extricable position, it was found necessary to amputate two of the extremities *in utero*. This was done by cutting the skin round the pastern, and ripping it up to the shoulder in the one case, and to the hip in the other, then skinning and dissecting with the fingers and scalpel. The extremities being removed, cords were attached to the remaining ones, and to the inferior maxilla. Considerable traction was then applied, and the remaining part of the foetus was extracted.

Before examining the calf the cow was attended to: a draught composed of Tinct. Opii  $\zeta$ iss, aqua q. s., was administered; warm gruel was also ordered, and sedative fomentations were applied to the labia, which were considerably swollen. In about sixteen hours after delivery Epsom salts, 1 lb., molasses, 1 lb., in a sufficient quantity of water, were given. This laxative dose was to prevent constipation, and counteract any tendency to inflammatory fever.

The calf was found to be a most interesting example of a monstrosity. Indeed almost every part was so reverse to its natural position that it seems vain to attempt a description

of the *lusus naturæ*. It is almost impossible for a person to realise such a freak of nature without having witnessed it.

That the reader may, however, have a faint idea of the creature's appearance, let him imagine a calf having the chest and abdomen opened inferiorly from the neck to the anus, the vertebræ remaining a fixed point, and each lateral half of the body—including the limbs and walls of the chest and abdomen—being doubled downward until the inferior surface of the vertebræ formed the animal's back, and a hairy lined cavity occupied the place of the belly, the fore limbs proceeding from under the ribs and the hind ones being wrapped with the skin and abdominal muscles half way down the thighs. Then let him imagine the heart and viscera to be attached to what would now be the back and exposed without any covering whatever except that which was afforded them by the placenta. Further, let the reader conceive the vertebral column to be so completely circled backwards upon itself as to bring the head quite into the centre of the legs—where the belly should be—with the face looking straight out between the hind ones, with the tail hanging right over it, and he has as good a picture as can be depicted. The rectum, according to the reversed position of parts, terminated behind the tail, and the penis behind the anus. The head, as already mentioned, had a large sac (congenital cranioccephalus), which, when distended, would almost fill the great cavity in which it hung, between the limbs. This cavity was lined by integument, which was covered with brown hair, with here and there white spots. There was no sternum, but the cartilages of the ribs tapered forward, and united to form a small cartilaginous band, which passed round and in front of the fore legs. One of these legs, as already noticed, was enclosed in a bag, which turned out to be an expansion of skin, with the hairy side inwards. This skin had no attachments to the other tissues, and must have been nourished entirely by imbibition from the placenta. The enclosed leg was also fully covered with hair, but was malformed, the knee-joint folding inwards, and the articulations of the digits at the upper pastern having considerable rotatory motion. There was no pelvic cavity, there being no ossa innominata; but simply a broad pubic bone growing out from the vertebræ, to which the hind limbs articulated. The whole vertebral column, too, was completely ankylosed.

Beyond the removal of the viscera no dissection of the fœtus was made, as it was intended to send the specimen in as perfect a state as possible to the Edinburgh Veterinary College, in order that it might be prepared for the Museum. The

question that will naturally be asked, after the perusal of the account which has been here given is, Did the cow live? It is satisfactory to be able to answer this in the affirmative. A fortnight after delivery the owner remarked, in reference to the animal, that "she never looked over her shoulder," meaning that she was in the full enjoyment of health. Perhaps the Editors or some of our friends may be able to give some explanation of the cause of such a malformation, or, if not, must it be looked upon as one of the many impenetrable mysteries of nature?

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### A CASE OF DIFFICULT PARTURITION IN A MARE, FOLLOWED BY INFLAMMATORY OEDEMA AND PURPURA HÆMORRHAGICA.

By RICHARD HUDSON, Veterinary Student, Retford.

ON May 3rd, late at night, my father was sent for to see a mare belonging to John Holmes, Esq., of this place, corn merchant, &c., at his forest farm three miles away; on arrival he found that parturition had so far advanced that the head and fore legs of the fœtus were protruding from the vagina. The attendants had been uselessly dragging at the foal, until the shepherd on examination found that one hind leg only was in the passage, when they desisted, and sent for help. The mare was straining very heavily, bedewed with perspiration, and respiring quickly; the off hind leg of the foal was turned upwards toward the croup of the mare, the other could not be felt at all; the foal was dead, and my father at once cut it in two; but in this case the foal could not be got out further than just clear of the shoulder-blades without increasing the injury already done to the mare, so that there was great difficulty experienced in pushing back the rest of the foal; ultimately, however, delivery was effected.

4th.—The vagina is much swollen, dark in colour within, and abraded; but except straining, and the bowels not having acted, the mare shows no untoward symptoms. A ʒiv physic ball was given, and the rectum carefully cleared; the swelling and soreness evidently prevented the mare evacuating the bowels.

5th.—Bowels acting nicely, and all going well; pulse 56, soft, ears and extremities warm, and respiration easy: the mare strained a little, and passed her urine often and in very small quantities.

6th.—The mare was attacked with bowel pain, which was shown by her frequently lying down, and looking back to the flanks; pulse increased to 66, and respiration quick; she had given to her *Ol. Lini* 1 lb., *Tinct. Opii* ʒij, *Ol. Terebinth.* ʒj. After removing the fæcal matter, giving an enema, and applying heat to the abdomen, the pain continuing, she had a dose of the following mixture: *Tinct. Aconit.* ʒij, *Sp. Æth. Nit.* ʒiv, *Aqua* ʒviij, 1-6th to be repeated every three or four hours, if the pain did not pass off; four doses were given.

7th.—Mare free from pain, pulse 54, fæces soft, tumefaction, and dark colour within vagina decreasing; a slight discharge exists. The mare retains her urine longer, passes it in increased quantity and more freely; she drinks sloppy gruel, and eats all that is allowed. A vegetable tonic and diuretic ball was given, and ordered to be repeated.

10th.—Improving; continue medicine on the 11th and 12th.

18th.—The mare eats well, and is very lively, pulse about 40; discharge from vagina continues; allowed a little exercise, to be increased daily. She went on well to the 26th, and did three afternoons' light work, when a boy came to say that "the black mare had dropped a humour;" attendance requested immediately. On arrival the mare was found affected with inflammatory œdema, the near hind leg midway between the hock and stifle was considerably enlarged, tense, and somewhat painful; on the inside of the thigh, immediately below the mamma, there was a round distinct patch of swelling. The off hind leg was also swollen around the hock and a little above it. The fore limbs were enlarged around the lower part of the arms; there was little or no discharge from the vagina, which looked raw, inflamed, and unhealthy in colour. Outside, but clear of the vulva on the right side, on the hairless portion of the skin, was an ulcerous-looking surface; on inquiry we found that an abscess had burst two days before; the cavity was explored, and found to communicate with the vagina, about two inches from the entrance: pulse 60, and weak.

Aloetic ball, ʒv, was given, and two diuretic powders, with *Hyd. Chlor.*, ʒss in each.

27th.—The enlargement of the near hind extremity has enormously increased. It reaches downwards to below the hock and upwards to the mammæ, and bulges out on the inner and upper part of the thigh, more than a hand's breadth, like a shelf. The other limbs are not increased to any appreciable extent. Four somewhat deep punctures were made in

the near hind leg, between the hock and stifle. The parts were fomented, and Lin. Saponis applied to all the enlargements; a weak injection of Zinci Sulph. and Tr. Opii was also applied twice in the day to the vagina and to the abscess, and two powders were left for night and morning, each consisting of Hyd. Chlor., gr. x, et Resina, ʒij.

28th.—Swelling increased in upper part of near thigh; a puncture was made into it. The serous discharge which issues from the former punctures appears to have lowered the tumefaction to a slight extent. Pulse 66, and weak; the mare eats, though sparingly, of green tares mixed with meal and oats alternately; she moves only when made to do so, but the stiffness is no worse. If no fresh outbreak occurs, and the attack keeps confined principally to the near hind leg, good hopes are entertained that she will do right. Two balls, tonic and diuretic, were left for night and morning; liniment and injections reapplied.

29th.—Early in the morning a messenger came to say that the mare was found bad with colic when the men rose from bed. We found her pawing in great pain, and from appearance of the bedding she had been ill several hours. The enlargements of the limbs had vanished; pulse is close on 80, and weak; fæces soft; urine high coloured, and clear; a slight discharge flows from the vagina, and a thin bloody discharge trickles from the near nostril. The mare lies down, after making two or three crouching attempts to do so, as if she were sore in the limbs; she also often looks backward towards the flanks. Gave Ol. Lini 1 lb., Ol. Terebinth. ʒij, Tr. Opii ʒij. Enemas were likewise thrown up, and a hot oven plate applied over the abdomen. No relief being obtained, Tr. Aconit. gtt. xx was given with Sp. Æther. Nit. and Sp. Ammon. Arom. āā ʒij, and two doses left to be repeated every three hours if the pain did not pass off; it lulled her for a time, but the pain returned at intervals until the afternoon, when it left her. Lin. Terebinth. was rubbed in over the abdomen, and afterwards mustard, and also to the extremities.

At 9 p.m. we found the mare free from abdominal pain; bowels had acted three or four times, but the pulse had quickened to 92, and could not be counted excepting on the right side of the jaw; the artery exceedingly thready; respiration quick and heavy, and somewhat difficult; extremities rather cold, ears very cold, the buccal membrane pale. Under the off eyelid there was a clear patch of blood-stain of a deep red colour, about the size of a shilling; inside left nostril also there were several smaller ones visible, and one, the size of half a crown, just within the vagina on the

left side ; she had not partaken of any food recently. Sp. Æth. Nit. et Sp. Ammon. Arom., āā ʒij, was given, also lb. ss Ol. Lini with ʒij Ol. Terebinth.

30th.—10 a. m. Ears and extremities warm, respiration quieter, pulse 90 and of the same character ; there is no appetite. As the mare seemed thirsty, beer mixed with oatmeal was added to some water in a pail (until wine could be got), which she drank several times in the day. 8 p. m.—Mare cheerful, pulse 85 and weak ; a ball was given and two left, each containing P. Gentian., Camphoræ, et Ferri Sulph., āā ʒij. Lin. Saponis was also applied to the throat and limbs. The swellings are gradually returning, fæces drier and coated ; threw up an enema ; the mare drinks freely of beer, wine, and gruel, which is to be continued every four or six hours ; pulse 80 and weak.

31st.—10 a. m. Pulse 70 and rather stronger, respiration easier ; the animal eats a little green tares, but won't take anything more substantial.

June 1st.—Eats better ; is tired of slops. 8 p. m. Pulse 80 and weaker ; ear ends cold ; she moves worse and is weaker ; the face, nose and mouth, upward towards the throat are now swelled ; nasal discharge much increased, very offensive, and mixed with blood ; the petechial spots have merged into one large patch, so far up as can be seen along the septum in the left nostril ; the right nostril is also stained, but not of so deep a hue ; vaginal discharge has ceased.

Other patches of swelling have appeared on the elbows, abdomen, and brisket. Hyd. Chlor., gr. x, was placed on the tongue, and a like dose left for morning ; balls could not be got down.

2nd.—Vaginal discharge returned, abscess on outside, runs thick white matter ; less swelling about the face, &c., less nasal discharge and not so bloody ; respiration easier, more lively. Pulse 74 ; eats and swallows better ; the arms, elbows, &c., increased in size, and pit on pressure. A tonic and diuretic ball was given, and six sent containing Hyd. Chlor. ʒss, Pulv. Gentian. ʒij, Pulv. Camph. ʒj, Pulv. Zingib. ʒj ; one to be given twice a day.

3rd.—Swelling about the face and hind extremities decreased ; fore legs and brisket in same state as before ; less discharge from vagina, and that from the sinus thicker ; pulse 74, extremities warm, eats more, fæces soft, no offensive odour from nasal discharge ; patch under the off eyelid nearly gone ; moves better.

4th.—Mare improving ; blood patch on near nostril fading ; thin discharge from the nose ; pulse 70, with a little

more power; respiration down to 21; the tumefied parts generally are less; blood patch in vagina nearly gone, but looks raw.

5th.—Swelling about the face returned, also an increased quantity of discharge from the nose, mixed with blood. Swallows with difficulty; frothy saliva runs from the mouth—it cannot be swallowed; vaginal discharge, and that from the sinus, ceased; pulse 80 and weak; respiration 36, heavy and difficult; urine higher coloured, but continues clear from blood. Ordered Tinct. Ferri Perchlor. ʒj, Sp. Æth. Nit. ʒiv, et Aqua ʒviiij; one fourth to be given three times a day in beer. 9 p.m.—Medicine cannot be got down; pulse 84, respiration somewhat easier; ears cold, fæcal matter coated; swelling in the arms more tense; two patches are also commencing at the pectoral muscles; nasal discharge mixed with saliva and slightly stained with blood; mare moves very stiff and weak, and stands propping her hind quarters in a corner of the box. Mixture repeated, but the tincture increased to ʒiiss, which she drinks mixed with beer, water and oatmeal.

6th.—More cheerful, moves better, eats a little green food, part of which returns down the nostrils; throat very sore; the parotid gland on the near side is enlarged and painful; discharge less; it is saliva chiefly, which cannot be swallowed; has sipped from the pail during the night, and tries to drink of a fresh portion given this morning; blood stain in left nostril less in circumference; pulse 74, with rather more force; medicine to be continued.

7th.—Six balls were sent, each containing Ferri Sulph., Pulv. Gentianæ, Pulv. Zingib., āā ʒij, Camphor, ʒj, to be given twice a day. Mare improving, and eats again; but the great difficulty in swallowing continues, and only three of the balls were given.

8th.—The owner not having seen the mare for several days, and finding her anxious but unable to eat, directed the foreman to apply mustard and vinegar to the throat, rather low down, where there was some enlargement. 8 p.m.—My father blistered the throat; the mare moves better; swellings in brisket and extremities much reduced; a fresh one the size of a plate has appeared below and behind the ribs on the near side, also a smaller one on the flank; great difficulty in swallowing continues; a quantity of salivary discharge comes from the nose and mouth; she discharges from the near nostril the most, mixed with blood at times; cannot eat, ear ends cold, rattles in respiration, which is difficult and dwelling, also looks anxious and dejected; pulse 78, is felt with

difficulty, partly on account of enlargement under the throat and submaxillary glands; the heart now throbs a little; fæces are dry and coated, urine clear but high coloured, and not very plentiful; discharges at the vagina and sinus at times; no medicine can be given.

9th.—Pulse and respiration less excited. The mare has sipped and wasted together half a pail of her usual mixture during the night; blister has acted well.

11th.—A visible improvement, pulse 64, soft and a little fuller; respiration tranquil; tries both to eat and drink, but most of it comes back through the nostrils, causing severe coughing, which shakes her very much; yet some passes, or she could not have recruited so much since the 8th; has taken and wasted together 5x of the Tinct. Ferri Perchlor. She moves more freely about the box, and is stronger. The redness in the right nostril has nearly faded off; on the septum of the left nostril it remains, but is of a dingy colour; fæces dry and in small lumps; the lining membrane at the termination of the rectum is of a dark mahogany colour; blister reapplied around the larynx, &c.

13th.—Still improving; pulse 60 and stronger; respiration easy; swallows better, but a great portion yet comes down the nostrils; water is offered, that she may clear the nostrils, in order that the septum may be seen; the colour the same as before in the left nostril. The lining within the anus as before; fæces not so buttony and coated, and no strings of mucus hanging from the anus, as has been previously seen. She moves freely, in good spirits; the off hind leg is now largest above the hock; inside, the skin is abraded and raw; the patch behind the false ribs is less, and has passed away under the body; continue tincture and reduce the spirit, and apply Ung. Hyd. Biniodid. round the throat daily.

The Ung. Hyd. Biniod. was reapplied on June 15th, 16th, and 17th. The mare now refuses to drink any more of the tincture, although she swallows better. Give Ferri Sulph. ʒij, Pulv. Gentianæ et Zingib. āā ʒj, mixed up in chop and corn, twice a day: she feeds well, and has a liberal allowance of oats and bean meal. To-day one of the servants observed that during a fit of coughing she expelled nearly a quart of pus from the vagina.

18th.—Mare is lively; eats well; the pulse numbers 54. She is unwilling to allow any one to approach her head, having been punished a good deal about the throat. The skin is sloughing around the lower thighs, leaving a raw uneven surface; the nostrils are still stained. The vaginal discharge is decreased and the sinus has healed.

24th.—Pulse 44; appetite good; she swallows much better, and is evidently beginning to gain flesh. Ordered the tonic powder to be given once a day only.

July 2nd.—Vaginal discharge nearly ceased; the little which escapes is slightly tinged with blood. Discontinue medicine.

5th.—Pulse and respiration natural; vaginal discharge scarcely perceptible. The nasal defluxion ceased a week ago, but the Schneiderian membrane still continues of a mahogany colour. The eruption above the hocks is healed, but desquamation of hair and slight sloughing are going on below the hocks and knees. The recovery is now so far completed that the mare may be turned to grass as soon as the weather, which is now very showery, permits.

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## THE PRINCIPLES OF BOTANY.

By Professor JAMES BUCKMAN, F.L.S., F.G.S., &c.

(Continued from p. 477.)

WE have now to introduce our readers to a series of plants so curious and irregular in the structure of their flowers as to have obtained for them the name of *Anomales*, but for which we are somewhat prepared after an examination of the *Iridaceæ*. To quote from the 'Vegetable Kingdom:'

"In the Narcissal alliance the series was terminated by irids, many of whose genera have a singularly irregular corolla: as for example, *Babiana*; there was, however, even in these last an exact symmetry in the number of parts of which the flowers consist. In this alliance that symmetry is wholly lost, the number of perfect stamens, as represented by authors, being reduced to one, or even half a one, and not exceeding five in any instance. At the same time the development of the foliage takes a new direction. In the majority of Narcissales the leaves are absolutely sword-shaped, and their veins consequently run in parallel lines; and even when, as sometimes happens, their leaves become widened, the veins still converge at the point. But in the Anomal Alliance the veins always diverge; the result of which is a foliage of quite another character, to which among Endogens

some lilyworts offer the only resemblance. When such leaves acquire a large size they are frequently split into lateral ribands."

It would require a long study of a series of flowers to fully develop the nature of their anomalous types, but allowing for rudimentary development and suppression of parts on the one hand, and redundancy on the other, the most difficult genera from which are produced ginger and arrowroot are reduced to order.

The natural orders are :

*Musaceæ*—Stamens normally 6, by abortion 5.

*Marantaceæ*—Stamens normally 3, of which 2 are abortive.

*Zingiberaceæ*—Stamens normally 3, of which the central one only is fertile.

1. *Musaceæ*.—To this order belong the Plantains and Bananas of the tropics, which, as says Dr. Pereira, "form important and valuable articles of food to the inhabitants of many tropical regions; 'but for plantains,' says Dr. Wright, 'Jamaica would scarcely be habitable, as no species of provision could supply their place. Even flour or bread itself would be less able to support the laborious negro, so as to enable him to do his business, or to keep him in health.'" The fruit of the Banana is indeed called bread-fruit, and the fruits of *Musa sapientum* and *Musa paradisiaca*, and other plantains are partaken of, not as fruits only, but as common articles of food; and so fertile are they that Humboldt calculated that 33 lbs. of wheat and 99 lbs. of potatoes require the same space as that in which 4,000 lbs. of Bananas are grown. Truly, indeed, is this a paradisaical state of things; but it is sad to think that where so little work is required for sustenance, Satan is sure to find some mischief to be done by the idle hands.

In these plants the immature fruit is employed for the production of starch; but in the process of ripening this becomes changed, first into mucilage and then into sugar, so that it can be made either a vegetable food or a delicious fruit, according to circumstances. We have grown the *Musa Cavendishii* in the hot house, where it has ripened its fruit; but as grown at Kew and other large establishments the beauty of form and elegance of the foliage of the numerous species of Musads is their chief attraction.

2. *Marantaceæ*.—Here we have a few genera possessing curiously formed flowers, but their interest centres in their rhizomata or underground stems. That of the *Maranta*

supplies the true arrowroot of the shops, whilst the *Canna* produces a starch called *tous les mois*. The seeds of some of the Cannas are so hard and smooth as to have won the name of Indian shot; and it is said that these roasted form no bad substitute for coffee. These plants have lately come into prominence from their ornamental nature, and many interesting varieties of them may be seen in the "tropical garden" at Battersea Park.

The different kinds of arrowroot made from the Marants are the true ones, but somehow the term has got to be generic for any kind of fecula, such as "Portland arrowroot," from the *Arum maculatum*, Brazilian arrowroot, from the *Jatropha manihot*, while the starch in potatoes is not only called but sold for genuine arrowroot. The fecula of the Marants form a most agreeable non-nitrogenous food. Pereira says, "the starch or arrowroot is employed at the table as an article of food, in the form of puddings. It forms an agreeable non-irritating diet for invalids or infants. In irritation of the alimentary canal, of the pulmonary organs, or of the urinary apparatus, it is especially valuable as a nutritive, emollient, and demulcent."

It has been used both in man and in the lower animals to dry up wounds, and is even made a vehicle in which to mix many active substances to be applied to abraded surfaces, &c.

3. *Zingiberaceæ*.—The Gingerworts are all aromatic herbs, natives of the tropics. Their stems are never branching; not so, however, the rhizome or rootstock, as that often assumes most curious branching and knotted forms. Almost all the species are objects of great beauty, their flowers rivalling the orchids in colour and peculiarities of form. Like some of the orchids, too, even the flowers possess a delicate aroma as do those of the ginger, indicative of the fine aromatic principles which we find stored up in different parts of their structure.

The order is rather an extensive one, but we shall only refer to three, as they are celebrated for affording us some active and useful medicines, *e. g.*—

*Zingiber*—Ginger.

*Curcuma*—Turmeric.

*Amomum*—Cardamoms.

Pereira says that "seven kinds of ginger, distinguished partly by their place of growth and partly by their quality, are known in English commerce. Of these two are from the West Indies, four from the East Indies, and one from Africa."

The quantity of ginger employed in this country may be gathered from the following record of its importation for six years, and it is probably still increasing :—

	Cwts.		Cwts.
In 1849 . . .	27,767	In 1852 . . .	19,919
„ 1850 . . .	33,996	„ 1853 . . .	21,852
„ 1851 . . .	35,399	„ 1854 . . .	24,616

It would be useless here to dwell at any great length upon the qualities or uses of ginger. It is directed for use in the London Pharmacopœia in various preparations, and Professor Tuson, in his useful ‘Veterinary Pharmacopœia,’ describes it as being employed in the following :—“Massa Aloes, Syrupus Rhamni, and Tinctura Zingiberis;” and according to the same authority its “actions and uses are stimulant, stomachic, carminative, and tonic. Given in flatulent colic and debility of the stomach and intestines; also combined with cathartics to increase their activity and prevent griping.” Ginger is also much used in domestic economy, and the dessert table is hardly complete without the addition of preserved ginger.

It is to be regretted that a drug so comparatively cheap should get to be so extensively adulterated. Ginger, in the shape of powder, as supplied to the profession, is too often adulterated, either by grinding inferior qualities or mixing these with flour; but in the mixtures called “horse powders,” which are got by most carters and given by stealth to their horses, we are bold to say that genuine ginger seldom or never forms a part; and happy indeed would it be if the want of pungency was not made up by still stronger stimulants.

Turmeric, as known in the shops, is the brownish-yellow bulboid rhizome of *Curcuma longa*, and perhaps other species. Its name is said by Royle to be derived from *kurkum*, the Persian name for saffron. It seems to be connected with the gingers by the *Zingiber Cassumunar*, which at one time had a repute for efficacy in convulsive and cerebral affections, but now it would be difficult to get, which is of little consequence, as its reputation has long since departed.

The common Turmeric of the shops grinds into a bright yellow powder, which is used for various colouring processes, mainly as a cheap substitute for saffron. This yellow is that of the curry powder, in which this powdered rhizome is always an ingredient.

The cow-leech and the farrier find in Turmeric a constant friend, for besides imparting colour to “drinks,” its yellow recommends it in all cases where discoloration results; thus,

the yellowness of skin from jaundice and kindred affections, the yellow hue around the eyes, and this general hue of ill-health are all supposed, on the doctrine of signatures, to point out Turmeric as a "sovereign remedy" in such cases, and so it is always in an ingredient in the carter's mixture; and the following is a receipt sent to a shop in the country with a plaster horse on one side of the window and a cow of the like composition on the other, intimating that horse and cattle medicine is a speciality within:—

*Recipe verbatim.*

Turmeric,  
Diapentey,  
Fennegreek,  
Junction (qy. Gentian),  
Sulphur Brimston of ache a quarter of a pound;  
Niter,  
Salt Peters 2 ounces.

Take a table spoonvul evry day to fine the Cwoat.

Summer weather and extra attention bring about the result, and then the carter thinks himself the cleverest fellow on earth, and fancies he "kneöws a thing or two mwör nor thaäy vetranies."

But our business is with Turmeric, and what has the possessor of the plaster horse and cow supplied for this article; simply such powdered Turmeric as would be supplied by the wholesale house for such purpose! Alas, no! but this, further mixed with bean flour and yellow ochre! The Turmeric has no place in Professor Tuson's 'Veterinary Pharmacopœia;' but it is yet largely sold by the country druggist—on the drug part of the shop for cattle and pigs, and on the grocer side as a colouring matter, in lieu of saffron, as even our hot cross-bun is coloured with the cheaper article.

The genus *Ammomum* contains several species of plants, the seeds of which are employed as stimulants and aromatics, amongst them the *A. Cardamomum* and *A. granum-paradisi*—Cardamomums and grains of Paradise.

The first of these has a position in the 'Physician's Veterinarian's Pharmacopœia,' for as stated by Tuson in the following:—

"*Characters.*—Seeds obtusely angular, corrugated, reddish-brown, internally white, with a warm, aromatic, agreeable taste and odour; contained in ovate-oblong, triangular, pale brown, coriaceous pericarps."

The seeds are directed to be kept in the pericarps from which they are removed for use. They are employed in the

state of powder mixed with powders, or incorporated in ball masses. In the human school the compound tincture is one of the most elegant preparations, especially as an adjunct\* to cordial, tonic, and purgative mixtures.

The Grains of Paradise form a coarser stimulant, and as such they are much used by rustic cow-leeches, and as their price is about one third that of the true Cardamom they find their uses in mixtures for the sophistication of pepper. Two or three sorts are imported under the name of Guinea grains (*Grana guineensia*); some, however, come from Sierra Leone, but these latter are inferior.

The quantities of "grains of Paradise and Guinea" imported in six years are in cwts. as follows :†—

	Cwts.		Cwts.
In 1849 . . .	1,247	In 1852 . . .	440
„ 1850 . . .	1,316	„ 1853 . . .	183
„ 1851 . . .	96	„ 1854 . . .	249

Whether this uncertainty depends upon the variable nature of the crop or has anything to do with legal restrictions it may be difficult to determine; but certain it is that they have been so much employed to give artificial strength to spirits, wine, beer, and vinegar, and they occur in the following list of the unlawful substances seized at different breweries and brewers' druggists' laboratories in London, as copied from the minutes of the Committee of the House of Commons :‡—" *Cocculus indicus, multum* (an extract of the *cocculus*, colouring, honey, hartshorn shavings, Spanish juice, orange powder, ginger, GRAINS OF PARADISE, quassia, liquorice, carraway seeds, copperas, capsicum, mixed drugs."

And by the 56 Geo. III, c. 58, no brewer or dealer in beer shall have in his possession or use *grains of Paradise*, under a penalty of £200 for each offence; and no druggist shall sell it to a brewer, under a penalty of £300 for each offence.

We would now, in bringing these notes to a close, remark upon the variable uses of this alliance of plants. In some the fruits are not only wholesome, but form the principal food of a large number of people. In others, the fruits are hot and spicy, as peppers. Again, in the Marants the *rhizomata* are employed for the production of the invalids' diet of arrow-root, whilst the gingers yield, from the same part, the hot and stimulating spice so well known. Still, it is with these

\* Pereira.

† Ibid.

‡ 'Cooley's Practical Receipts.'

products as with the varied anatomy of their flowers, they all make out an affinity which is well marked spite of these variations.

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## Pathological Contributions.

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### CATTLE PLAGUE.

THE information received from France with regard to the cattle plague is still very meagre; so much so in reality that no correct estimate can be formed of the extent of the disease, or the success of the means employed for its extermination.

No fresh cases of the disease have occurred during the past month in Bavaria; but in Lower Austria the malady has broken out, since our last report, in six villages, in two divisions of the empire. Cattle plague is also prevalent in Galicia and Transylvania; but Poland is reported as having been free from it since the middle of June.

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### PLEURO-PNEUMONIA.

OUR report of the extent and progress of this disease differs but little from that of last month. The centres of the infection have increased; but the fresh outbreaks and number of counties in which the malady prevails are fewer. The disease is also less rife in the metropolis.

One very serious outbreak has taken place in Somerset on the farm of Mr. Stephen Butler at Farnborough, which has led to the Local Authority enforcing the powers conferred on it by Order of Council of February 16th, 1871, to the effect "That the carcasses of all cattle which have died, or have been slaughtered, in consequence of pleuro-pneumonia, shall be buried, under the supervision of the inspector, to a depth of at least six feet, the hides slashed, and covered with quick-lime, and that such carcasses shall not be afterwards removed from the place of burial.

"That no hay, straw, litter, or other thing commonly used

for food of animals, or otherwise for or about animals, or that has been in the same field, stable, cowshed, or other premises with cattle affected with pleuro-pneumonia, shall be moved out of such premises without a license from the inspector.

“That the foregoing regulations shall have effect throughout the district of the Local Authority.

“That all other powers under the said Order in Council of the 16th day of February, 1871, vested in the Local Authority, be, and they are hereby, delegated to the several sub-committees appointed by the order of the 16th of October, 1869, subject to the foregoing orders and regulations.”

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### FOOT AND MOUTH DISEASE.

DURING the past month very little change has taken place with regard to the prevalence of the foot and mouth disease ; but upon the whole the malady is rather more rife—a slight increase being reported both in the centres of the infection and number of fresh outbreaks.

Our information from the Continent is to the effect that the disease prevails in many parts of Southern Europe, and in some countries in which it is comparatively rare. Portugal is suffering from the malady ; and two or three cargoes of infected cattle have been imported from that country, which were dealt with in accordance with the provisions of the Orders of Council.

In South America the disease is on the decline. The Republic of Uruguay is reported to be free of it, and the Province of Coquimbo, Chili, to contain but few cases, and these of a mild character.

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### THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

“RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of June, 1871, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which,

and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	NUMBER OF ANIMALS AFFECTED.					DISPOSAL.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered at place of landing.
Hamburg	London	Pleuro-Pneumonia	1	...	...	...	1	1
Lisbon	Southampton	Foot-and-mouth	17	...	...	...	17	17
Total . . .			18	...	...	...	18	18

“ALEXANDER WILLIAMS,

“ Privy Council Office,

Secretary.

“ Veterinary Department, 13th July, 1871.”

“GID” IN LAMBS—HYDATIDO-CEPHALUS.

MR. GEORGE DREW, M.R.C.V.S., Abingdon, has called our attention to an extensive and somewhat extraordinary outbreak of “gid” among a flock of valuable lambs. A short time ago many of the animals gave indications of cerebral disturbance by the ordinary symptoms of vertigo, giddiness, &c. About a dozen soon fell a sacrifice to the disease, and between thirty and forty are now affected. We have not unfrequently met with a similar occurrence, and have sometimes known as many as thirty-five per cent. of the entire flock to be ultimately lost.

The existence of the brain-hydatid is now well known to depend on the matured ova of the *Tænia cænurus* of the dog being received into the digestive organs of the sheep, and the young hooked embryos, on making their escape from the ova, finding their way to the brain, and in this their habitat developing into the polycephalous hydatid (*Cænurus cerebralis*). The so-called heads of this hydatid are in reality larval tape-worms, so that when the hydatid in its turn enters the stomach and intestines of the dog, tape-worms are produced in proportion to the number of heads which are retained within the digestive canal of this animal.

In conjunction with Dr. Cobbold, we, in the year 1865,

reared several of these tape-worms, and have in our keeping specimens of the *Tenia cœnurus*, which vary from five days to two months of age.

Experiments in the contrary direction, *id est*, the exhibition of the matured ova of the tape-worm to sheep, have shown that about two months are required for the development of the hydatid, or hydatids, as the case may be, in the brain to an extent sufficient for the animal to give indications of "gid." It is evident from these facts that the lambs in question must have received the tape-worm eggs when not more than two to three months of age; and it becomes an important question as to where they were then located, and how managed from very early life. Had dogs of any kind free access to the fields on which the lambs were at pasture? Does their owner rear or keep sporting dogs, or is the shepherd's dog infested with tape-worms? These are matters to be inquired into for preventing a recurrence of the evil. To cure it is out of the question.

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### SUPER-FŒTATION IN THE SHEEP.

WE are indebted to Mr. John Casewell, M.R.C.V.S., Wem, Shropshire, for the particulars of a case of lambing, which certainly goes a long way to prove that super-fœtation occasionally occurs in the sheep. Mr. Casewell writes as follows:—"One of my clients has a ewe which brought forth a lamb on the 13th or 14th of March last, and on the 19th of June she gave birth to another. Both lambs are alive, healthy, and perfectly formed. The owner of the ewe says that no ram has been with the flock since February 27th, and he thinks she must have taken the ram while in lamb."

It is fair to infer from this account that the lamb which was born in March had been carried the full period of utero-gestation—twenty-two weeks—which would place the *first impregnation* in the middle of October, 1870. Assuming the same thing with regard to the *second* lamb, born June 30th, the *second impregnation* would occur at the end of January, or about six weeks previously to the birth of the first lamb, and a month before the removal of the ram from the flock.

We believe that no delay in the bursting of the ova-sac subsequently to coition will account for these facts, and that they do not admit of any satisfactory explanation, except on the principle that super-fœtation did absolutely take place in this particular instance. Speaking physiologically, and having

in view a normal condition of the uterus of the sheep, superfœtation would appear to be a thing impossible; but then it is well known that the uterus, like other organs of the body, is occasionally abnormally developed, and it is easy to conceive that its neck and mouth may be so formed as to allow the unoccupied horn to be impregnated. The uterus of such a sheep would be modified so as to approach the form of the womb of the hare and rabbit, in which animals one half of the organ is not unfrequently occupied by a fœtus when the other becomes impregnated. As far back as the time of Pliny these animals were believed to be capable of super-fœtation.

If arrangements could be made by which we could have an opportunity of examining the entire generative organs when the ewe is slaughtered, we should be yet further indebted to Mr. Casewell.

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### RABIES IN THE DOG.

THE spread of that truly dreadful disease, rabies of the dog—hydrophobia of man—to which we have several times within the last few months drawn special attention, seems to be assuming a most serious increase. The *Sporting Gazette*, alluding to the subject, says that “Very alarming intelligence has reached us of the outbreak of rabies in several hunting kennels. The Quorn have lost all their entry, and many of the Albrighton have died; whilst more serious fears are entertained of the fate of the huntsman and one of his assistants of the latter pack, both of whom have been bitten. We also hear that the disease has spread amongst some of the Scotch packs.”

A few years ago the attention of the Royal Veterinary College was called to an outbreak of rabies in a pack of hounds belonging to Mr. W. C. Standish, South Shoreham, Southampton. Several of the diseased animals were sent to the College, that the symptoms of the malady might be more carefully noted and practical illustrations of its variable features given to the students. Fortunately, the larger number of the cases were of the variety known as “dumb madness,” and hence there was little risk in thus dealing with the animals. The disease went on for several months, and ultimately, by death and by slaughter, only a very few of the animals were left in the pack. It fortunately happened that by the precautions which were adopted no person was bitten.

The outbreak was supposed to have depended on a hound which had strayed away, and was absent from the kennels

for several days, having been bitten in the interim. The pack was a "bitch pack."

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## INFLUENZA AMONG THE HORSES IN PARIS AND NEW YORK.

THE disease ordinarily known as influenza, which was recently very rife among the horses of the metropolis, appears to have almost entirely ceased, or to have assumed so mild a character as to create very little interest or anxiety. We learn, however, that a similar malady has broken out with much violence among the omnibus and cab horses in Paris, and that large numbers of them have died.

The public papers report that of 300 horses recently purchased by the Paris Cab Company from the Prussian military commanders, no less than 200 have been carried off by the disease.

We are also informed that a similar disease is raging to a serious extent among the horses in New York, and that the losses by death are very heavy.

A leading peculiarity of the New York outbreak is that the nervous system is much involved in the morbid action, whereby paralytic attacks are frequent complications.

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## Facts and Observations.

THE BROWN BEQUEST.—By the liberality of Mr. Cunliffe, who presented £2000 for the purpose, the University of London has now been formally placed in possession of an excellent site and buildings in the Wandsworth Road, Battersea, and the Brown Institute for the Treatment and Study of the Diseases of Domestic Animals is now an accomplished fact. £30,000 are available for the purpose. Dr. Burdon Sanderson, F.R.S., has been appointed by the Senate the professor-superintendent. The Senate also accepted a scheme for the management of the Institution, involving the appointment of—1st. A Committee of Management, to be composed of the Vice-Chancellor, six members of the Senate, and the Registrar, or Assistant-Registrar, if a medical man; and 2ndly. A professor-superintendent, a veterinary-assistant, a clerk, and subordinates, the two former to reside on the pre-

mises. The institute will thus be placed in a position to render services alike important to humanity and to science.—*Lancet*, and *British Medical Journal*.

**A COLLEGE OF SCIENCE FOR YORKSHIRE.**—At the annual meeting of the Yorkshire Board of Education, held at Leeds, a short time since, Lord F. Cavendish, M.P., advocated the necessity of establishing a college of science, to which both manufacturers and artisans could send their sons, to learn the laws which regulated the materials it would be their future business to deal with.

**WOOL IMPORTS.**—The imports of sheep's wool last year were 873,927 bales, being about 6300 bales below the imports of 1869. The falling off was principally in Cape, East Indian, and German wool. The Australasian wool imports were larger by about 50,000 bales than in the previous year, having reached the high figure of 549,264 bales. In goats' hair or wool, there has been a considerable decline in the last three years. Assuming the yield of the home clip for 1870 to have been equal to that of former years (which, according to a paper recently read before the Statistical Society in London, taken as an average of the four years 1867 to 1870, amounts, in round figures, to 160,000,000 lb.); and considering that stocks of the raw material in the hands of consumers and dealers are admittedly very light—only importers of fine colonial wools holding rather more than the usual quantity at this time of the year—it appears, beyond all doubt, that the consumption of wool during 1870 has been on an unprecedentedly large scale, that more machinery than ever is profitably employed, and that the woollen trade altogether is decidedly in a most healthy state.—*Journal of the Society of Arts*.

**SALE OF THE LATE LORD WALSINGHAM'S SOUTH-DOWNS.**—The sums realised by the sales of this celebrated flock, which took place on Thursday, June 29th, were as follows:—

	£	s.	d.
19 Old rams brought ... ..	525	10	6
65 Shearing rams ... ..	1431	13	6
120 Ram lambs ... ..	543	16	0
192 Old ewes ... ..	771	5	0
65 Three shear ewes ... ..	267	10	0
90 Two shear ewes ... ..	432	10	0
160 Shearling ewes ... ..	1110	2	6
160 Ewe lambs ... ..	407	7	6

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£5489 15 0

A small number of ewes, which had been kept separate from the general flock, and the first-prize shearing ram at the Manchester show of the Royal Agricultural Society, with a son of his, and also a son of the first-prize shearing ram at the Bury St. Edmunds show, have been retained as a foundation for a future flock.

**IRON AND STEEL.**—Mr. Gerhard, metallurgical chemist, of Wolverhampton, is proceeding with his experiments in the manufacture of iron, and has succeeded in producing from the ore, refined iron of a high order, at much under the cost of a similar quality very much sought after by certain machine founders and producers of finished iron. Mr. Gerhard, however, aims at the making of steel at much less cost than any of the methods now in vogue, and he has much confidence that he shall soon succeed. He believes that he can see his way to producing finished iron in a pure state without the interposition of the puddler.—*Journal of the Society of Arts.*

**GUN COTTON IVORY.**—It has been discovered that camphor, triturated with gun cotton, and subjected to hydraulic pressure, produces a hard white substance, which, if coated with a compound of gun cotton and castor oil, resembles ivory, to which for many purposes it is superior. In order to detect what takes place in this curious transformation, Professor Seely placed fragments of camphor in a test-tube, and closed its upper end with a plug of gun cotton; the tube was then set in a water-bath, when, in a few minutes, the tube became filled with red vapour, and the gun cotton exploded with violence. It has long been known that camphor must be added to alcohol before gun cotton will dissolve in it.—*Ibid.*

**SOLUBILITY OF METALS.**—Mr. Charles A. Seeley, of New York, has communicated to the *Journal of the Franklin Institute* some results of his recent experiments on the solubility of metals without chemical action. He has been investigating the properties of ammonium amalgam, which, from the mercury being increased tenfold in bulk, and also from the fact that it is compressible in a syringe, recovering, however, both its volume and appearance on pressure being removed, he believed to be a mercuric froth rather than an amalgam. Further investigation led him to the discovery that ammonia was a solvent of all the alkali metals.

## THE VETERINARIAN, AUGUST 1, 1871.

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Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

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## IMPORTATION OF FOREIGN CATTLE.

WE return to the question of the importation of cattle from the Continent, for the purpose of making clear the law as it now exists, as well as the reasons which have led to the Netherlands being removed from the list of scheduled countries, thus placing the cattle of Holland in the same position as those of Spain, Portugal, Denmark, &c., *viz.* that after being landed at an undefined part of a port, examined on landing, and again at the end of not less than twelve hours' detention, they shall, if found to be free from disease, cease to be considered foreign animals. We have felt it necessary to refer to this subject, in consequence of the numerous applications we have received for information, and also with a view of replying to the garbled statements which have appeared in several of the papers which profess to watch over the agricultural interest.

In the discussion which took place in the House of Commons on the Contagious Diseases (Animals) Act—published in our last issue—the Vice-President of the Council, after drawing attention to the vast importance of the trade with Holland, and the increased number of cattle imported from that country over those from Germany during last year, as well as the continued freedom of the country from cattle plague, explained “that the Dutch Government were told, when they asked that the restrictions on the import of Dutch cattle might be taken off, that there was risk in allowing cattle to be imported from Rotterdam, as such cattle might come from the Steppes, or from other countries infected with cattle plague; and the result was that the Dutch passed a law prohibiting the import of cattle and sheep into Holland, and also promised to give notice of any change about to be made in the law.”

The law thus referred to consists of a Royal Decree—a translation of which is subjoined—by which it will be seen that it goes very much further in the way of preventing the cattle plague entering Holland than the observations of the Vice-President, as reported in the public prints, would lead the public to infer. Indeed, the decree is so complete in itself—even if unconnected with the promise given by the Government of Holland—as to furnish a perfect answer to the objectors of the policy of freeing Dutch cattle, and to render it unnecessary for us to support the course which has been adopted by any arguments of our own.

*Translation.*

DECREE of the 8th December, 1870, prohibiting the importation and transit from foreign countries of *cattle, sheep, goats, fresh hides, fresh and salted meat, unsmelted fat, manure, unmanufactured wool, unmanufactured hair, hoofs and horns,* as well as of everything pertaining to the animals above mentioned.

WE, WILLIAM III, BY THE GRACE OF GOD KING OF THE  
NETHERLANDS, PRINCE OF ORANGE-NASSAU, GRAND  
DUKE OF LUXEMBURG, ETC. ETC. ETC.

Considering :

That, on the 31st December, 1870, the law of the 17th October, 1865 ('Official Gazette,' No. 121), and also our decrees of the 10th and 20th September, 1870 ('Official Gazette,' Nos. 160 and 163), do not remain in force ;

That, nevertheless, the spreading of the cattle plague in neighbouring kingdoms still renders it necessary to make regulations, in order to continue to avert the disease ;

Taking into consideration Clause 15 of the Act of the 20th July, 1870 ('Official Gazette,' No. 131), which will come into operation on the 1st January, 1871 ;

Upon the recommendation of our Ministers of the In-

terior and of Finance of the 17th October, 1870, No. 246, 9th division, and of the 28th of the same month, No. 126 ;

Having heard the Council of State (Notice of the 29th November, 1870, No. 6) ;

Having taken notice of the further joint Report of our before-mentioned Ministers, of the 3rd and 6th December following, No. <sup>(172, 9th Division</sup><sub>77, I. U. R. & Acc.</sub> ;

Have resolved and decreed :

#### CLAUSE 1.

The importation and transit from foreign countries of cattle, sheep, goats, fresh hides, fresh and salted meat, unsmelted fat, manure, unmanufactured wool, unmanufactured hair, hoofs, horns, and everything pertaining to the aforesaid animals, is prohibited.

#### CLAUSE 2.

This prohibition shall not apply to salted meat, wool, hair, horns, and hoofs, imported direct from countries not in Europe.

#### CLAUSE 3.

Should any particular reasons render it necessary to grant an exception to this prohibition, our Minister of the Interior is empowered to make such exception, provided the necessary measures be adopted to prevent the introduction of the disease, and also with the concurrence of our Minister of Finance.

#### CLAUSE 4.

This decree shall come into operation on the 1st of January, 1871.

Our Minister of the Interior and of Finance shall be charged with the carrying out of this decree, which shall be published in the ' Official Gazette,' and also in the ' Official

Journal,' and of which a copy shall be sent to the Council of State.

The Loo, the 8th of December, 1870,  
(Signed) WILLIAM.

The Minister of the Interior,  
(Signed) FOCK.

The Minister of Finance,  
(Signed) VAN BOSSE.

Published on the twentieth of December, 1870.

The Minister of Justice,  
(Signed) VAN LILAAAR.

So much for security given by Hollaud and the policy adopted towards that country with regard to the importation of her cattle.

We now give the regulations which are in force with reference to cattle imports in general from the Continent, and as these are best set forth by a paper just issued from the Veterinary Department, bearing date 7th July, 1871, we shall content ourselves by a reprint of this document.

“NOTES OF THE PRINCIPAL PROVISIONS WITH RESPECT TO FOREIGN ANIMALS CONTAINED IN THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869, AND ORDERS ISSUED THEREUNDER.

“N.B.—These notes are intended to supply a means of reference to the Act and Orders, but it must be distinctly understood that the Act and Orders themselves are alone authoritative.—A. W.

“SECTION 1.—*Cattle from scheduled Countries.*

O. C. 258  
Schedule, and  
O. C. 325.

“Cattle coming from Russia, the Austrian-Hungarian dominions, North Germany, the dominions of the Sultan, Italy, the Papal States, Belgium, and Greece, can only be landed at the following ports :—

Bristol.	Leith.
London.	Glasgow.
Dover.	Middlesborough.
Hartlepool.	Portsmouth.
Hull.	Grimsby.
Newcastle-upon-Tyne.	Dartmouth.
Plymouth,	Littlehampton.
North Shields.	Sunderland.
Shoreham.	Goole.
Southampton.	Liverpool.
Granton.	

These cattle must be landed at parts of these ports defined by the Privy Council as landing-places for slaughter, and are subject to the regulations contained in the fourth schedule to the Act.

“ All such cattle must be slaughtered within ten days after being landed, exclusive of the day of landing. O. C. 258, Art. 5.

“ All such cattle must be slaughtered at such landing-places, except for the supply of London and Edinburgh, and at ports where quarantine or re-shipment to another landing-place is allowed.

“ For the supply of Edinburgh the defining Orders contain special provisions enabling these cattle, under certain conditions, to be moved by railway from the landing-places at the ports of Granton and Leith to the Edinburgh Public Slaughter-house. O. C. 274 and 275.

“ For the supply of London the Metropolitan Order and the Order defining the port of London, contain special provisions, enabling these cattle, under certain conditions, to be moved by railway from the landing-places in the port of London to the Metropolitan Cattle Market. O. C. 259, 263, and 326.

“ Re-shipment is allowed at Hartlepool, Hull, and Sunderland. O. C. 293, 297, and 282.

“ In the Order for Southampton there are special provisions under which cattle from scheduled countries may undergo quarantine, and so cease to be deemed foreign cattle. O. C. 311.

- O. C. 285. "The Order of the 1st of September, 1869, contains special provisions with regard to milch cows in vessels taken out from, and brought back to, Great Britain, without having left the vessel.
- Act of 1869, Sec. 19. "All animals within a part of a port defined for the landing and slaughter of cattle from scheduled countries are to be deemed cattle from scheduled countries.
- O. C. 263 and 326. "There are three places within the port of London defined as landing-places for slaughter, namely, Thames Haven, Victoria Docks, and Brown's Wharf.
- O. C. 259, 263, and 326. "The Metropolitan and defining Orders provide for the removal of cattle from these landing-places to the Metropolitan Cattle Market. The cattle are to be taken by railway in special trucks along specified routes to within 1000 yards of the market, and are to be there discharged, and driven immediately to the market, or to lairs licensed by the Privy Council. No such cattle can leave the Metropolis alive.
- Act of 1869, Secs. 28 and 29. "There are special provisions in the Act for the establishment of a foreign market for the Metropolis.

"SECTION 2.—*Foreign animals generally, and cattle from unscheduled countries.*

- O. C. 328. "Foreign animals can only be landed at the following ports :—

Bristol.	Harwich.
Cardiff.	Hull.
Dartmouth.	Kirkwall.
Dover.	Leith.
Falmouth.	Littlehampton.
Folkestone.	Liverpool.
Glasgow.	London.
Goole.	Middlesborough.
Grangemouth.	Newcastle-upon-Tyne.
Granton.	Penzance.
Grimsby.	Plymouth.
Hartlepool.	Portsmouth.

Shields, North.  
Shields, South.  
Shoreham.

Southampton.  
Sunderland.  
Weymouth.

“ All foreign animals must be detained and inspected on landing. If any one of a cargo is found affected with any contagious or infectious disease, such animal or the whole cargo may be detained and slaughtered, or otherwise dealt with, as the Privy Council or Customs direct.

Appendix, O. C.  
258, Arts. 7  
and 9, and  
O. C. 322.

“ Compensation may be withheld in respect of any foreign animal slaughtered on account of its being affected with cattle plague, or with disease suspected to be cattle plague, if it appears that the animal was so affected at the time of its landing.

Act of 1869,  
Sec. 71.

“ Healthy foreign cattle if landed at places other than those defined for the landing of cattle from scheduled countries will cease to be deemed foreign cattle after complying with the following conditions:—

O. C. 258, Art.  
6.

“ 1. The vessel in which they are imported must not within three months have had on board any cattle from a scheduled country.

“ 2. The vessel must not, since taking on board the cattle imported, have entered any port of a scheduled country.

“ 3. The cattle must not, while on board, have been in contact with any cattle from a scheduled country.

“ But they are not allowed to land until the owner or charterer of the vessel or his agent has entered into a bond not exceeding £1000, to observe the above conditions, nor until the master of the vessel has made a declaration that none of the cattle exported have come from a scheduled country, and that the foregoing conditions have been observed.

## “ SECTION 3.

“ The provision of the Order issued on the O. C. 321. 9th March, 1871, prohibiting the landing of cattle coming from France, and sheep and goats coming with them, is still in force.

“ (Signed) ALEXANDER WILLIAMS.

## “ APPENDIX.

“ REGULATIONS relating to the Landing and Inspection of Foreign Animals arriving at Ports in Great Britain, from and after the 31st day of March, 1871.

## “ MARKING.

“ Each kind of foreign animal landed at a landing-place for slaughter (with the exception of sheep and swine landed within a defined part of the Port of London) shall be marked in the following manner, namely :—

“ *Cattle*.—By clipping the hair off the end of the tail, and by clipping a broad arrow, about five inches long, on the left quarter.

“ *Sheep and Goats*.—By clipping a broad arrow, about four inches long, on the forehead.

“ *Swine*.—By printing a broad arrow, about three inches long, on the left side, with the following composition, namely :—Resin, five parts ; oil of turpentine, two parts ; and red ochre, one part ; melted, and used warm.

## “ DETENTION.

“ All foreign animals landed in Great Britain shall be detained for at least twelve hours after landing, except as hereinafter provided, in some lair or other proper place adjacent to the landing-place, for the purpose of being inspected by the Veterinary Inspector appointed by the Privy Council for that purpose ; and every such Inspector shall have power to detain, for any longer period, any animal or

animals which he has reason to suspect is or are affected with any contagious or infectious disease.

“No animal, carcase, hide, meat, offal, provender, or manure, shall be removed from the lairs, except with the permission of the Inspector.

#### “INSPECTION.

“All foreign animals shall be inspected by the Veterinary Inspector appointed for that purpose; and such inspection shall commence as soon as possible after landing.

“The final inspection of each animal shall not take place until the end of the twelve hours, except as hereinafter provided, nor except during daylight.

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“REGULATIONS relating to Contagious or Infectious Diseases amongst Foreign Animals landed at Ports in Great Britain.

#### “1. *Slaughter.*

“Should one or more sheep or swine be found to be affected with any contagious or infectious disease (except cattle plague), such sheep or swine shall be kept separate from those of the same cargo which have been passed as healthy. The slaughter of the healthy sheep or swine of such cargo may be permitted to take place immediately, and such slaughtering may, if desired by the importer or consignee, be continued without intermission.

“The carcases of the healthy animals, so slaughtered, may be removed without a *post-mortem* examination, under the superintendence of the inspector, or of the police, or of any officer appointed by the local authority in that behalf.

“The slaughter of the diseased animals shall take place under the superintendence of the inspector, who shall make a *post-mortem* examination of each carcase, and give instructions as to the disposal of it.

“ 2. *Cleansing and Disinfection.*

“ When any animal suffering from any contagious or infectious disease has been landed at any port, or has been slaughtered at the landing-place in consequence of being so affected, the landing-place, lair, or other place where such animal has been, shall not be used for any other animals until such landing-place, lair, or other place has been properly cleansed and disinfected.

“ 3. *Cattle Plague.*

“ When cattle plague has been detected in one or more of a cargo of animals, the whole of the animals forming such cargo shall be detained and slaughtered at the place of landing.

“ 4. *Pleuro-Pneumonia.*

“ When pleuro-pneumonia has been detected in one or more of a cargo of animals, the whole of the cattle forming part of such cargo shall be subject to the following regulations, namely :—

“ When such cattle have been landed at any place other than within the defined part of a port, they shall be slaughtered at the landing-place, or if, at the port at which such cattle are landed, there is a part defined for slaughter, they may, with the permission of the Commissioners of Her Majesty’s Customs, be removed into such defined part for the purpose of such slaughter.

“ When such cattle have been landed within a defined part of a port, or have been moved as above provided into such defined part, they shall not be removed therefrom alive, but shall be slaughtered within such defined part.

“ 5. *Foot-and-Mouth Disease.*

“ When foot-and-mouth disease has been detected in one or more of a cargo of animals, the following regulations shall apply : Provided that such regulations shall be deemed to apply only to the class of animals amongst which the disease has been found to exist.

“ 1. The cattle, if any, so affected shall be slaughtered at the landing-place.

“ 2. The cattle, if any, not so affected shall either be slaughtered at the place of landing, or if, at the port at which they are landed, there is a part defined for slaughter, they may, with the permission of the Commissioners of Her Majesty’s Customs, be removed into such defined part.

“ 3. The cattle, when landed within a defined part of a port, or if moved, as above provided, into such defined part, shall be slaughtered within such defined part, subject, however, to any regulation affecting any port, in the defining order of which, special permission is granted to remove cattle out of such defined part.

“ 4. The sheep, if any, so affected shall be slaughtered at the landing-place.

“ 5. The sheep, if any, not so affected, shall either be slaughtered at the place of landing, or if, at the port at which they are landed, there is a part defined for slaughter, they may, with the permission of the Commissioners of Her Majesty’s Customs, be removed into such defined part.

“ 6. The sheep, when landed within a defined part of a port, or if moved, as above provided, into such defined part, shall not be removed therefrom alive, but shall be slaughtered within such defined part.

“ 7. The swine, if any, so affected, shall be slaughtered at the landing-place.

“ 8. The swine, if any, not so affected, shall either be slaughtered at the place of landing, or if, at the port at which they are landed, there is a part defined for slaughter, they may, with the permission of the Commissioners of Her Majesty’s Customs, be removed into such defined part.

“ 9. The swine, when landed within a defined part of a port, or if moved, as above provided, into such defined part, shall not be removed therefrom alive, but shall be slaughtered within such defined part.

“6. *Sheep-Pox.*

“When sheep-pox has been detected in one or more of a cargo of animals, the whole of the sheep forming any part of such cargo shall (subject to Regulation No. 1) be detained and slaughtered at the place of landing.

“7. *Sheep-Scab.*

“When sheep-scab has been detected in one or more of a cargo of animals, all the sheep forming any part of such cargo shall (subject to Regulation No. 1) be detained and slaughtered at the place of landing, or if, at the port at which they are landed, there is a part defined for slaughter, they may, with the permission of the Commissioners of Her Majesty’s Customs, be removed into such defined part for the purpose of such slaughter.”

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THE ROYAL AGRICULTURAL SHOW AT WOLVERHAMPTON.

THE success hitherto attending the visits of the Royal Agricultural Society to the manufacturing districts has not been so fully realised at Wolverhampton as had been expected. The receipts, although they have exceeded those of Oxford and other meetings in purely agricultural districts, have fallen far short of Manchester and Leeds. The total sum received for admission to the yard during the week does not much exceed £7000, independent of the season tickets; while at Manchester the receipts at the doors were considerably over £15,000. On Monday, the 5s. day, only 2654 persons paid for admission; and on the two following days, when the entrance fell to 2s. 6d., 18,578 passed the turnstiles. The first shilling day, Thursday, brought 52,466 visitors, and the second 33,624, making a total for the five days of 107,322.

Various causes contributed to bring about this unexpected result, and among them the unfavorable state of the weather and poachy condition of the show-yard doubtless played their

part. The thing before all others, however, as it appeared to us, which threw a gloom over the whole affair, was a want of that public spirit and *esprit de corps* on the part of the town authorities which have always formed so prominent a feature at the Society's country meetings.

No social or convivial gatherings, *soirées*, or intellectual assemblies bear record to the Society's visit to Wolverhampton. Every one was asking his friend or neighbour whether the capital of the black country did really possess a mayor and corporation, and no one, not claiming the rights of denizenship, appeared to be able with confidence to answer the question.

It is not many years since that the head of the corporation of a town located in a purely agricultural district, from the energy, activity, and liberality he displayed, not only contributed to render a meeting successful which had been regarded by many with gloomy anticipations, but won for himself the reputation of being "the best mayor (mare) for agricultural purposes." The honour of winning the first prize by this gentleman has been followed by many successful competitors for the Society's second and third prizes and "high commendations" among the heads of other corporations; but it seems that the mayor (mare) of Wolverhampton will henceforth be remembered as having failed to obtain even a "commendation" in any of the classes.

The decision arrived at by the judges with regard to the want of sufficient merit in the chief of the local candidates seems to have had a most depressing influence over the rest of the competitors for public honours, and, with a few exceptions, little was seen or known of any of them.

The Society, however, has much to congratulate itself upon in the show itself, the merits of which contrast favorably with the merits of many former exhibitions.

The entry of horses exceeded that of Oxford, and although not large, it contained, upon the whole, many better animals than we have often seen brought together. The "thorough-bred stallions suitable for getting hunters" did not to our mind possess any very special merit. The first prize fell to Mr. Casson's "Sincerity," who took third honours last year at Oxford; the second to Mr. Watson's "Blink-

hoolie," and the third to Mr. Sharpe's "Suffolk." The hunter classes were very superior as a whole, particularly the weight carriers. Geldings and mares vied with each other for public honours, as well as for the special prizes of the Society. The mares for breeding hunters came short of our expectation, but not so the class of hackney stallions, which was very good. The agricultural classes contained many superior animals, both stallions and mares, but in many of them the entries were small and the contest necessarily less severe. "Honest Tom" again took first prize in the class of all-aged stallions, and "Champion" second. The Suffolks were better than last year; and the class of mares with foals at foot, not eligible to compete as Clydesdale or Suffolk, was so superior as to obtain the distinction of "generally commended."

Little need be said of the cattle, beyond the fact that each of the established breeds of shorthorn, Hereford, and Devons, bore evidence of progress. Some of the old short-horn bulls and also cows were, perhaps, scarcely equal to those of former shows, but the classes of "yearling bulls," "heifers not exceeding three years old," and "yearling heifers," were so meritorious as for each of them to be "highly commended." The yearling Hereford bulls were also considered sufficiently good to be "commended" as a class; while the two-year-old heifers were so excellent as to win the distinction of "highly commended." The show of Devons was less than at Oxford, but the animals possessed so much merit as for five out of the eight classes to be "generally commended." The Norfolk and Suffolk polled did not show in great strength, still some really good animals were exhibited in the different classes. Other breeds were moderate.

The principal feature to be noticed with regard to the sheep was the splendid collection of "Shropshires;" a finer lot of this breed of sheep was never before brought together. The lambs, however, were scarcely up to mark; indeed, it may be said that ordinary fairs and markets not unfrequently, at this time of year, will furnish more thriving and better animals than some of those exhibited.

It would seem from the award of prizes that Sir W. Throckmorton appears destined to take the place of the late Lord Walsingham as a breeder of South-downs; but if we mistake not, this honour will be stoutly contested by the Duke of Richmond and Mr. Rigden. The former takes a first prize for a pen of five shearling ewes, and the latter a third for shearling rams, and a second and third for rams of any other age.

The pig classes were well represented, and many splendid grunTERS were domiciled within their iron-bound pens. The disqualifications for want of agreement between the statements made in some of the certificates and the condition of the dentition of the animals were more numerous than of late. Seven pens were disqualified—two for the animals not being of the same litter. Four of the disqualified lots, singularly enough, belonged to the same exhibitor.

It may be mentioned, as an incident of rare occurrence, that one of three young sows, in Class 124, “above four and under eight months of age,” certified to be “seven months and three weeks old” to July 1st, produced, during the night of Wednesday, a litter of six young ones. Taking the period of utero-gestation at sixteen weeks, and reckoning her age in weeks, inclusive of the day of parturition, she would have been only sixteen weeks old when impregnated. This is certainly early, but many cases of the kind have occurred.

We subjoin a list of the prizes *only*, our space not allowing of mention being made of the “commendations.”

### *Prize List.*

*“No 3rd Prize will be given unless at least six animals be exhibited, except on the special recommendation of the Judges.”*

### HORSES.

CLASS 1. Agricultural stallion, foaled before the 1st of January, 1869 (not qualified to compete as Clydesdale or Suffolk). First prize, 25*l.*; second prize, 15*l.*; third prize, 5*l.* 1st prize, William Welcher, of Mouse Hall, West Tofts, Brandon, Norfolk, “Honest Tom,” bay, 6 years old, bred by exhibitor. 2nd, John Manning, of Orlingbury, Wellingborough, Northamptonshire, “Young Champion,” chestnut, 4 years old, bred by Mr. Stokes, Caldecot, Rockingham, Northamptonshire. 3rd, Cotes Sharpley,

Kelston Hall, Louth, "Le Bon," bay, 3 years old, bred by Mr. T. Fullard, Thorney, Peterborough.

CLASS 2.—Agricultural stallion, foaled in the year 1869 (not qualified to compete as Clydesdale or Suffolk). First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, Thomas Corfield, of Cardington, Church Stretton, Salop, "The Shropshire Friend," bright bay, 2 years old, bred by exhibitor. 2nd, Lawrence Ashcroft, of Mawdesley, Ormskirk, Lancashire, "John Bull," bright bay, 2 years old, bred by exhibitor. 3rd, George Street, of Mauldon, Ampthill, Bedfordshire, "Captain," brown, 2 years old, bred by exhibitor.

CLASS 3.—Clydesdale stallion foaled before the 1st of January, 1869. First prize, 25*l.*; second prize, 15*l.*; third prize, 5*l.* 1st prize, Henry Tomlinson, of Blithford, Rugeley, Staffordshire, "Young Lofty," bay, 10 years old, bred by Mr. J. Clarke, Mansurrae, Kilbarchan, N. B. 2nd, Lieut.-Col. R. Loyd Lindsay, M.P., of Lockinge Park, Wantage, Berks, "Prince Albert," bay, 3 years old, bred by Mr. Snodgrass, Clochkeil, Campbeltown, Argyshire.

CLASS 4.—Clydesdale stallion, foaled in the year 1869. No entry.

CLASS 5.—Suffolk stallion, foaled before the 1st of January, 1869. First prize, 25*l.*; second prize, 15*l.*; third, 5*l.* 1st prize, Richard Garrett, of Carleton Hall, Saxmundham, Suffolk, "Cupbearer," chestnut, 7 years old, bred by Mrs. Sargent, Marlesford, Wickham Market. 2nd, George David Badham, of The Lawn, Bulmer, Sudbury, Suffolk, "Hercules," chestnut, 6 years old, bred by exhibitor. 3rd, William Wilson, of Baylham Hall, Ipswich, Suffolk, "Bismark," chestnut, 3 years old, bred by Mr. C. Cordy, Trimley, Ipswich.

CLASS 6.—Suffolk stallion, foaled in the year 1869. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, Lieut.-Col. Fuller Maitland Wilson, of Stowlangtoft Hall, Bury St. Edmunds, Suffolk, "Heir Apparent," chestnut, 2 years old, bred by Mr. S. Wolton, Newbourn, Woodbridge. 2nd, George David Badham, of The Lawn, Bulmer, Sudbury, Suffolk, "Emperor," chestnut, 2 years old, bred by Mr. Taylor, Earl's Colne, Halstead, Essex.

CLASS 7.—Thoroughbred stallion, suitable for getting hunters. First prize, 50*l.*; second prize, 25*l.*; third prize, 10*l.* 1st prize, Joseph Casson, Burg-by-Sands, Carlisle, Cumberland, "Sincerity," brown, 13 years old, bred by Lord Naas; s. Red Hart, d. Integrity, s. of d. Van Tromp. 2nd, John Watson, of Waresley, Hartlebury, Kidderminster, Worcestershire, "Blinkhoolie," bay, black legs, 7 years old, bred by Mr. W. P'Anson, Spring Cottage, Malton, Yorkshire; s. Rataplan, d. Queen Mary, s. of d. Gladiator. 3rd, W. Taylor Sharpe, of Baumber Park, Horncastle, Lincolnshire, "Suffolk," bay, 6 years old, bred by Baron Rothschild, Mentmore, Bucks; s. North Lincoln, d. Protection, s. of d. Defence. Commended, the Earl of Coventry, of Croome Court, Severn Stoke, Worcestershire, "Umpire," chestnut, 14 years old, breeder unknown; s. Le Compto, d. Alice Cameal, s. of d. Imp.-Tarpedon.

CLASS 8.—Stallion above fourteen hands, but not exceeding fifteen hands two inches, suitable for getting hackneys. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, James Lockhart, of Culmington, Bromfield, Salop, "Dick Turpin," dark bay, black legs, 4 years old, bred by exhibitor. 2nd, Benjamin Mitchell, Sen., of Crome Hall, Downham Market, Norfolk, "Fireaway the Second," chestnut, 3 years old, bred by exhibitor. 3rd, H.

Bultitaft, Bedwellhay Grange, Ely, Cambs., "Clear the Way," roan, 8 years old, bred by Mr. Phypers, Cottenham, Cambs.

CLASS 9.—Pony stallion not exceeding fourteen hands. First prize, 15*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, Henry Roundele, Otley, Yorkshire, "Sir George," brown, 4 years old, bred by Mr. W. Walker, Shadwell, Leeds. 2nd, Charles Groucock, of Stanfield Hall, Wymondham, Norfolk, "King Arthur," chestnut, aged, breeder unknown.

CLASS 10.—Agricultural mare, in foal, or with foal at foot, not suitable to compete as Clydesdale or Suffolk. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, Henry Overman, of Weasanham, Brandon, Norfolk, "Diamond," black, 10 years old (in foal), bred by Mr. S. Thompson, Skipwith, Selby. 2nd, Edmund Crowe, of Denver, Downham Market, Norfolk, "Smart," bay, 9 years old (in foal), bred by Mr. J. Betts, Downham Market. 3rd, William Welcher, of Mouse Hall, West Tofts, Brandon, Norfolk, "Beauty," bay, 11 years old (in foal), bred by Mr. R. Fitzjohn, March, Cambs.

CLASS 11.—Clydesdale mare, in foal, or with foal at foot. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, Thomas Statter, jun., of Stand Hall, Whitefield, Manchester, "Princess," bay, 7 years old (and foal by Dundonald), breeder unknown. 2nd, George Head Head, of Rickerby, Carlisle, Cumberland, "Deborah," dark bay, 4 years old (in foal), bred by Mr. W. Sproat, Borness, Kircudbright, N.B.

CLASS 12.—Suffolk mare, in foal, or with foal at foot. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, the executors of the late Thomas Capon, of Dennington, Wickham Market, Suffolk, "Matchit," chestnut, 7 years old (and foal by Boxer), bred by exhibitors. 2nd, Lieutenant-Colonel Fuller Maitland, of Stowlangtoft Hall, Bury St. Edmunds, Suffolk, "Bury Empress," chestnut, 5 years old (in foal), bred by Mr. Frost, Stoke, Colchester. 3rd, Horace Wolton, of Newbourn Hall, Woodbridge, Suffolk, "Diamond," chestnut, 6 years old (in foal), bred by Mr. S. Wolton, Newbourn Hall.

CLASS 13.—Mare, in foal, or with foal at foot, suitable for breeding hunters. First prize, 25*l.*; second prize, 15*l.*; third prize, 5*l.* 1st prize, Thomas Horrocks Miller, of Singleton, Poulton-le-Fylde, Lancashire, "Lady Emily," brown (and foal), age and breeder unknown. 2nd, Joseph Clarke, of Beeston, Leeds, "Lady Byron," chestnut, 18 years old (and foaled by Neptunus), bred by Mr. J. Byron, Kirkby Green, Sleaford. 3rd, Leonard Lywood, of High Downs, Bridgnorth, Salop, "Jassy," chestnut, aged (and foal by Oreste), breeder unknown.

CLASS 14.—Mare, above fourteen hands but not exceeding fifteen hands one inch, in foal or with foal at foot, for breeding hackneys. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, Henry Overman, of Weasenham, Brandon, Norfolk, "Jenny Lind," chestnut, aged (and foal by Tice's Prickwillow), breeder unknown. 2nd, Thomas Jones, of Cross Lane Head, Bridgnorth, Salop, "Judy," grey, aged (and foal by Balarnock), breeder unknown.

CLASS 15.—Pony mare, not exceeding fourteen hands. First prize, 10*l.*; second prize, 5*l.* 1st prize, William Coates, of Scarborough Farm, Winchcombe, "Kitey," chestnut, 5 years old, bred by exhibitor. 2nd, Richard Milward, of Thurgarton Priory, Southwell, Notts, "Brighteyes," bay, 4 years old, breeder unknown.

CLASS 16.—Hunter gelding, three years old. First prize, 20*l.*; second prize, 15*l.*; third prize, 10*l.*; fourth prize, 5*l.* 1st prize, William Armstrong, of Kendal, Westmoreland, "Banker," bay, bred by Mr. W. H. Wakefield, Prizet, Kendal. 2nd, Sir Wilfrid Lawson, Bart., M.P., of Brayton, Carlisle, Cumberland, brown, bred by exhibitor. 3rd, George J. Mitchell, of Newton Mount, Burton-on-Trent, Staffordshire, "Femian," chestnut, breeder unknown. 4th, Charles Cook, of Taddington, Winchcomb, Gloucestershire, "The Admiral," iron-grey, bred by Mr. Sumner.

CLASS 17.—Hunter filly, three years old. First prize 20*l.*; second prize, 15*l.*; third prize, 10*l.*; fourth prize, 5*l.* 1st prize, James Moffat, of Kirklington Park, Carlisle, Cumberland, "Luna," chestnut, bred by Mrs. Bogne, Westward Parks, Wigton. 2nd, Edward Phillimore, of Prestbury Park Farm, Cheltenham, chestnut, breeder unknown. 3rd, John B. Booth, of Killerby Hall, Catterick, Yorkshire, "Duckling," bay, bred by Mr. J. Fielden, Dobroyd Castle, Todmorden. 4th, Charles Byrd, Littlewood, Stafford, "Theodora," dark brown, bred by the exhibitor.

CLASS 18.—Hunter gelding or filly, four years old. First prize, 30*l.*; second prize, 20*l.*; third prize, 10*l.*; fourth prize, 5*l.* 1st prize, Frederick Barlow, of Hasketon, Woodbridge, "Tregothnan," brown gelding, bred by Lord Falmouth, Tregothnan, Truro. 2nd, Frederick Barlow, of Hasketon, Woodbridge, Suffolk, "Beckford," brown gelding, bred by Mr. Maunder, Hazley Mills, North Molton. 3rd, Charles Cook, of Taddington, Winchcomb, Gloucestershire, chestnut filly, breeder unknown. 4th, George John Mitchell, of Newton Mount, Burton-on-Trent, Staffordshire, "Blankney," chestnut gelding, bred by Mr. H. Chaplin, M.P., Lincoln.

CLASS 19.—Hunter (mare or gelding), up to not less than 15 stone. First prize, 30*l.*; second prize, 20*l.*; third prize, 10*l.*; fourth prize, 5*l.* 1st prize, John B. Booth, of Killerby Hall, Catterick, Yorkshire, "Banner Bearer," bay gelding, 5 years old, breeder unknown. 2nd, T. Harvey D. Bayly, of Edwinstow House, Ollerton, Notts, "Borderer," chestnut gelding, 5 years old, bred by Mr. Hudsmith, Cumberland. 3rd, George Van Wart, of The Shrubbery, Birmingham, "Loxley," bay gelding, 7 years old, breeder unknown. 4th, Richard Bassnett Oswell, of Shelvoek, West Felton, Salop, "Filbert," brown gelding, 5 years old, bred by exhibitor.

CLASS 20.—Hunter (mare or gelding), up to not less than 12 stone. First prize, 25*l.*; second prize, 15*l.*; third prize, 10*l.*; fourth prize, 5*l.* 1st prize, the Earl of Coventry, of Croome Court, Severn Stoke, Worcestershire, "Bird on the Wing," black gelding, aged, breeder unknown. 2nd, Samuel James Wellfit, of Tathwell Hall, Louth, Lincolnshire, "Loiterer," bay gelding, 9 years old, bred by Mr. Waite. 3rd, William Armstrong, of Kendal, Westmoreland, "The Witch," chestnut mare, 4 years old, bred by Mr. T. Gefferson, Brampton, Cumberland. 4th, George Smith, of Ailston, Stratford-on-Avon, Warwickshire, "Brenda," dark brown mare, 6 years old, bred by exhibitor.

CLASS 21.—Carriage horses or mares, in pairs, under six years of age. First prize, 25*l.*; second prize, 15*l.*; third prize, 10*l.* Prize, John Thomas Robinson, of Leckby Palace, Thirsk, Yorkshire, roan horses, 3 and 4 years old, bred by exhibitor.

CLASS 22.—Brougham horse or mare, under six years old. No competition.

CLASS 23.—Roadster (mare or gelding), about 14 hands 1 inch, and not exceeding 15 hands 1 inch. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, James Moffat, of Kirklington Park, Carlisle, Cumber-

land, "Covet," bay mare, 4½ years old, bred by exhibitor. 2nd, William Fell, of The Close, Lichfield, Staffordshire, "Mahomet," black gelding, 6 years old, bred by Mr. Chandos Pole-Gell, Hopton Hall, Wirksworth. 3rd, James Moffat, of Kirklington Park, Carlisle, "Land Agent," bay gelding, 5 years old, bred by Mr. W. Graham, Gap Shields, Gilstand, Carlisle.

CLASS 24.—Roadster (mare or gelding), above 15 hands 1 inch. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, John Warth, of Sutton, Ely, Cambridgeshire, "The General," bright bay gelding, 5 years old, bred by exhibitor. 2nd, George David Badham, of The Lawn, Bulmer, Sudbury, Suffolk, "Tearaway," black-brown gelding, 4 years old, bred by Mr. Green, Newton, Sudbury. 3rd, Thomas Horrocks Miller, of Singleton, Poulton-le-Fylde, Lancashire, grey gelding, 5 years old, bred by Mr. Crozier, Garstang.

CLASS 25.—Cob (mare or gelding), above 13 hands, and not exceeding 14 hands 1 inch. First prize, 15*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, George Smith, of Ailston, Stratford-on-Avon, Warwickshire, "Dick," cream gelding, 9 years old, breeder unknown. 2nd, William Edward Wiley, of Tamworth Road, Erdington, Birmingham, "Bob," bay gelding, 7 years old, breeder unknown. 3rd, John G. Boraston, of Kidderminster, Worcestershire, "Comet," bay gelding, 7 years old, bred by Mr. J. Bowen, Combrayne, Knighton, Radnorshire.

CLASS 26.—Pony, not exceeding 13 hands. First prize, 10*l.*; second prize, 5*l.* 1st prize, Frederick Bower, of 10, Albion Street, Birmingham, "Jumney," grey, 7 years old, breeder unknown. 2nd, William Tyler, of Friday Bridge, Birmingham, "Billy," bay, 8 years old, breeder unknown.

CLASS 27.—Agricultural filly, two years old, not qualified to compete as Clydesdale or Suffolk. First prize, 15*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, John Linton, of Westwick Hall, Cambridge, "Princess," brown, bred by exhibitor. 2nd, James Hawkesworth, of Barton Fields, Barton Blount, "Darling," bay, bred by exhibitor. 3rd, Stephen Davis, of Woolashill, Pershore, Worcestershire, "Darling," red roan, bred by exhibitor.

CLASS 28.—Clydesdale filly, two years old. First prize, 15*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, Thomas Townley Parker, of Charnock, Chorley, Lancashire, bay, bred by Mr. D. D. Hamilton, Campbeltown, N.B.; s. Large Jock. 2nd, Her Majesty the Queen, Windsor Castle, "Kate," brown, bred by Her Majesty, the Prince Consort's Shaw Farm, Windsor.

CLASS 29.—Suffolk filly, two years old. First prize, 15*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, William Thompson, jun., of Rose Cottage, Thorpe, Colchester, Essex, "The Despised," chestnut, bred by Mr. Cross, Ipswich.

CLASS 30.—Agricultural pair of geldings or mares, of any age. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, Charles William Brierley, of Rhodes House, Middleton, Manchester, "Champion," bay gelding, 5 years old; "Warwick," 7 years old, breeder unknown. 2nd, Thomas Statter, jun., of Stand Hall, Whitefield, Manchester, "Fanny," chestnut mare, 6 years old, bred by Mr. T. Upton, Pallathorpe, Tadcaster; "Diamond," chestnut mare, 11 years old, breeder unknown. 3rd, Charles William Brierley, of Rhodes House, "Sensation," grey mare, 6 years old; "Farmer," grey gelding, 7 years old, both bred by Mr. Tennant, Selby.

CLASS 31.—Agricultural pair of geldings or mares, 4 years old. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, Thomas Statter, jun., Stand Hall, Whitefield, Manchester, "Smiler," bay, bred by exhibitor; and "Boxer," bay, breeder unknown.

CLASS 32.—Agricultural pair of geldings or mares, 3 years old. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, Thomas Statter, jun., of Stand Hall, Whitefield, Manchester, "Thumper," bay gelding; "Maggie," bay mare, breeders unknown. 2nd, Charles William Brierley, of Rhodes House, Middleton, Manchester, "Bobby" and "Flirt," both grey geldings, breeders unknown.

CLASS 33.—Agricultural gelding, 3 years old. First prize, 10*l.*; second prize, 5*l.* 1st prize, Edward Tongue, of Manor House, Aldridge, Walsall, Staffordshire, "The Drummer," bright bay, breeder unknown.

CLASS 34.—Agricultural gelding, 2 years old. First prize, 10*l.*; second prize, 5*l.* 1st prize, James Perry, of Salters Hall, Claverley, Bridgnorth, "Captain," chestnut, bred by Mr. T. Wall, Wollaston, Stourbridge, s. Champion. 2nd, Thomas W. D. Harris, of Wootton, Northamptonshire, brown, bred by exhibitor.

CLASS 35.—Agricultural gelding, yearling. First prize, 10*l.*; second prize, 5*l.* 1st prize, Thomas Statter, jun., of Stand Hall, Whitefield, Manchester, "Thumper," breeder unknown.

## CATTLE.

### SHORTHORNS.

CLASS 36.—Bull, above three years old. First prize, 30*l.*; second prize, 20*l.*; third prize, 15*l.*; fourth prize, 10*l.* 1st prize, Henry Thompson, of Maiden Hill, Penrith, Cumberland, "Edgar," roan, 8y. 6m. 1w. 3d. old, bred by Mr. C. R. Saunders, Nunwick Hall, Penrith. 2nd, the Marquis of Exeter, of Burghley Park, Stamford, "Telemachus," roan, 3y. 2m. 2w. 3d. old, bred by exhibitor. 3rd, the Rev. Walter Sneyd, of Keele Hall, Newcastle-under-Lyme, Staffordshire, "Ironmaster," red, 3y. 6m. 5d. old, bred by the late Mr. R. Sneyd, Keele Hall Farm. 4th, John Wright, of Green Gill Head, Penrith, Cumberland, "Man's Estate," white, 3y. 7m. 3w. old, bred by Mr. T. Bowstead, Edenhall, Penrith.

CLASS 37.—Bull above two and not exceeding three years old. First prize, 25*l.*; second prize, 15*l.*; third prize, 10*l.*; fourth prize, 5*l.* 1st prize, William Linton, of Sherriff Hutton, York, "Lord Irwin," white, 2y. 5m. 1w. old, bred by exhibitor. 2nd, John Outhwaite, of Bainesse, Catterick, Yorkshire, "Royal Windsor," white, 2y. 5m. 3w. 3d. old, bred by Mr. T. Willis, Carperby, Bedale. 3rd, Sir David Baird, Bart., of New Blythe, Preston Kirk, Haddingtonshire, "Baron Lawrie III," red, 2y. 3m. 3w. 6d. old, bred by Mr. G. R. Barclay, Keavil, Dumfermline, Fifeshire. 4th, Emily Lady Pigot, of Branches Park, "Bythis," red and white, 2y. 10m. 1d. old, bred by exhibitor.

CLASS 38.—Yearling bull, above one and not exceeding two years old. First prize, 25*l.*; second prize, 15*l.*; third prize, 10*l.*; fourth prize, 5*l.* 1st prize, Colonel Charles Towneley, of Towneley, Burnley, Lancashire, "Baron Hubback 2nd," red, 1y. 4m. 4w. old, bred by exhibitor. 2nd, Lord Sudeley, of Toddington, Winchcombe, Gloucestershire, "Cherub," red, 1y. 3m. old, bred by exhibitor. 3rd, John Lamb, of Burrell Green, Penrith,

Cumberland, "Ignoramus," roan, 1y. 2m. 2w. 4d. old, bred by exhibitor, 4th, Joseph Meadows, of Thornville, Wexford, Ireland, "Prince Charlie," roan, 1y. 2m. 1w. 3d. old, bred by exhibitor.

CLASS 39.—Bull calf, above six and not exceeding twelve months old. First prize, 15*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, William and Henry Dudding, of Panton House, Wragby, Lincolnshire, "British Flag," red and white, 10m. 2w. 3d. old, bred by exhibitors. 2nd, William Linton, of Sherriff Hutton, York, "Leeman," red and white, 7m. 3w. 1d. old, bred by exhibitor. 3rd, Thomas Garne and Son, of Broadmoor, North-leach, Gloucestershire, "Red Prince," red, 9m. 1w. 4d. old, bred by exhibitors.

CLASS 40.—Cow, above three years old, First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, James Beattie, of Newbie House, Annan, Dumfriesshire, "Warrior's Plume," roan, 5y. 3m. 2w. 4d. old, in milk, bred by Mr. W. Torr, Aylesby Manor, Grimsby. 2nd, Adam Dugdale, of Rose Hill, Burnley, Lancashire, "Kent Cherry Second," roan, 5y. 8m. 2d. old, in calf, bred by exhibitor. 3rd, James How, of Broughton, Huntingdon, "Windsor Butterfly," red and white, 3y. 4m. 2w. 1d. old, bred by exhibitor.

CLASS 41.—Heifer, in milk or in calf, not exceeding three years old. First prize, 15*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, Emily Lady Pigot, of Branches Park, Newmarket, "Dame Swift," white, 2y. 3m. 1w. 3d. old, in calf, bred by exhibitor. 2nd, James How, of Broughton, Huntingdon, "Vesper Queen," red, 2y. 5m. 1w. 2d. old, in milk, bred by exhibitor. 3rd, F. J. Savile Foljambe, M.P., of Osberton Hall, Worksop, Notts, "Concert," roan, 2y. 2m. 2w. 4d. old, in calf, bred by exhibitor.

CLASS 42.—Yearling heifer, above one and not exceeding two years old. First prize, 15*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, John Outhwaite, of Bainesse, Catterick, Yorkshire, "Lady Brough," roan, 1y. 8m. 2w. 1d. old, in calf, bred by Mr. F. Robinson, Wintslow, Catterick. 2nd, F. J. Savile Foljambe, M.P., of Osberton Hall, Worksop, Notts, "Fleur de Lis," roan, 1y. 10m. 1d. old, in calf, bred by exhibitor. 3rd, Colonel Charles Towneley, of Towneley, "Baron Oxford's Duchess," red, 1y. 10m. 2w. 1d. old, in calf, bred by exhibitor.

CLASS 43.—Heifer calf, above six and under twelve months. First prize, 10*l.*; second prize, 5*l.* 1st prize, Arthur Garfit, of Scothern, Lincoln, "Brilliant Rose Second," white, 10m. 2w. 3d. old, bred by Mr. E. H. Cheney, Gaddesby Hall, Leicester. 2nd, Emily Lady Pigot, of Branches Park, Newmarket, "Victoria Victrix," roan, 9m. 3w. 5d. old, bred by exhibitor.

#### HEREFORDS.

*The Prizes in the respective Classes the same as for Shorthorns and Devons.*

CLASS 44.—Bull, above three years old. First prize, 25*l.*; second prize, 15*l.*; third prize, 5*l.* 1st prize, Warren Evans, of Llandowlais, Usk, Monmouthshire, "Monaughty Third," 3y. 6m. 2w. 2d. old, bred by exhibitor. 2nd, Philip Turner, of the Leen, Pembridge, Herefordshire, "Bachelor," 4y. 2m. 1w. 3d. old, bred by Mr. S. Robinson, The Moor, Kington. 3rd, Nathaniel, Benjafield, of Short's Green Farm, Motcombe, Shaftesbury, Dorset, "Theodore," 3y. 3m. 2w. 1d. old, bred by Mr. Eli Benjafield, Gummershea Farm, Stalbridge, Dorset.

CLASS 45.—Bull above two and not exceeding three years old. 1st prize, John Williams, of St. Mary's, Kingsland, Herefordshire, "Royal Head," 2y. 8m. 5d. old, bred by exhibitor. 2nd, The Earl of Southesk, of Kinnaird Castle, Brechin, Forfarshire, "Ostorius," 2y. 10m. 4w. 1d. old, bred by Mr. W. Tudge, Adforton, Leintwardine. 3rd, Philip Turner, of The Leen, Pembridge, Leominster, Herefordshire, "Provost," 2y. 1w. 1d. old, bred by exhibitor.

CLASS 46.—Yearling bull, above one and not exceeding two years old. 1st prize, Richard Hill of Orleton Court, Ludlow, Salop, "Pearl Diver," 1y. 10m. 2w. 4d. old, bred by exhibitor. 2nd, George Child of Westonbury, Pembridge, Herefordshire, "Star of the West," 1y. 10m. 4d. old, bred by the late Mr. J. S. Bannister, Weston, Pembridge. 3rd, John Crane, of Benthall Ford, Shrewsbury, "Prince George," 1y. 10m. 1w. 3d. old, bred by exhibitor.

CLASS 47.—Bull calf, above six and not exceeding twelve months old. 1st prize, Henry N. Edwards, of Broadward, Leominster, Herefordshire, "Alexander," 9m. 2w. 1d. old, bred by exhibitor. 2nd, William Taylor, of Showle Court, Ledbury, Herefordshire, "The Wolverhampton Boy," 8m. 3w. 2d. old, bred by exhibitor.

CLASS 48.—Cow above three years old. 1st prize, William B. Peren, of Compton House, South Petherton, Somerset, "Ivington Rose," 6y. 10m. 3d. old, in calf, bred by Mr. T. Roberts, Ivington Bury, Leominster. 2nd, Philip Turner, of the Leen, Pembridge, Leominster, Herefordshire, "Livia," 3y. 9m. 3w. 6d. old, in milk, bred by exhibitor. 3rd, Richard Tanner, of Frodesley, Dorrington, Salop, "Queen," 7y. 10m. old, in milk, bred by Mr. Tanner, Aintree House, Bromfield.

CLASS 49.—Heifer in milk, or in calf, not exceeding three years old. 1st prize, Philip Turner of Leen, Pembridge, Leominster, Herefordshire, "Rarity," 2y. 3w. 5d. old, in calf, bred by exhibitor. 2nd, John Harding, of Bicton, Shrewsbury, "Dahlia," 2y. 8m. 3w. 3d. old, in calf, bred by exhibitor. 3rd, Thomas Fenn, of Stonebrook House, Ludlow, "Duchess of Bedford 6th," 2y. 11m. 1w. 5d. old, in calf, bred by exhibitor.

CLASS 50.—Yearling heifer, above one and not exceeding two years old. 1st prize, John Harding, of Bicton, Shrewsbury, "Lizzie Jefferys," 1y. 11m. 2w. 3d. old, bred by exhibitor. 2nd, Philip Turner, of The Leen, Pembridge, Herefordshire, "Plum," 1y. 8m. 3w. 6d. old, bred by exhibitor. 3rd, Thomas Thomas, of St. Hilary, Cowbridge, Glamorganshire, "Sunflower," 1y. 11m. 2w. 3d. old, bred by exhibitor.

CLASS 51.—Heifer calf, above six and under twelve months old. 1st prize, Thomas Fenn, of Stonebrook House, Ludlow, "Lady of the Tome," 10m. 3w. 6d. old, bred by exhibitor. 2nd, John Morris, of Town House, Madley, Hereford, "Madeline," 11m. 3w. 5d. old, bred by exhibitor.

#### DEVONS.

CLASS 52.—Bull above three years old. 1st prize, James Howard Buller, of Downes, CREDITON, Devon, 4y. 9m. 4w. 1d. old, bred by exhibitor. 2nd, Viscount Falmouth, of Tregothnan, Probus, Cornwall, "Narcissus," 3y. 9m. old, bred by exhibitor. 3rd, James Davy, of Flitton Barton, North Molton, Devon, "Duke of Flitton 4th," 3y. 5m. 4w. 2d. old, bred by exhibitor.

CLASS 53.—Bull, above two and not exceeding three years old. 1st

prize, James Davy, of Flitton Barton, North Molton, Devon, "Duke of Flitton 5th," 2y. 9m. 3w. 3d. old, bred by exhibitor. 2nd, Viscount Falmouth, of Tregothnan, Probus, Cornwall, "Jonquil," 2y. 8m. 3w. 5d. old, bred by exhibitor. 3rd, William Smith, of Hoopern, Exeter, Devon, "Pennsylvania," 2y. 2m. 3d. old, bred by exhibitor.

CLASS 54.—Yearling bull, above one and not exceeding two years old. 1st prize, Viscount Falmouth, of Tregothnan, Probus, Cornwall, "Cinnamon," 1y. 11m. 2w. 6d. old, bred by exhibitor. 2nd, Walter Farthing, of Stowey Court, Bridgwater, Somersetshire, "Master Harry," 1y. 6m. 3w. 2d. old, bred by exhibitor. 3rd, James Davy, of Flitton Barton, North Molton, Devon, "Duke of Flitton 6th," 1y. 8m. 1w. 5d. old, bred by exhibitor.

CLASS 55.—Bull calf, above six and not exceeding twelve months old. 1st prize, Walter Farthing, of Stowey Court, Bridgwater, Somersetshire, "Marquis of Lorne," 11m. 2w. 3d. old, bred by exhibitor. 2nd, James Davy, of Flitton Barton, North Molton, Devon, "Conqueror," 7m. 1w. 1d. old, bred by exhibitor.

CLASS 56.—Cow, above three years old. 1st prize, William Taylor, of Glynley, Westham, "Profit's Duchess," 5y. 11m. 1w. 5d. old, in milk and in calf, bred by exhibitor. 2nd, William Taylor, of Glynley, Westham, "Frederica," 6y. 7m. 2w. 5d. old, in milk and in calf, bred by exhibitor.

CLASS 57.—Heifer in milk, or in calf, not exceeding three years old. 1st prize, William Smith, of Hoopern, Exeter, Devon, "Duchess," 2y. 6m. 3w. 1d. old, in calf, bred by Mr. George Turner, Bramford Speke, Exeter. 2nd, William Taylor, of Glynley, Westham, Eastbourne, Sussex, 2y. 9m. old, in calf, bred by the exhibitor.

CLASS 58.—Yearling heifer, above one and not exceeding two years old. 1st prize, James Davy, of Flitton Barton, North Molton, Devon, "Gaylass," 1y. 11m. 3w. 1d. old, bred by exhibitor. 2nd, James Howard Buller, of Downes, Crediton, Devon, 1y. 11m. 2w. 3d. old, bred by exhibitor. 3rd, Walter Farthing, of Stowey Court, Bridgwater, Somersetshire, "First Fruit," 1y. 11m. 3w. 4d. old, bred by exhibitor.

CLASS 59.—Heifer calf, above six and under twelve months old. 1st prize, James Davy, of Flitton Barton, North Molton, Devon, "Actress the 5th," 10m. 1w. 1d. old, bred by exhibitor. 2nd, Walter Farthing, of Stowey Court, Bridgwater, Somersetshire, "Fair Rosamond," 10m. 2w. 6d. old, bred by exhibitor.

## CHANNEL ISLAND BREEDS.

### JERSEY.

CLASS 60.—Bull, above one year old.—First prize, 10*l*; second prize, 5*l*. 1st prize, Walter Gilbey, of Hargrave Park, Stanstead, Essex, "Banboy," fawn, 2y. 2m. 3w. 1d. old, bred by exhibitor. 2nd, George Simpson, of Wray Park, Reigate, Surrey, "Prince," grey fawn, 5y. 5m. 1d. old, bred by exhibitor.

CLASS 61.—Cow, above three years old. First prize, 10*l*; second prize, 5*l*. 1st prize, Walter Gilbey, of Hargrave Park, Stanstead, Essex, "Duchess," light fawn, 3y. 5m. old, in milk, bred by Mr. H. J. Le Feuvre, St. Peter's, Jersey. 2nd, George Digby Wingfield-Digby, of Sherborne

Castle, Dorsetshire, "Julia," fawn and white, 4y. 5m. 1w. 5d. old, in milk and in calf, bred by exhibitor.

CLASS 62.—Heifer in milk, or in calf, not exceeding three years old. First prize, 10*l*.; second prize, 5*l*. 1st prize, George Digby Wingfield-Digby, of Sherborne Castle, Dorsetshire, "Miss Edith," fawn and white, 2y. 1m. old, in calf, bred by exhibitor. 2nd, John Gellibrand Hubbard, of Addington Manor, Winslow, Bucks, "Belle," fawn, 2y. 8m. 3w. 6d. old, in calf, bred by exhibitor.

#### GUERNSEY.

CLASS 63.—Bull, above one year old. First prize, 10*l*.; second prize, 5*l*. 1st prize, the Rev. Joshua Rundle Watson, of Le Bocage, Guernsey, "Trumpeter," fawn and white, 2y. 4m. 2w. 2d. old, bred by Mr. Wakeford, Foulon, Guernsey. 2nd, Charles Le Page, of Les Naftieux, Guernsey, "Billy," red and white, 1y. 5m. 2w. 1d. old, bred by Mr. Henry F. de Putron, Pierre Perceé, Guernsey.

CLASS 64.—Cow, above three years old. First prize, 10*l*.; second prize, 5*l*. 1st prize, the Rev. Joshua Rundle Watson, of Le Bocage, "Stella," fawn, 7y. 8m. 2w. 3d. old, in milk, bred by Mr. Mahy, Cobo, Guernsey. 2nd, Thomas Blondel Le Page, of Maison de Bas, S. Andrew's, Guernsey, "Daisy," yellow and white, 5y. 2m. old, in calf, bred by exhibitor.

CLASS 65.—Heifers, in milk or in calf, not exceeding three years old. First prize, 10*l*.; second prize, 5*l*. 1st prize, Charles Le Page, of Les Naftieux, Guernsey, red and white, 2y. 8m. 6d. old, in calf, bred by Mr. John Naftel, Les Ruettes, Guernsey. 2nd, Thomas Blondel Le Page, of Maison de Bas, St. Andrew's, "Beauty," red and white, 2y. 2m. old, in calf, bred by exhibitor.

#### NORFOLK AND SUFFOLK POLLED.

CLASS 66.—Bull above one year old. First prize, 10*l*.; second prize, 5*l*. 1st prize, Benjamin Brown, of Thursford, Thetford, Norfolk, "Norfolk Duke," red, 6y. 4d. old, bred by Mr. N. Powell, Little Snoring, Fakenham. 2nd, Jeremiah James Coleman, M.P., of Carrow House, Norwich, "Cherry Duke," red, 3y. 4m. old, bred by Mr. H. Wolton, Newbourn Hall, Woodbridge.

CLASS 67.—Cow above three years old. First prize, 10*l*.; second prize, 5*l*. 1st prize, Benjamin Brown, of Thursford, Thetford, Norfolk, "Duchess," red, 5y. 3w. 3d. old, in milk, bred by exhibitor. 2nd prize not awarded.

CLASS 68.—Heifer, in milk or in calf, not exceeding three years old. First prize, 10*l*.; second prize, 5*l*. 1st prize, Benjamin Brown, of Thursford, Thetford, "Countess," red, 2y. 3m. 1d. old, in calf, bred by exhibitor. 2nd, John Hammond, of Bale, Norfolk, "Davy the 4th," 2y. 11m. old, in calf, bred by exhibitor.

#### OTHER ESTABLISHED BREEDS.

Not including the Shorthorn, Hereford, Devon, Jersey, Guernsey, or Norfolk and Suffolk polled breeds.

CLASS 69.—Bull above one year old. First prize, 10*l*.; second prize, 5*l*. 1st prize, the Duke of Buckingham and Chandos, of Stowe, Buckingham, "Young Conqueror," dark brown (longhorn), 3y. 11m., bred by exhibitor. 2nd, John Godfrey, of Wigston Parva, Hinckley, Leicestershire, "Samson 2nd," red and white (longhorn), 5y. 2m. old, bred by exhibitor.

CLASS 70.—Cow above three years old. First prize, 10*l.*; second prize, 5*l.* 1st prize, John Godfrey, of Wigston Parva, Hinckley, Leicestershire, "Buttercup," red and white (longhorn), 7y. 2 w. old, in milk and in calf, bred by exhibitor. 2nd, Thomas Statter, jun., of Stand Hall, Whitefield, Manchester, "Princess of Aberdeen," black (Angus), 6y. old, in calf, breeder unknown.

CLASS 71.—Heifer, in milk or in calf, not exceeding three years old. First prize, 10*l.*; second prize, 5*l.* 1st prize, Thomas Statter, jun., of Stand Hall, Whitefield, Manchester, "Black Bess," black (Angus), 2y. 11m. old, in calf, bred by exhibitor. 2nd, the Duke of Buckingham and Chandos, of Stowe, Bucks, "Lady Mary," red and white (longhorn), 1y. 10m. 1w. old, in calf, bred by exhibitor.

#### DAIRY CATTLE.

CLASS 72.—Pair of heifers, in milk, under three years and eight months old. Prizes offered: First prize, 20*l.* (offered by the Staffordshire Agricultural Society); second prize, 10*l.* (offered by J. W. Phillips); third prize, 5*l.* (by A. C. Twentyman). 1st prize, Thomas Statter, jun., of Stand Hall, Whitefield, Manchester, "Rose" and "Beauty" (Ayrshire), about 3 yrs. old, breeders unknown. 2nd, Thomas Statter, jun., of Stand Hall, Whitefield, Manchester, "Buttercup" and "Daicymaid" (Ayrshire), about 3 yrs. old, breeders unknown. 3rd, John Jervis Sharp, of Broughton, Kettering, Northamptonshire, "Julia 4th," roan (Shorthorn), 3y. 5m. old, bred by exhibitor.

CLASS 73.—Pair of cows, over three years and eight months old, in milk. First prize, 20*l.* (offered by the Staffordshire Agricultural Society); second prize, 10*l.*; third prize, 5*l.* 1st prize, Thomas Statter, jun., of Stand Hall, Whitefield, Manchester, "Maid of Ayr" and "Maid of Midlothian" (Ayrshires), ages and breeders unknown. 2nd, Thomas Statter, jun., of Stand Hall, Whitefield, Manchester, "Maid of May" and "Maid of Craven," roan (crossbred), ages and breeders unknown. 3rd, Henry Crossley, of Watkinson Hall Farm, Halifax, roan (Yorkshire cross), 6y. old, breeders unknown.

#### SHEEP.

##### LEICESTERS.

CLASS 74.—Shearling ram. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, George Turner, jun., of Alexton Hall, Uppingham, 1y. 3m. 1w. old, bred by exhibitor. 2nd, the Rev. George Inge, of Thorpe Constantine, Tamworth, Staffordshire, 1y. 4m. old, bred by exhibitor. 3rd, the Rev. George Inge, of Thorpe Constantine, 1y. 4m. old, bred by exhibitor.

CLASS 75.—Ram of any other age. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, George Turner, jun., of Alexton Hall, Uppingham, 2y. 3m. 1w. old, bred by exhibitor. 2nd, George Henry Sanday, of Holme Pierrepont, 3y. 4m. old, bred by exhibitor. 3rd, John Borton, of Barton House, 2y. 3m. old, bred by exhibitor.

CLASS 76.—Pen of five shearling ewes of the same flock. First prize, 15*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, Teasdale Hilton Hutchinson, of Manor House, Catterick, Yorkshire, 1y. 3m. 2w. old, bred by exhibitor. 2nd, John Borton, of Barton House, Barton-le-Street, Malton, Yorkshire, 1y. 3m. old, bred by exhibitor. 3rd, The Rev. George

Inge, of Thorpe Constantine, Tamworth, Staffordshire, 1y. 4m. old, bred by exhibitor.

## COTSWOLDS.

CLASS 77.—Shearling ram. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.*; 1st prize, Thomas Brown, of Marham Hall Farm, Downham Market, Norfolk, 1y. 4m. 2w. old, bred by exhibitor. 2nd, Thomas Brown, of Marham Hall Farm, Downham Market, 1y. 4m. 2w. old, bred by exhibitor. 3rd, Thomas Brown, of Marham Hall Farm, 1y. 4m. 2w. old, bred by exhibitor.

CLASS 78.—Ram of any other age. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, the Executors of the late Thomas Gillett, of Kilkenny, 2y. 4m. 1w. old, bred by exhibitors. 2nd, Thomas Brown, of Marham Hall Farm, Downham Market, Norfolk, 3y. 4m. 2w. old, bred by exhibitor. 3rd, Thomas Brown, of Marham Hall Farm, 2y. 4m. 2w. old, bred by exhibitor.

CLASS 79.—Pen of five shearling ewes of the same flock. First prize, 15*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, Russell Swanwick, of the Royal Agricultural College Farm, Cirencester, Gloucestershire, between 1y. 2m. 2w. and 1y. 3m. 2w. old, bred by exhibitor. 2nd, Russell Swanwick, of the Royal Agricultural College Farm, between 1y. 2m. 2w. and 1y. 3m. 2w. old, bred by exhibitor.

## LINCOLNS.

CLASS 80.—Shearling ram. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, William F. Marshall, of Branston, 1y. 4m. 2w. old, bred by exhibitor. 2nd, Thomas Cartwright, of Dunston Pillar, Dunston, Lincolnshire, 1y. 4m. 2w. old, bred by exhibitor. 3rd, William and Henry Dudding, of Panton House, Wragby, Lincolnshire, 1y. 3m. 2w. old, bred by exhibitors.

CLASS 81.—Ram of any other age. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, William and Henry Dudding, of Panton House, Wragby, Lincolnshire, 3y. 3m. 2w. old, bred by exhibitors. 2nd, Algernon Hack, of Buckminster, Grantham, Lincolnshire, 3y. 4m. old, bred by exhibitor. 3rd, John Pears, of Mere, Lincoln, 3y. 4m. old, bred by exhibitor.

CLASS 82.—Pen of five shearling ewes of the same flock. First prize, 15*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, Thomas Gunnell, of Willow House, 1y. 4m. old, bred by exhibitor. 2nd, Thomas Cartwright, of Dunston Pillar, 1y. 4m. 2w. old, bred by exhibitor. 3rd, John Pears, of Mere, Lincoln, 1y. 4m. old, bred by exhibitor.

## OXFORDSHIRE DOWNS.

CLASS 83.—Shearling ram. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, John Treadwell, of Upper Winchendon, about 1y. 4m. 2w. old, bred by exhibitor. 2nd, George Wallis, of Old Shifford, Bampton, Faringdon. 1y. 5m. 2w. old, bred by exhibitor. 3rd, George Wallis, of Old Shifford, Bampton, Faringdon, 1y. 5m. 2w. old, bred by exhibitor.

CLASS 84.—Ram of any other age. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, James Longland, of Grendon, Northampton, 4y. 3m. 3w. old, bred by exhibitor. 2nd, A. F. Milton Druce, of Burghfield

Reading, Berkshire, 3y. 5m. old, bred by exhibitor. 3rd, George Wallis, of Old Shifford, 2y. 5m. 2w. old, bred by exhibitor.

CLASS 85.—Pen of five shearling ewes of the same flock. First prize, 15*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, A. F. Milton Druce, of Burghfield, Reading, Berkshire, 1y. 5m. old, bred by exhibitor. 2nd, Charles Howard, of Biddenham, Bedford, 1y. 4m. 2w. old, bred by exhibitor.

#### RYLAND AND OTHER LONG WOOLS.

*Not qualified to compete as Leicesters, Cotswolds, or Lincolns.*

CLASS 86.—Shearling ram. First prize, 15*l.*; second prize, 5*l.* 1st prize, John Lynn, of Church Farm, Stroxton, Lincoln and Leicester, 1y. 4m. old, bred by exhibitor. 2nd, John Lynn, of Church Farm, Stroxton, Grantham, Lincolnshire, Lincoln and Leicester, 1y. 4m. old, bred by exhibitor.

CLASS 87.—Pen of five shearling ewes of the same flock. First prize, 10*l.*; second prize, 5*l.* 1st prize, Thomas William Daniel Harris, of Wootton, Northamptonshire, Lincoln and Leicester, 1y. 4m. 2w. old, bred by exhibitor.

#### SOUTHDOWNS.

CLASS 88.—Shearling ram. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, Sir William Throckmorton, Bart., of Buckland, Faringdon, Berks, 1y. 4m. old, bred by exhibitor. 2nd, Sir William Throckmorton, Bart., of Buckland, 1y. 4m. old, bred by exhibitor. 3rd, William Rigden, of Hove, 1y. 4m. old, bred by exhibitor.

CLASS 89.—Ram of any other age. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, Sir William Throckmorton, Bart., of Buckland, Faringdon, Berks, 2y. 4m. old, bred by exhibitor. 2nd, William Rigden, of Hove, Brighton, Sussex, 2y. 4m. old, bred by exhibitor. 3rd, William Rigden, of Hove, 2y. 4m. old, bred by exhibitor.

CLASS 90.—Pen of five shearling ewes of the same flock. First prize, 15*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, the Duke of Richmond, K.G., of Goodwood, 1y. 4m. old, bred by exhibitor. 2nd, Lord Sondes, of Elmham Hall, Thetford, Norfolk, 1y. 4m. old, bred by exhibitor. 3rd, Colonel R. N. F. Kingscote, M.P., of Kingscote Park, Wotton-under-Edge, Gloucestershire, 1y. 4m. old, bred by exhibitor.

#### SHROPSHIRES.

CLASS 91.—Shearling ram. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, Charles Byrd, of Littywood, 1y. 4m. 5d. old, bred by exhibitor. 2nd, Thomas Mansell, of Adcott Hall, 1y. 4m. 2w. old, bred by exhibitor. 3rd, John Stubbs, of Burston, Stone, Staffordshire, 1y. 4m. old, bred by exhibitor.

CLASS 92.—Ram of any other age. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, George Allen, of Knightley Hall, Eccleshall, Stafford, 2y. 2m. 2w. old, bred by exhibitor. 2nd prize, John Evans, of Uffington, 2y. 3m. 1w. old, bred by exhibitor. 3rd prize, John Coxon, of Freeford Farm, Lichfield, Staffordshire, 2y. 3m. 2w. old, bred by exhibitor.

CLASS 93.—Pen of five shearling ewes of the same flock. First prize, 15*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, Sarah Beach, of The

Hattons, Brewood, Staffordshire, 1y. 3m. 2w. old, bred by exhibitor. 2nd, Lord Chesham, of Latimer, Chesham, Bucks, 1y. 3m. 2w. old, bred by exhibitor. 3rd, Lord Chesham, of Latimer, 1y. 3m. 2w. old, bred by exhibitor.

CLASS 94.—Ten Shropshire ewes, having had lambs in 1871. First prize, 20*l.*, offered by the Earl of Shrewsbury and Talbot; second prize, 10*l.*; and third prize, 5*l.*, offered by the Wolverhampton Local Committee. 1st prize, William Baker, of Moor Barns, Atherstone, Warwickshire, various ages, bred by exhibitor. 2nd, Sarah Beach, of The Hattons, Brewood, Staffordshire, various ages, bred by exhibitor. 3rd, Thomas Nock, of Sutton Maddock, Shifnal, Salop, various ages, bred by exhibitor.

CLASS 95.—Ten Shropshire ewe lambs. First prize, 15*l.*; second prize, 10*l.*; third prize, 5*l.*, all offered by Mr. F. Monckton. 1st prize, John Hanbury Bradburne, of Pipe Place, Lichfield, Staffordshire, 4m. 2w. old, bred by exhibitor. 2nd, Sarah Beach, of The Hattons, Brewood, Staffordshire, 3m. 3w. old, bred by exhibitor. 3rd, Lord Chesham, of Latimer, Chesham, Bucks, 4m. old, bred by exhibitor.

CLASS 96.—Five Shropshire ram lambs. First prize, 15*l.*; second prize, 10*l.*; third prize, 5*l.*, offered by the Staffordshire Agricultural Society. 1st prize, Sarah Beach, of The Hattons, Brewood, Staffordshire, 3m. 3w. old, bred by exhibitor. 2nd, Thomas Nock, of Sutton Maddock, Shifnal, Salop, 3m. 3w. old, bred by exhibitor. 3rd, Henry Smith, of New House, Sutton Maddock, Shifnal, Salop, 4m. 1w. old, bred by exhibitor.

The silver cup, value 10*l.*, to the exhibitor taking the greatest number of prizes in all the Shropshire classes, was awarded to Mrs. Sarah Beach.

#### HAMPSHIRE AND OTHER SHORT WOOLS.

Not qualified to compete as Southdowns or Shropshires.

CLASS 97.—Shearling ram. First prize, 20*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, James Rawlence, of Bulbridge, Wilton, Hampshire Down, 1y. 5m. 2w. old, bred by exhibitor. 2nd, Alfred Morrison, of Fonthill House, Tisbury, Wilts, Hampshire Down, 1y. 5m. old, bred by exhibitor. 3rd, Alfred Morrison, of Fonthill House, Hampshire Down, 1y. 4m. 3w. old, bred by exhibitor.

CLASS 98.—Ram of any other age. First prize, 20*l.*; second prize, 10*l.* third prize, 5*l.* 1st prize, James Rawlence, of Bulbridge, Wilton, Salisbury, Hampshire Down, 2y. 5m. 2w. old, bred by exhibitor. *No competitors for the second and third prizes.*

CLASS 99.—Pen of five shearling ewes of the same flock. First prize, 15*l.*; second prize, 10*l.*; third prize, 5*l.* 1st prize, James Rawlence, of Bulbridge, Wilton, Salisbury, Hampshire Down, 1y. 5m. 2w. old, bred by exhibitor. 2nd, James Rawlence, of Bulbridge, Wilton, Hampshire Down, 1y. 5m. 2w. old, bred by exhibitor.

#### DORSET.

CLASS 100.—Shearling ram. First prize, 15*l.*; second prize, 5*l.* 1st prize, Henry Mayo, of Cokers Frome, Dorchester, Dorsetshire, 1y. 6m. 3w. 3d. old, bred by exhibitor. 2nd, Henry Mayo, of Cokers Frome, 1y. 6m. 2w. 3d. old, bred by exhibitor.

CLASS 101.—Pen of five shearling ewes. First prize, 10*l.*; second prize, 5*l.* *No entry.*

## CHEVIOTS.

CLASS 102.—First prize, 15*l.*; second prize, 5*l.* 1st prize, John Robson, of Bymess, Rochester, Northumberland, 3y. 3m. old, bred by exhibitor. 2nd, John Robson, of Bymess, 2y. 3m. old, bred by exhibitor.

CLASS 103.—Pen of five ewes of any age. First prize, 10*l.*; second prize, 5*l.* 1st prize, John Robson, of Bymess, Rochester, Northumberland, 1y. 3m. old, bred by exhibitor. 2nd, Alexander Roxborough, of Caerllo, 2y. 3m. old, bred by exhibitor.

## MOUNTAIN SHEEP.

Not qualified to compete as Cheviots.

CLASS 104.—Ram of any age. First prize, 15*l.*; second prize, 5*l.* *There were three competitors, but they were disqualified by the sheering inspectors.*

CLASS 105.—Pen of five ewes of any age. First prize, 10*l.*; second prize, 5*l.* 1st prize, Jonathan Peel, of Knowlmere Manor, Clitheroe, Yorkshire, Lonk, about 2y. and 3y. old, bred by exhibitor. *Two other competitors were disqualified by the sheering inspectors.*

## PIGS.

## LARGE WHITE BREED.

CLASS 106.—Boar, above twelve months old. First prize, 10*l.*; second prize, 5*l.* 1st prize, Peter Eden, of Cross Lane, Salford, Manchester, "Victor 2nd," 3y. 1w. 1d. old, bred by Messrs. J. and F. Howard, Britannia Farm, Bedford. 2nd, Richard E. Duckering, of Northorpe, Kirton-Lindsey, Lincolnshire, 2y. 3m. 1w. old, bred by exhibitor.

CLASS 107.—Boar, above six months and not exceeding twelve months old. First prize, 10*l.*; second prize, 5*l.* First prize, Francis H. Everett, of Bridgham, Thetford, Norfolk, "Sir Robert," 11m. 2w. 1d. old, bred by exhibitor. 2nd, John Wheeler, of Long Compton, Shipston-on-Stour, Warwickshire, "General," 10m. 1w. old, bred by exhibitor.

CLASS 108.—Breeding sow. First prize, 10*l.*; second prize, 5*l.* 1st prize, Peter Eden, of Cross Lane, Salford, "Great Western," 3y. 4m. 4d. old, bred by exhibitor. 2nd, Richard E. Duckering, of Northorpe, 1y. 10m. old, in pig, bred by exhibitor.

CLASS 109.—Pen of three breeding sow pigs of the same litter, above four and under eight months old. First prize, 10*l.*; second prize, 5*l.* 1st prize, Peter Eden, of Cross Lane, Salford, Manchester, 7m. 3w. 2d. old, bred by exhibitor. 2nd, Richard E. Duckering, of Northorpe, Kirton-Lindsey, Lincolnshire, 7m. 3w. old, bred by exhibitor.

## SMALL WHITE BREED.

CLASS 110.—Boar, above twelve months old. First prize, 10*l.*; second prize 5*l.* 1st prize, Peter Eden, of Cross Lane, Salford, Manchester, "Young Prince," 1y. 10m. 2w. 3d. old, bred by exhibitor. 2nd, John Sagar, of Lister Hills, Bradford, Yorkshire, "Premier," 2y. 8m. old, bred by exhibitor.

CLASS 111.—Boar, above six months and not exceeding twelve months old. First prize, 10*l.*; second prize, 5*l.* 1st prize, Matthew Walker, of Stockley Park, Anslow, Burton-on-Trent, Staffordshire, "Little John," 10m. 3w. 2d. old, bred by Mr. Eden, Cross Lane, Salford. 2nd, John Edward Fox, of Mansion House, Great Horton, Bradford, "Master McGrath," 11m. 1w. 5d. old, bred by Mr. T. Holmes, Keighley, Yorkshire.

CLASS 112.—Breeding sow. First prize, 10*l.*; second prize, 5*l.* 1st prize, Richard E. Duckering, of Northorpe, Kirton-Lindsey, Lincolnshire, "Topsey," 2y. 2m. 2w. old, bred by exhibitor. 2nd, Charles Roberts, of Wakefield, Yorkshire, "Annie," 1y. 11m. 4w. 1d. old, bred by Mr. J. Sagar, Lister Hills, Bradford.

CLASS 113.—Pen of three breeding sow pigs of the same litter, above four and under eight months old. First prize, 10*l.*; second prize, 5*l.* 1st prize, Peter Eden, of Cross Lane, Salford, Manchester, 7m. 3w. 1d. old, bred by exhibitor. 2nd, Richard E. Duckering, of Northorpe, Kirton-Lindsey, Lincolnshire, 7m. 3w. 2d. old, bred by exhibitor.

#### SMALL BLACK BREED.

CLASS 114.—Boar, above twelve months old. First prize, 10*l.*; second prize, 5*l.* 1st prize, William Mortimer Ware, Newham House, Helstone, Cornwall, "Gem," 2y. 3m. 3w. old, bred by Mr. T. Roberts, St. Levan, Penzance. 2nd, Henry Crossley, of Broomfield, Halifax, Yorkshire, "Black Prince," 2y. 1m. old, bred by Mr. Wormald, Dewsbury, Yorkshire.

CLASS 115.—Boar, above six months and not exceeding twelve months old. First prize, 10*l.*; second prize, 5*l.* 1st prize, W. Mortimer Ware, of Newham House, Helstone, Cornwall, "Ebony," 9m. 1w. old, bred by the Earl of Portsmouth, Eggesford House, Wemworthy, Devon. 2nd, George Mumford Sexton, of Wherstead Hall, Ipswich, Suffolk, "Bothwell," 11m. 4d. old, bred by exhibitor.

CLASS 116.—Breeding sow. First prize, 10*l.*; second prize, 5*l.* 1st prize, George Mumford Sexton, of Wherstead Hall, Ipswich, "Hannah," 2y. 11m. 1w. 4d. old, bred by exhibitor. 2nd, William Hope, of Parsloes, Barking, Essex, "Aunt Hannah," 2y. 6m. old, in pig, bred by Mr. H. Biddell Playford, Woodbridge.

CLASS 117.—Pen of three breeding sow pigs of the same litter, above four and under eight months old. First prize, 10*l.*; second prize, 5*l.* 1st prize, George Mumford Sexton, of Wherstead Hall, Ipswich, Suffolk, "Semblance," "Substance," "Symmetry," 7m. 2w. 2d. old, bred by exhibitor. 2nd, George Mumford Sexton, of Wherstead Hall, Ipswich, Suffolk, "Three Little Wonders," 6m. 3w. 5d. old, bred by exhibitor.

#### BERKSHIRE BREEDS.

CLASS 118.—Boar, above twelve months old. First prize, 10*l.*; second prize, 5*l.* 1st prize, Russell Swanwick, of R. A. College Farm, Cirencester, Gloucestershire, "Sambo 2nd," black and white, 2y. 1m. old, bred by exhibitor. 2nd, Arthur Stewart, of Saint Bridge, Gloucester, "King of the Valley," black, little white, 1y. 1m. 1w. 6d. old, bred by exhibitor.

CLASS 119.—Boar, above six months and not exceeding twelve months old. First prize, 10*l.*; second prize, 5*l.* 1st prize, Russell Swanwick, of R.

A. College Farm, Cirencester, Gloucestershire, "Sambo 4th," black, white points, 10m. old, bred by exhibitor. 2nd, Russell Swanwick, of R. A. College Farm, Cirencester, "J. 3," black, white points, 11m. 1w. 6d. old, bred by exhibitor.

CLASS 120.—Breeding sow. First prize, 10*l*; second prize, 5*l*. 1st prize, Russell Swanwick, of R. A. College Farm, Cirencester, "Sister to Sally 5th," black, white points, 2y. 1m. old, bred by exhibitor. 2nd, Lord Clermont, of Ravensdale Park, Newry, Ireland, "Young Octoroon," black, little white, 1y. 2m. 2w. 4d. old, in pig, bred by exhibitor.

CLASS 121.—Pen of three breeding sow pigs of the same litter, above four and under eight months old. First prize, 10*l*; second prize, 5*l*. 1st prize, the Rev. Henry G. Baily, of Swindon, Wilts, Bucks, black, white points, 6m. 3w. 4d. old, bred by exhibitor. 2nd, John Gilbert, of Half-Way Farm, Perry Barr, Birmingham, black, white points, 6m. 1w. old, bred by exhibitor.

BREED NOT ELIGIBLE TO COMPETE IN ANY OF THE PRECEDING  
CLASSES.

CLASS 122.—Boar. First prize, 10*l*; second prize, 5*l*. 1st prize, John Edward Fox, of Mansion House, Great Horton, Bradford, Yorkshire, "Young Prince of Airedale," white (Yorkshire), 2y. 8m. 6d. old, bred by Sir C. Tempest, Bart., Broughton Hall, Skipton. 2nd, Peter Eden, of Cross Lane, Salford, Manchester, "Jackey," white (middle), age and breeder unknown.

CLASS 123.—Breeding sow. First prize, 10*l*; second prize, 5*l*. 1st prize, Peter Eden, of Cross Lane, Salford, Manchester, "Busy Bee," white (middle), 4y. 5m. 4d. old, bred by exhibitor. 2nd, William Parker, of Bradford, Yorkshire, "Lady Sarah," white (Yorkshire), 1y. 10m. 3w. 1d. old, in pig, bred by Mr. J. Pickerdike, Bradford.

CLASS 124.—Pen of three breeding sow pigs of the same litter, above four and under eight months old. First prize, 10*l*; second prize, 5*l*. 1st prize, Clement R. N. Beswick-Royds, of Pyke House, Littleborough, Lancashire, "Rose," "Shamrock," and "Thistle," white (middle), 7m. 3w. old, bred by Mr. W. Hatton, Addingham, Otley. 2nd, Thomas Bantock, of Merridale House, Wolverhampton, white, blue spots (middle), 7m. 4w. 1d. old, in pig, bred by exhibitor.

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## Extracts from British and Foreign Journals.

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### MICROSCOPICAL EXAMINATION OF WATER FOR DOMESTIC USE.

By JAMES BELL, F.R.S.

*(Read before the Royal Microscopical Society.)*

THE microscopical examination of water for domestic use is, in my opinion, a suitable subject to bring before this Society. The subject is essentially a practical one, and affords a wide field in which microscopists might occasionally spend a portion of their time with much profit.

A sample of water which is largely contaminated with sewage exhibits, when placed for a few days in a warm chamber, such a mass and variety of life, that the mind is almost bewildered in trying to master in detail the numerous creatures that have sprung into existence within so short a space of time. From the diversity of the ingredients usually composing sewage, it would, indeed, be difficult to find a mixture so well adapted for the development of a variety of organisms.

Mr. Heisch was, I believe, the first who attempted to point out a possible means of detecting, by the use of the microscope, whether water had been contaminated with sewage or not; his method being founded upon the development therein of a distinctive organism in the presence of sugar.

He found that when a small proportion of pure cane-sugar was added to water containing sewage, and the mixture was maintained at a temperature between 60° and 70° Fahr., and placed in a position where plenty of light was admitted to the bottle in which the liquid was contained, the mixture became turbid in times, varying from twenty-four to sixty hours, and contained cells and a delicate fungus mycelium, followed by the ultimate development of the odour of butyric acid. From this, Mr. Heisch concluded that sewage contained particular germs, which when brought into contact with sugar in water immediately began to grow.

This observation was necessarily regarded as a most important one, not only because it promised to effect a change in the present mode of determining the presence of sewage in water; but to lead to the discovery and identification of the germs which generate epidemics.

Mr. Heisch deserves great credit for initiating such an important line of investigation, and the combined researches of microscopists on the subject may ultimately lead to important practical results with respect to the laws of health, by determining the exact conditions under which the germs of various organisms are developed.

Shortly after the subject was brought before the Chemical Society, I had occasion to assist at the examination of a sample of water obtained from a well in the neighbourhood of Drury Lane, and suspected to contain impurities. To a portion of the water Mr. Lewin added a small quantity of pure cane-sugar, and in less than twenty hours the mixture became turbid, and the liquid when submitted to a microscopical examination was found to be literally alive with minute bacterian-like bodies in an extremely active condition; and it was obvious that these little organisms by their action on the cane-sugar were the immediate cause of the turbidity. The water was bright, and there was certainly nothing in its appearance to cause any suspicion that it was contaminated with sewage. Subsequently it was ascertained that the drain-pipes of an urinal not far from the well were stopped up, and that the earth around the well was saturated with urine. On being informed of this fact, and recollecting that the characteristic fungus mycelium had not been observed when the water was submitted to the sugar test, I made various experiments with mixtures of urine, in different stages of decomposition, and New River water, and in every instance failed to discover any distinctive fungus mycelium, the field being almost exclusively occupied by bacterian bodies.

About six weeks after this I accidentally made the observation that water which had been passed through animal charcoal became turbid when submitted to the sugar test, and that a large development of bacterian bodies was produced. I had purchased a new charcoal filter in the month of September last, and I was naturally led to try the water by the sugar test before and after filtration, when to my surprise I found that the filtered water became turbid, while that which had not been filtered remained bright. This result at first puzzled me, but as I had observed last summer, during the course of my experiments on fungi, that phosphate of lime exercised powerful deteriorating properties by promoting the development of organisms, I was led to attribute the presence of the bacteria in the water after filtration to the action in some way of the phosphate of lime in the animal charcoal. The mystery of this action of the animal charcoal has since been explained, as it is known to be a fact that a portion of the phosphate of

lime in the charcoal is dissolved out by the water when passing through it.

I have made some special experiments with phosphates in pure distilled water, under various conditions, and the results showed that in every case when phosphate of lime was present, the liquid, on the addition of cane-sugar thereto, became turbid and literally alive with bacteria, in times varying from twelve to thirty hours. The phosphates of the alkalies gave negative results, but when nitrate of ammonia was present, a slight turbidity occurred after the lapse of several days, and the liquid was found to contain a few bacteria. The results of these experiments confirmed my previous observations, that the phosphate of lime possessed powerfully stimulating properties in promoting the development of organisms. The phosphates of the alkalies, however, in the presence of pure vegetable albumen, also promote the development of organisms, and produce turbidity in cane-sugar solutions.

I also made various experiments with water passed through animal charcoal, and with water to which animal charcoal had been added, and in every instance when sugar was added, and the mixture placed in a chamber maintained at a temperature between 60° and 70° Fahr., the sample became turbid, in times varying from twelve to forty hours.

I have since observed that animal charcoal which has been in use for a considerable length of time ceases to possess the property of imparting to the water the power of producing turbidity on the addition of sugar; doubtless from all the phosphate of lime having been dissolved out by the long and constant action of the water.

Hitherto in the course of my experiments both with phosphates and urine I failed to obtain any characteristic mycelium; but it occurred to me that so long as the field was occupied by such a mass of bacterian bodies, there was but a small chance of obtaining the development of any other organisms, and as I had observed that the greater the proportion of urine or phosphate of lime present in the water, the water not only became turbid within a shorter time, but the bacterian bodies were greatly increased in number.

To obviate this I experimented with more dilute solutions. I first made an experiment with one drop of fresh urine in 20 ounces of New River water, and the result was completely successful, and I obtained an exquisitely beautiful filamentous development corresponding to the characteristic mycelium described.

Now, I had observed that the bacterian bodies produced in New River water, when a phosphate was present, were

identical in appearance and character with those which were produced by the addition of fresh urine to a portion of the same water, and it was difficult to comprehend how, when fresh urine was used, one class of the organisms developed corresponded with those produced in the presence of phosphate of lime, while the filament was absent.

To try and assimilate more the conditions of making the experiments with a phosphate and the urine, I added very minute quantities of phosphate of potash to New River water—from two to five hundredths of a grain to 40 ounces—and with this proportion of phosphate a beautiful filamentous development similar to that which was produced by the one drop of urine, made its appearance, thus clearly indicating that phosphate of lime exercised an important part in causing the development.

I next largely diluted some water that had been filtered through animal charcoal, and subjected a portion of the mixture of filtered and unfiltered water to the sugar test, when an abundance of fine filaments was developed. These filaments were not identical with those produced in the presence of urine; but the difference was probably due to my not having arrived at the proper conditions.

From what has been stated it will be seen how easily by a slight change of conditions the line of development of living things may be modified, and this is one of the great difficulties to be contended with in attempting to establish whether a water is impure or not, from the development therein of any particular organism; and it is even possible for a water under certain conditions to contain combined nitrogen without producing, when submitted to the sugar test, any turbidity.

Dr. Frankland, whose researches on this subject are full of interest, was the first to make the observation that effluent sewage water, when passed through a thick bed of gravel, was deprived of its phosphates, and that although containing combined nitrogen, the water, when submitted to the sugar test, remained bright.

I was unsuccessful until within the last few days in obtaining any filamental growth from vegetable albumen approaching in appearance the filaments that occur in water containing sewage. A small quantity of partially purified vegetable albumen was introduced into New River water contained in an open glass vessel and left for nine days, at the expiration of which time the water contained filaments, both in strings and fragments, the latter being almost undistinguishable from those found in effluent sewage waters.

While making the experiments with urine and phosphates I also made many with sewage and effluent sewage water under various conditions. There happens to be near me a farm on which the sewage of Epsom is utilised, and I obtained various samples of the sewage as it entered the farm, and of the effluent sewage water, and also samples of the latter after it had become mixed with the water of a brook.

In dealing with such samples as these in their normal condition, and examining them microscopically from time to time, the first thing that strikes an observer is their capability of producing a great variety of life without the addition of sugar or any extraneous substance, and when, after various degrees of dilution, the samples are submitted to the sugar test, they become less or more turbid, and contain variable proportions of fine filaments and bacterian bodies.

In effluent sewage water, I have rarely met with the filaments in that beautiful network form in which they are found in water containing only urine or a phosphate; but there is no difficulty in deciding that both filaments belong to the same class of growth.

The filaments met with are of at least two sizes; one is so fine that the joints cannot be seen when magnified 1000 diameters. The joints in the other filament can be observed when magnified above 400 diameters. Both descriptions of filaments are found in water containing sewage, but in some diluted samples of effluent sewage water I have only been able to discover the finer filaments, while in others only the larger. In mixtures of urine or of a minute quantity of alkaline phosphate with New River water, the larger filaments are found, and they occur in the network form.

Both filaments soon break into pieces of various lengths and diffuse themselves throughout the liquid. In the case of the filament produced in the water containing urine, I observed that in its earlier stages of development the filament appeared to be surrounded by a sort of soft casing, which gradually separated from the filament, the jointed character of which was then readily distinguishable.

While dealing with the subject, it is proper to point out that when some descriptions of ditch and other dirty water are submitted to the test, filaments similar in character are developed, and after these break up and become diffused throughout the liquid, they are hardly distinguishable from those produced in water containing sewage; in fact the only difference apparently observable is that the broken filaments are much less numerous than in samples of effluent sewage waters, which undoubtedly produce the filamentous growths

in great abundance. The dirty waters upon which I operated became turbid, and were found to contain bacterian bodies.

The rapid growth of the filaments in the presence of phosphate of lime and cane-sugar is very curious and interesting, and the interest in their development is somewhat heightened by the fact that the filaments will, I think, be found to belong to a higher order of vegetation than fungi, viz. to the *Algæ* and probably to the class *Oscillatoriacæ*.

In samples of water containing sewage a large proportion of the bacterian-like bodies partake more of the character of vibrios than the corresponding organisms in water containing phosphate of lime, and free from organic matter; but the line of distinction is so fine that I could not undertake at present to define the difference. Those bacterian bodies which are produced in water containing a large proportion of sewage, and especially urinary sewage, appear to be more flexible than those developed in the presence of sugar in effluent sewage water, or in water containing phosphate of lime only. The most active condition in which they are found is when they consist apparently of two cells or divisions, and in this form they are extremely rapid in their motions, and are seen darting constantly across the field, and occasionally stopping and performing a revolving motion. I cannot help thinking that these bodies, which multiply with such extreme rapidity and produce such rapid changes in solutions of organic matter, are a dangerous form of organism to be taken into the human system.

Finally, the results of my experiments are in accordance with the theory, now almost universally accepted, of the general diffusion of germs; and once a suitable soil is produced for any class of these germs they will soon find it out and begin to grow, just as bacterian bodies develop in New River water immediately after a small proportion is added thereto of potash and cane-sugar respectively.

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#### THE LYMPHATICS OF THE LUNGS.

AN investigation into these structures has been recently undertaken in M. Chrzonszczewsky's laboratory of Kiew, by Herr J. Sikorsky. The results have been published in the 'Centralblatt,' and are abstracted in a recent number of the *Lancet*—The method adopted consisted in the

injection of a watery solution of ammonia into the lungs of living cats and dogs, and the subsequent examination of the paths pursued by the tinted fluid, the lungs being at once removed from the body and frozen, and the blood-vessels being in most cases injected with a solution of gelatine tinted blue. In such experiments it was found that, in opposition to the effect produced in dead animals, neither the intercellular substance, nor the cell formations, not even the columnar epithelium of the bronchia, with which the carmine solution must have been in direct contact, became tinted. The commencement of the lymphatic system was not exactly the same in the bronchia and the alveoli of the lungs. In the bronchia the epithelium generally remained uncoloured; but between the columnar cells were special structures, very similar in form to these cells, and staining strongly with carmine. From these structures minute canals penetrated perpendicularly to the surface of the mucous membrane, and formed a close plexus in the submucosa, and partly also in the mucosa, from which larger trunks originate, which accompany the bronchia to the roots of the lungs. In the alveoli of the lungs, on the other hand, a peculiar plexus, composed of tubes and nodal dilatations, is found; the latter are triangular, stellate, or irregular cavities, which are again connected with the lumen of the alveoli by means of very fine tubules. The lymphatic plexus of the alveoli gives origin to larger vessels, which accompany the veins to the roots of the lungs. This system constitutes the so-called deep plexus of lymphatics of the lungs. The superficial plexus arises from the subpleural alveoli. The trunks pass into the pleura, and then into the pulmonary ligaments.—*The Monthly Microscopical Journal.*

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#### THE ORIGIN AND NATURE OF FAT.

IN the *Transactions of the Vienna Royal Academy*, Herr Toldt has recently published some very interesting observations, in opposition to the statements of Virchow, who maintains that fat-cells are to be regarded as the cells of connective tissue filled with an oily fluid, and are, therefore, constantly associated with this tissue. Toldt gives as the general results of his inquiries upon the intra-spinal fatty tissue that this, at least, is an organ of a peculiar nature, which neither in regard to its structure nor function can be included amongst the connective tissue formations. In order

further to demonstrate that adipose tissue is independent of connective tissue, he refers to the characters and relations of fat in the Batrachia. The masses of fat that surround the uro-genital apparatus of these animals in the larval state consist of large, round, transparent nucleated cells, not separated by *any* intervening substance except blood-vessels. Passing to the Mammalia (says the *Lancet*, from which we quote), he points out that the first formation of fat in the embryo occurs round the kidneys, and thence gradually extends into the connective tissue of the mesentery after birth. He considers a strong argument in favour of the independency of the adipose tissue to be the fact that it always has, down to its smallest lobules, its own proper and closed system of blood-vessels, which, it is curious to observe, very closely resembles that of the acinous glands. These researches of Toldt enable us to explain the absence of fat in regions where everything appears to favour its formation, as in the sub-muscular connective tissue of the intestinal canal. It explains also the persistence of the tissue, with its characteristic features, even when all the oily matter has been removed by absorption. Whilst fully concurring in the general statement that fat-cells possess in mature adipose tissue a distinct membrane, he differs from Czajewicz in maintaining that when first formed they are destitute of a membrane, this only becoming visible in the later embryonal periods. The minute masses of protoplasm they contain, however, remain throughout life. He makes an interesting observation to the effect that spring frogs that have fasted through the winter, and are excessively lean, present fat drops in which no membrane is distinguishable, but which, reduced to their protoplasmic primary mass, possess the power of amœboid movements. From the consideration of these facts, M. Toldt has arrived at the conclusion that the protoplasm of the fat-cells, when supplied with sufficient nutriment, is capable, like a gland-cell, of forming fat as a kind of secretion; and, inversely, when the consumption of oxidizable material exceeds the supply, it possesses the power of using up the stored-up fat and discharging it into the blood. The mode in which fat is laid up has also been investigated by Fleischer, with a view of determining whether, in accordance with Liebig's idea, the amylaceous compounds ingested are converted into fat directly; or whether, as Voit thinks, the fat consumed in the economy is derived from the fat of the food, and that the amylaceous compounds are only serviceable as readily combustible compounds, by means of which the fat developed from albuminous compounds, and already present

in the body, are preserved. The results of his investigations on cows, which were both numerous and extended over a long period of time, were on the whole unfavorable to Voit's views.—*Ibid.*

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#### WHAT IS THE USE OF THE SPLEEN ?

THIS question is, we fear, yet unanswered, though Signor Bacelli has attempted its solution. He observes that in the intermissions of the first attacks of malarial fever there is frequently a great increase of appetite, which, however, is soon followed by a gastric catarrh, leading to a very complete loss of digestive power (known even to Celsus) for albuminous compounds. His researches have led him to believe that the increase of appetite at the commencement of the disease is due to simple hyperæmia of the spleen; whilst the disturbance of digestive power, occurring after repeated attacks, was attributable to the persistent hyperæmia of the organ producing physiological disturbance of its functions. The large veins of the spleen, he points out, are destitute of valves, and pass, imbedded in the pancreas, and therefore imbedded in the stomach, and in front of the spinal column, to the liver, so that the blood only traverses them unimpeded when the stomach is empty; whilst, when the stomach is full, the blood current is more or less completely arrested. During digestion, physiological enlargement of the spleen occurs; and, partly owing to the contractility of the organ, and partly to the pressure by the stomach on its veins, its blood is returned by the vasa brevia and coronary veins. But he has found that from the splenic pulp, and from its venous blood, a juice can be obtained containing pepsine, and capable of digesting coagulated albumen. The spleen, he is therefore disposed to think, prepares from the disintegrated albuminates of the blood-corpuscles the pepsine that is afterwards secreted by the glands of the stomach. The hyperæmia of the spleen occurring at the commencement of the malarial intoxication occasions an increased secretory activity of the gastric peptic glands, and thus accounts for the increased appetite observed at this period; but, at a later stage of the disease, the persistence of the hyperæmia causes stasis of the blood in the swollen spleen, accompanied by a kind of paralysis or functional disturbance, and the patient is no longer capable of digesting albuminoid food.—*Ibid.*

## Analysis of Continental Journals.

By G. FLEMING, M.R.C.V.S., Royal Engineers.

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### ON THE ABSORPTION OF SOLID MATTER DEPOSITED IN THE TISSUES.

By M. C. DAVAINE.

THE following observations on the transport in the body of foreign solid matter of a definite form were made before the Society of Biology by M. Davaine. He says :

The possibility of the absorption of solid matter deposited in the tissues of animals has no longer been a matter for doubt since our regretted colleague Follin showed that particles of vermilion and charcoal, introduced into the skin by tattooing, might, after a certain time, be found in the neighbouring lymphatic ganglia. (*Comptes Rendus de la Société de Biologie*, vol. i, p. 79). This fact has recently been confirmed by an observation of M. Robin, who observed the ganglia in the right arm-pit of a criminal to be dark-coloured by particles of charcoal which had been derived from tattooing the forearm. (*Journal de l'Anatomie et de la Physiologie*, 1869, p. 465). Our colleague, M. Charcot, has also witnessed a similar instance, but this he has not published.

In these cases, however, the phenomena at work in conveying for a short distance solid particles exclusively by the lymphatic vessels are somewhat local. The facts I am about to relate belong to a different order, and have reference to the absorption of solid bodies of a notable volume being carried with the blood into all the organs.

The Society may perhaps remember that, in the course of the year 1860, I laid before it drawings of spores which I had on several occasions observed in the blood-vessels of several herbivorous animals. These *composite* spores—conical or fusiform—were derived from parasitical fungi on the plants which were given to these creatures as food. It might be conceived that pointed spores could find their way into the blood-vessels through the mucous membrane of the intestines, and I have endeavoured to verify this fact experimentally ; but having been unable to procure a sufficiently large number of fusiform or conical spores, I made two guinea-pigs consume for several days great quantities of the maize blight (*ustilago maidis*), the spores of which are spherical. Notwithstanding, how-

ever, the most careful search, I could not discover any spore in the organs or blood of these two creatures. So I resolved to repeat these experiments on the first opportunity, but with spores of another shape. Before this opportunity occurred, however, facts of another kind caused me to revert to this question. In the course of last year, in studying the action of putrified blood on animals, I found a very short time after the injection of this blood beneath the skin, very long vibrionæ in the veins of the adjacent parts. An attentive examination of several similar cases led me to believe that these long vibrionæ could not be formed in such a brief period in the blood of the veins, but that they had penetrated therein either by absorption or through the capillaries torn in the process of injection. To be assured of this, it was necessary to inject into the tissues bodies which could not propagate themselves there, and possessing those precise characteristics which would always lead to their being readily detected. The spores of the mushroom respond to these conditions: they are uniform in each species; are provided with a rigid tegument that prevents their becoming distorted; are a long time before submitting to alteration; are immense in number; and, lastly, according to their species, their volume is very variable. My first experiments were made with exceedingly small spores—those of the penicillium. I found them in all the organs; but, smaller than the blood-corpuscles, these spherical bodies having no particular characters, and resembling in several respects fat-globules, might give rise to mistakes.

In one of the experiments, an abscess having formed at the part where the injection had been practised, a great number of leucocytes contained one, two, or three, and even four spores of the injected penicillium. The penetration of foreign bodies into leucocytes had been already remarked by Virchow, and M. Robin had also noticed the presence of atoms of charcoal in the leucocytes found in certain sputa (*Leçons sur les Humeurs*, p. 485, Paris, 1867, and *Dictionnaire Encyclopédique*, art. *Leucocyte*, p. 277); but the present instance appears to me, nevertheless, interesting from the clearness of the result. In treating these leucocytes with acetic acid or potass, the intact spores were disengaged, and their inclusion was rendered manifest by the transparency the leucocyte at first acquired under the action of the reagent.

These experiments were repeated with spores of various sizes, obtained from fungi of different species. I will only speak at present of those made with the maize blight (*ustilago maidis*). The spores of this fungus are black, spherical, and rigid, and the surface uneven. All these characters render

them perfectly distinct in the tissues or the blood of animals, in which they may remain two months without being notably altered. Lastly, they are the hundredth part of a millimètre in diameter, about equal in volume to that of the white globules of the blood, and much superior to that of the red corpuscles.

On the 15th August, 1868, I injected, with Pravaz's syringe, four drops of water charged with a great number of the spores of the *ustilago maidis* into the substance of the abdominal parietes of a young guinea-pig. The animal having been killed six days afterwards, the spores of this ustilago were discovered in the lungs and liver, but more especially in the brain, where they were found in large numbers chiefly in the grey matter. There were also some in the interior of the eye.

On the 24th August, 1868, I injected in the same manner into the abdominal wall of a very young guinea-pig, three drops of water densely charged with the maize *ustilago*. Its organs having been examined five days after, I found many spores in the blood contained in the heart and in the lungs, a small number in the brain and liver, and some in the spleen, the supra-renal capsules, and the kidneys.

Recently, I have confirmed these results by new experiments which I shall communicate to the Society when they are terminated. I may, however, state that I have obtained the transport of the spores of the maize fungus in the guinea-pig about once in every two attempts. As might have been expected, the lungs were the first to contain them. In one of the animals which had been injected about six weeks, none were found in the lungs, but a great number were discovered in the brain.

At the *Séance* of the Academy of Sciences, held at Paris on the 11th of last July, honorable mention and a sum of six hundred francs were awarded to the veterinary professors, MM. Tripier and Arloing, for their discoveries relative to the cutaneous sensitive nerves. M. Saint-Cyr, professor at the Imperial Veterinary School of Lyons, was also awarded a prize of a thousand francs as an inducement for him to continue his researches on *Tinea favosa* in the domestic animals. The paper detailing his investigations into the history, nature, and transmissibility of this malady was read to the Academy in 1869, and published in the 'Recueil' for that year. It is so interesting and important in a pathological point of view, and the subject is at the same time dealt with in such a lucid and scientific manner, that we purpose giving a translation

of the monograph in a future number of the *Veterinarian*. In the mean time, we must congratulate our French colleagues on the substantial and distinguished recognition which their contributions to science have obtained for them.

Our felicitations are also due to M. Reynal, professor at the Imperial Veterinary School of Alfort, who has been, by imperial decree of the 15th August, promoted to the grade of Officier of the Legion of Honour; and to M. C. Leblanc, Veterinary Surgeon of Paris, and Secretary of the Imperial and Central Veterinary Medical Society, who is, by the same decree, named a chevalier of that order. Both the recipients are well known to the profession in and beyond France, and their honours have been well earned.

#### EQUINE POLYDACTYLISM.

The 'Proceedings of the Royal Asiatic Society of Bengal' for January last contains a drawing of a remarkable case of polydactylism in a horse from Bagdad, which tends to illustrate and verify the remarks we made regarding the digital extremity of animals, and its transition from the pentadactylous to the monodactylous type, in the January number of the *Veterinarian* for 1870 (p. 3).

Mr. Wood-Mason, who exhibited the specimen, remarked that the splint-like rudiments of the metacarpals of the fourth toe on each fore-foot had given rise to a supernumerary digit provided with the regular number of phalanges, and encased in an asymmetrical hoof, the asymmetry of which was such that the presence of another of the same shape internally to it would have formed a symmetrical pair like the cleft hoof of a ruminant. The metatarsals of the fourth toe on each hind foot were, by the law of correlation, similarly affected; but the supernumerary hoofs of these were stouter and more irregular in shape.

The monstrosity appeared to present an interesting reversion in the direction of the extinct fossil *Hipparion*.

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## ROYAL COLLEGE OF VETERINARY SURGEONS.

JULY 5TH, 1871.

The President, BENJAMIN CARTLEDGE, Esq., in the Chair.

PRESENT:—Prof. Simonds, Mr. Wilkinson, Mr. Fleming, Mr. Broad, Mr. Cowie, Mr. Silvester, Mr. Withers, Mr. Robinson, Mr. Naylor, Mr. Gowing, Mr. Harpley, Mr. Balls, Mr. Owles, Mr. Lowe, Mr. Coates.

The minutes of the two previous special meetings were read and confirmed.

The following letters were read :

- (1) From Professor Williams,
- (2) From Professor M'Call,
- (3) From Mr. Naylor,
- (4) From Mr. Owles,

acknowledging the honour of their election as Vice-Presidents of the Council.

- (5) From Professor Simonds,
- (6) From Mr. J. C. Broad,
- (7) From Mr. G. Armatage,
- (8) From Mr. Thos. Burrell,

acknowledging the honour of their election as members of the Council.

(9) From Mr. Geo. Morgan, of Liverpool, drawing attention to the published report of the last special meeting of the Council, and desiring to be informed whether the second ballot for vice-presidents was in accordance with the provisions of the charter when a tie occurs.

The Secretary was directed to acknowledge the letter, and refer Mr. Morgan to the 61st bye-law, which says, "all elections shall be by ballot."

(10) From Mr. Davidson, of Whitby, Ontario, Canada, desiring to be informed whether a person of the name of W. G. Fitzmaurice was a member of the College. In reply, he was informed that no such name appeared on the register.

(11) From Mr. Thomas Gaved, of Burton-on-Trent, enclosing an advertisement of Mr. Charles Hall, who styles himself a member of the College of Veterinary Surgeons. The writer of the letter wished to have the announcement contradicted in order that it might be inserted in the local papers. In reply he had been informed that no such name appeared on the register.

(12) From Mr. Driver, St. George's College, Regent's

Park, asking for a synopsis of the subjects in which candidates are examined for the diploma of the College. The required information had been sent him.

(13) From Mr. M'Gavin, enclosing a report of the proceedings instituted by the Pharmaceutical Society, for non-registration, against a Mr. Whiskin, of Welshpool, who styles himself veterinary surgeon.

(14) From Mr. George Lewis, of Monmouth, inquiring if veterinary surgeons are exempt from serving on juries. He had been informed that they are not exempt.

(15) From Mr. Clayworth, jun., Birmingham, stating that an action had been brought against him by a Mr. J. H. Pitt, Birmingham, for not acknowledging his certificate. He wished to be furnished with the official regulation on this subject, and had been referred to page 5 of the Charter.

(16) From Mr. T. W. Prentice, Great Totham, Essex, asking to be informed if a person holding the Highland and Agricultural Society's certificate is required to pass an examination in chemistry and anatomy in order to obtain the diploma of the College. Further particulars had been asked for before a definite reply is given.

(17) From Mr. Geo. Mould, of Aberdeen, asking to be allowed to undergo a written examination in that city, in consequence of his inability to attend the examinations in London. He had been informed, in reply, that no such written examination could be permitted.

(18) From Mr. John Bretherton, Liverpool, stating that he had lost his diploma, and asking if the Council could provide him with another.

(19) From Mr. Geo. Morgan, of Liverpool, stating that Mr. John Ellis, of Liverpool, had certified to him that Mr. John Bretherton, who had lost his certificate, is the same Mr. John Bretherton who passed his examination in 1858.

*The Secretary* said that on two previous occasions similar applications had been made, and the Council then resolved that a certificate, signed by the President and Secretary, should be forwarded to the gentlemen who had lost their diplomas.

*Mr. Gowing* said Mr. Wm. Brown, of Grafton Street, had lost his diploma by fire, and he also wished to possess some document to show that he is a member of the College.

*Mr. Wilkinson* moved that a certificate similar to that which had been sent on previous occasions should be forwarded to Mr. Bretherton.

A discussion arose as to whether it was advisable to affix the seal of the College to the certificate, Mr. Wilkinson

explaining that he did not, by his motion, propose to have the seal affixed.

*Mr. Withers* seconded the motion.

*Mr. Cowie* moved as an amendment that the seal of the College should be put to the certificate.

This amendment was seconded by *Mr. Gowing*, and on a division was carried, the members being, eight in its favour; five against it.

#### *Appointment of a Registrar.*

*Mr. Owles* proposed the reappointment of *Mr. Coates* as registrar, and on a ballot being taken *Mr. Coates* was unanimously re-elected.

#### *Appointment of Committees.*

The following Committees were appointed:

*Finance Committee.*—*Mr. J. C. Broad*, *Mr. Field*, *Mr. Harpley*, *Mr. Moon*, *Mr. Lowe*, *Mr. Wilkinson*.

*House Committee.*—*Professor Spooner*, *Mr. Cowie*, *Mr. Harpley*, *Mr. Withers*, *Mr. Balls*.

*Publication Committee.*—The President, *Professor Brown*, *Mr. Lowe*, and the Secretary.

*Parliamentary Committee.*—*Professor Spooner*, *Professor Simonds*, *Mr. Field*, *Mr. Fleming*, *Mr. Gowing*, *Mr. Harpley*, *Mr. Robinson*, *Mr. Wilkinson*, *Mr. Owles*, *Mr. J. C. Broad*.

#### *Report of Examinations.*

*The Registrar* reported that at the recent April examinations in London thirty-one candidates passed and twenty-five were rejected. At the examination in Edinburgh twenty-two passed and five were rejected. At the Glasgow examinations eight passed. At a special examination in London two candidates, residing in Calcutta, who had been examined, passed.

#### *The New Register.*

*The Registrar* reported that 250 copies of the new Register had been received from the printer's.

The obituary notice was then read.

#### *Report of Finance Committee.*

The report of the Finance Committee showed that the balance at bankers was £387 14s. 8d. The present liabilities amounted to £94 19s. 9d.

The adoption of the report was moved by *Mr. Naylor*, seconded by *Mr. Cowie*, and agreed to.

*Mr. Withers* moved that £100 should be invested, and a portion of the remaining balance be placed on deposit.

*Mr. Silvester* seconded the motion, which was agreed to.

### *Re-examinations.*

*Mr. Wilkinson*, after expressing his cordial and hearty thanks for the letter which the Secretary, under the direction of the Council, had written to him, containing their expression of thanks for the manner in which he had performed the duties of the presidency during the past year, said he wished to draw the attention of the Council to an event that took place at the last examination. A gentleman who had been educated at the Edinburgh School, and examined by the Scotch section of the Board of Examiners and rejected, applied to one of the members of the Council for information as to whether or not he would be eligible for examination in London. The gentleman to whom he applied was not aware at the time that he had been rejected, and he therefore informed him that he certainly was eligible for examination in London. On the evening before the examination it was mentioned to him (*Mr. Wilkinson*) that the candidate had been rejected in Scotland, and he thought an examination by the English Board would be irregular, but inasmuch as the gentleman had gone to the expense of coming to London on the assurance of the member of the Council, that he was eligible for examination, it was considered that under the circumstances he might be examined. The examination, however, confirmed the decision of the Board in Edinburgh, and he was again rejected. His object in bringing the matter before the Council was to obtain a decision as to what course should be adopted in the event of a similar application in the future. The principal reason in favour of the re-examination being permitted in London was, that if the gentleman resided in the south of England it would be a great expense to him to have to go to Edinburgh, but this was a consideration that the Council could take no notice of. On the other hand, it was intended when a candidate was rejected, that he should return to the school at which he had been educated. This, in fact, ought to be a *sine qua non* before re-examination.

*Professor Simonds* said the whole question resolved itself into a nutshell. There were not two Courts of Examiners, but simply two sections of one Board. Any pupil who was rejected by either section was in reality rejected by the Court of Examiners, and he could not come before that Court again

unless he brought proof of having attended a school, so as to acquire a greater amount of information.

*Mr. Cowie* asked Professor Simonds if he implied that a student in England might go to Scotland for examination, and if rejected there return to the school for six months, and then be re-examined in England.

*Professor Simonds* said it had happened more than once that gentlemen educated at the Royal Veterinary College, and rejected by the English section of the Court of Examiners, betook themselves to Scotland, and after attending a course of lectures there presented themselves before the Scotch section of the Court, and passed. There was no objection to that.

*The Secretary* : The facts were these. A student who had obtained the Highland and Agricultural Society's certificate was examined in Scotland, on the 17th April, 1869, and rejected. Then he went into business, and subsequently applied to Professor Brown to know if he could be allowed to present himself for examination in December, 1870, before the English section of the Board of Examiners, and he was permitted to do so.

*Mr. Balls* : Without educating himself at any college in the interval?

*The Secretary* : No, he was in practice.

*Mr. Owles* thought that, according to the by-laws, if a student furnished the Secretary with the necessary certificate that he had attended a school, he had a right to present himself before either section of the Board. If he was rejected, that rejection was only for a certain period, and he might apply, at the expiration of that period, for re-examination before the other section, if he thought proper.

*Mr. Cowie* : If a pupil appears in Edinburgh with certificates from the London School, were the Scotch section of the Board to examine him, the same as if his certificates were from a Scotch school?

*The President* : That is so.

*Mr. Wilkinson* then gave notice that at the next quarterly meeting he should move "That no rejected pupil shall be eligible for re-examination unless he produces a certificate of having received further instruction at one of the recognised schools."

*Mr. Naylor* gave notice of his intention to second the motion.

The motion will therefore be suspended for three months, when it will be moved as an addition to Bye-law 33. This closed the proceedings.

## CENTRAL VETERINARY MEDICAL SOCIETY.

[OFFICIAL REPORT.]

THE usual monthly meeting of this Society was held on Thursday, July 6th, the President, G. Fleming, Esq., F.R.G.S., M.R.C.V.S., &c., in the chair.

## NEW METHOD OF HORSE-SHOEING.

The subject of the evening was the new method of shoeing horses, known as the Pre-plantar system, invented some time ago by M. Charlier, V.S., Paris. The President introduced M. Charlier, jun., who is at present residing in London, and interpreted to the meeting the substance of his (M. Charlier's) observations, as follows:

“The foot of the colt, when in a perfectly natural state, and before it has ever been shod, presents a conformation beautifully adapted for the performance of those functions which by nature it is intended to fulfil; being strong to resist wear and tear, and to support superincumbent weight, as well as yielding and elastic, to counteract the effects of concussion.

“The principle upon which M. Charlier's mode of shoeing is based, is the application of iron (or any sufficiently hard metal, simple or compound), to that part only of the foot of the horse which requires to be protected from the excess of friction which any animal used for saddle or draught must be exposed to when going rapidly, either upon a paved or macadamized road, or indeed on hard ground of any kind.

“The portion of the hoof subjected to such wear and tear being the lower or treading portion of the crust (that which comes into direct contact with the ground), M. Charlier's plan of acting simply is to protect this part from injurious friction, at the same time preserving in its integrity the natural form and structure, and consequently all the functions of the horse's foot. To this end the lower edge of the superficial crust (or wall) only is cut away, the portion removed being replaced by a metallic rim, necessarily more resisting than the natural wall of the foot, but precisely the same in form and thickness as the substance removed.

“This metal edging or shoe lies imbedded in a groove, made by Charlier's drawing knife, an instrument constructed for the purpose by the inventor, something resembling an ordinary moulding plane, and which any shoeing smith can use. The shoe thus let, as it were, into the foot, becomes a continuation of the natural hoof to the tip of the toe, but not extending beyond it; and in a normal shaped foot at once (or in a weakly foot after about three months' duration of this plan of shoeing, and consequent free growth of

horn), lies level with the sole and frog, both of which are thus permitted to come into direct contact with the ground.

“The frog is never pared, and, being left entire, soon becomes thick and flexible, and assists to support the body, forming with its spongy upper cushion a medium of elasticity to weaken the shocks upon the tendons and the joints. Its structure, too, soon resembles india rubber, and it thus constitutes in the hinder part of the foot a natural elastic wedge which expands, and keeps wide open the heel. The frog also, when well developed, fulfils another office besides strengthening the bearing upon the ground, for it prevents the horse from slipping, acting like the pad under the foot of the camel, dog, or cat. This last function is of very great advantage by securing the safety of the rider, and is all important in the paved streets of towns, when turning sharply round a corner or in travelling over ice. With Charlier’s shoe the sole of the foot is never touched, and the horn, being permitted to remain in its normal state, grows freely, and is always healthy and strong, for from bearing upon the ground it becomes hard and thick, and able to resist contact with the sharpest stones. Thus is obtained that real cover for the foot so desirable, a good sound sole.

“All artificial means to prevent the contact of the sole with the ground have turned out to be injurious, causing wasting, softening, and disease, more or less, of the sensitive portions of the foot. The frog and the sole, moreover, appear to be more abundantly secreted the more that they are exposed to attrition; and like the skin of the hand of the blacksmith, or the foot of the beggar boy who has never worn a shoe, get to be incredibly resisting, and capable of being exposed to very hard and rough usage.

“Charlier’s method will thus be seen to be directly opposed to the ordinary system of shoeing horses, as generally practised in Great Britain and in France; which system is, in his opinion, neither more nor less than a mutilation of the hoof of the horse by the knife and rasp, with the application to the extremity of the leg of the animal of an unnecessary weight of iron, oftentimes so constructed as to elevate the horse upon a kind of skate, making him to be like unto the ladies with monstrous heels, thus seriously injuring the action of the leg, and (as the ladies) causing to the wearer suffering and torture.

“Many of the serious affections of the foot and heels of the horse, especially bad corns, are induced by the present mode of shoeing; a fashion which must be condemned alike by the teachings of science, the reasoning of common-sense, and the result of daily observation and experience.

“Once again, then, let it be repeated, that the frog and sole must have pressure or they will become useless and diseased. With the foot shod *à la* Charlier, the heels of the horse are kept open, and the bars strong, the frog prominent and flexible, and the soles as firm and thick as the unshod colt, for they are never touched by a knife. The great enemies to the introduction of this system will be ignorance and routine, but these the friends of progress must de-

stroy by their authority, when the object to be gained is the preservation of such a precious thing as the horse.

“As to the material of which this shoe is to be made, it should properly be half steel, half iron. Steel alone (although it may be used) is too brittle, whilst common iron is too soft for durability, the portion of metal necessary for the shoe being so very slight. Professor Ferguson, of Dublin, has had a composition bar of steel and iron so constructed that whilst all the toughness of the iron is retained, and fracture thereby obviated, the steel edge enables it to resist the friction of the road for five or six weeks, as long a time as it is desirable to leave the same shoe on. Finally, as to the objects to be gained: corns, contractions, narrow heels, and bruises of the sole, are prevented by the Charlier shoe, whilst brushing, speedy cut, and over-reach are got rid of, the weight of metal appended to the horse's foot being so slight as not to interfere with his natural action; whilst the shape and functions of the foot are left entirely as nature made them.”

The principles of the system were thoroughly discussed, and the Fellows concurred in the belief that they are based generally upon a sound and perfect acquaintance with the natural conditions of the foot.

The debate, which was somewhat prolonged, was concluded by a cordial vote of thanks to M. Charlier, jun., for his attendance and exhibition of numerous models after nature, as well as morbid specimens, which powerfully illustrate his system.

During the proceedings the ballot was taken, resulting in the election of Mr. James Moore, sen., and Mr. Alfred Withers, as Fellows of the Society.

*Mr. F. Jarvis* put into the hands of the President a large and tastefully made album, on the back of which there was a suitable inscription, explaining the object of the donation.

The Society having agreed some time ago to collect the portraits of distinguished members of the profession, Mr. Jarvis became induced to make the principal movement by his valuable present, which the Society appreciate most highly—beyond the mere thanks offered to him on receipt of it.

The proceedings were afterwards extended to an examination of several morbid specimens, and their description, brought by Mr. J. R. Cox, Mount Street, Berkeley Square.

Three applications for Fellowship were read by the Secretary—viz. resident, Messrs. S. H. Withers, M.R.C.V.S., and G. Balls, M.R.C.V.S.; non-resident, J. G. Dickinson, M.R.C.V.S., Boston, Lincolnshire.

At the next meeting, to be held August 3rd, the President will introduce some observations on the subject of “Difficult Parturition in the Small Domesticated Animals.”

## THE LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE last quarterly meeting was held at the Spread Eagle Hotel, Manchester, June 28th, the President, W. Whittle, Esq., in the chair.

The following gentlemen were also present:—Messrs. Thomas Greaves, Peter Taylor, Thomas Walley, T. Hopkins, A. Lawson, Anderson, Howard, Faulkner, Watson (Manchester), W. A. Cartwright (Whitchurch), A. Lawson (Bolton), A. Challinor (Bolton), Woods (Wigan), Leather (Liverpool), J. Taylor (Oldham), Howell (Rochdale), Buckley (Blackburn), Brookes (Pilkington), J. B. Taylor (Ashton), J. Lomas (Stockport), A. S. Cox (Knutsford), J. E. Mather (Blackley), W. Bromley (Lancaster), and the Secretary.

Letters of apology for non-attendance were received from Messrs. Morgan, Thomas Taylor, John Greaves, John Lawson, W. I. Challinor, Lowe, Hanly (4th Dragoon Guards), Naylor, Fearnley, Bostock, Carter, and Broughton.

After the minutes of the previous meeting had been read and confirmed, Mr. Woolmer (Heywood) was elected a member, and Mr. Bromley (Lancaster) was nominated for membership by Mr. Whittle.

The election of two gentlemen to officiate as Life Governors of the Benevolent Fund of the National Veterinary Benevolent and Mutual Defence Society was then proceeded with, and Messrs. Whittle and Thos. Taylor were unanimously elected.

The report of the committee appointed at the last meeting to revise the rules of the Association was read by the Secretary, and after a few remarks from some of the members the revised list was passed unanimously. One of the most important alterations was the addition of a new rule, which is as follows:—"Gentlemen, members of any other recognised Veterinary Medical Association, desirous of becoming members of this Society, shall do so on payment only of ten shillings annual subscription; such gentlemen to be duly nominated and proposed according to Rule VI."

The President then called upon Mr. W. A. Cartwright to read his essay on "Inflammation of Veins."

MR. PRESIDENT AND GENTLEMEN,—At the Veterinary Medical Association in London, Session 1839-40, I read an essay on inflammation and disease in a great measure of the jugular veins, on which we had two very excellent nights' debate. And as the more prominent of our subjects for discussion are in a great measure exhausted, I thought I should not be doing wrong in bringing this matter, with additions thereto, before the members of this Association, who are of a more mature age, and can bring their practical knowledge to bear upon it, far more so than the youths who formed the association at the College.

In the present day many practitioners are much averse to bleeding in almost any case, but I must say I am not one of them, as I sincerely believe that in some cases of inflammation of the eyes, brain, bowels, lungs, farcy in the hind legs (lymphangitis), spasm of the bowels, &c., bleeding is of the most essential use, and cannot be neglected with safety to our patients. But this point, I submit, Mr. President, we need not enter upon to-night.

Many years ago I was sadly harassed with cases of inflammation of the vein, consequent on bleeding, especially so in the hot summer of 1826; but latterly, I am glad to say, cases of this kind have been very rare with me.

Although I may not offer anything particularly novel to your notice, yet I believe there are among us those who are fully able to throw considerable light on the subject from the different cases they have witnessed, and I can assure you, from my own experience, there is no disease that requires more tact, talent and discrimination, in order to perform a cure.

Phlebitis, or inflammation of the veins, may be observed occasionally, I have no doubt, in every animal; but as far as my experience goes, I have only seen it in the human subject, the horse and the cow.

In the cow I have seen many cases, but most of them have passed off without giving much trouble, as they were mere cases of thrombus. In one case it was fatal. I have also had a fatal case in the horse. (See *Veterinarian* for 1839, pages 717—719.)

Mr. Youatt, in his work on cattle, says that "he has seen as bad necks in cattle after bleeding as in the horse, but they are not so common."

In the horse the diseased vein has been chiefly the jugular. I have never had more than three or four cases in the superficial brachial, and none in the superficial tibial—*vena saphena major*—or other veins.

The jugular veins are the vessels chiefly employed in returning the blood from the head, brain, face, neck, &c., and are made up of large branches that take their rise from various places, and from what are usually designated the *submaxillary*, *auricular*, *internal maxillary*, *parotideal* and *temporal veins*, and also from a branch that comes from the lateral sinus of the *dura mater*, and proceeds through the foramen lacerum basis cranii. Other smaller branches from the neck, &c., empty themselves as they proceed down the neck.

Mr. Youatt, in his work on cattle, has described an internal jugular vein, and says it "is deeply seated, and lies by the side of the carotid artery, and under the subscapulo-hyoideus muscle, and that a knowledge of this additional jugular vein in cattle will obviate in a great measure the danger accruing from obstruction in the external jugulars." This vein I denied the existence of, which brought forth a reply in the "Abstract of the Proceedings of the Association" for 1839-40, page 213, wherein he states, "That which I call the internal jugular vein in the ox might as properly be termed the occipital vein. It descends from the head in com-

pany with the occipital artery, and receives some branches from the cerebrum itself and from the cerebellum, and then, instead of uniting with the jugular high up, as do the auricular, the temporal, the parotideal, the submaxillary, and other veins, it receives communications from the thyroidean and laryngeal veins, and, accompanying the course of the internal carotid artery, it at length unites itself with the external jugular vein, near its entrance into the thoracic cavity."

Professor Quain and others have described the veins in the human subject as having three coats—the external one, of condensed cellular tissue; the central one, thinner and more pliant than that of the arteries, and composed of fibres, the greater part of which are longitudinal, and a few transverse. The internal coat consists of a thin shining membrane, and is continuous with that lining the heart. Veterinary authors mostly describe only two coats, a muscular and a membranous one, the elastic coat, according to some of them, being absent.

On dissecting the jugular vein from the neck we find it surrounded by a considerable quantity of loose cellular membrane, which becomes more condensed as we approach the inner membrane.

After removing this we can easily discover the texture of the vein to be composed of a vast number of minute threads or fibres as delicate as the finest silk or spider's web, most of them being disposed in two layers longitudinally, the rest being circular and fibrous. The inner membrane on being cut across can easily be stripped off, and has the appearance, as in the human subject, of a thin, shining tunic lined with epithelial scales. The jugular vein is of immense strength. We are unable to break it by the united force of both hands, and, on separating longitudinally the delicate fibres of which the vessel is composed, we find each to be of great strength compared with its bulk.

Within the jugular vein are reflexions or duplications of its lining membrane, called valves, but which Mr. Hunter says are of a tendinous and elastic nature, and of a different structure to the internal coat. I am inclined, however, to think that they are nothing more than fine duplicatures of the membrane, for I fancy that I have been enabled to separate them into two folds.

In the human subject, I believe that there are two of these folds uniting to form one valve. Mr. Percivall says that in the horse there is commonly but *one*, sometimes two, at other times three. According to my experience there are generally two folds, sometimes three, and *rarely* but one.

Some time ago I dissected from a horse's neck the right or off side vein, from the breast to the bifurcation above. I found that there were three valves at the lower part of it, at intervals of nearly three inches from each other, and that there was a space of nearly a foot below the bifurcation without a valve. In another there were six valves in a space of twelve inches.

I also dissected both the veins from the neck of a horse from the breast upwards. In one of them I found five valves. The four

lowermost were tricuspid, and at intervals of from two to four inches from each other. They were small, and projected but little from the sides of the veins. I should have thought that they were incapable of preventing the regurgitation of the blood. The uppermost, which was five inches below the bifurcation, was tricuspid and very large.

In the branch that came from under the parotid gland there was a bicuspid valve, about five inches above the bifurcation. In the same vein, on the other side, there were *six* valves in the same space; three at the lower part of the vein were very imperfect, and from an inch to an inch and a half apart; the two next were well developed, and at a larger distance from each other; while the upper one was large, three inches from the vein below and five inches from the bifurcation above. There was another in the maxillary branch, an inch and a half from the bifurcation.

In an old grey horse that was destroyed at the College while I was in attendance, there were only two valves in one of the jugulars, but each large and distinct. One was near the breast and was bifid. The other lay about four inches above, and was trifid. There was a single one in a branch just above the bifurcation. In a section of eight inches made by Mr. Percivall from the middle of a jugular vein, he found two pairs of valves, two inches from each other, in the upper part, and three single ones, and a tricuspid one in the lower part, whose edges were accurately adapted to each other; thus, there were no fewer than three different kinds of valves in the space of eight inches of vessel. I also dissected the jugular veins of a cow, and found that at the lower end of each there were three valves at intervals of two inches, and only one more between them and the bifurcation.

There are twelve or fourteen valves in the superficial brachial from the knee to the jugular, and about the same number in the superficial femoral from the hock to its termination.

At the places where smaller branches open into the jugulars there are loose flaps of lining membrane floating, and which will direct a portion of the blood to flow up the small branches again.

*Variæ.*—On the jugular veins of horses there are often seen varicose enlargements of various sizes, some of which are as large as walnuts. These are generally considered as arising from bleeding. On examining these varices they are found to be nothing more than dilatations of the vein, the coats of which are not near the thickness of those of the natural vein.

The incised edges of the veins probably threw out fresh organizable matter, which the blood pressing against and at the same time pushing towards the skin, ultimately became united to the under surface of the integuments while in a state of dilatation; and this afterwards became more dilated and thinned in consequence of the blood forcing against the parts and reducing the newly-formed coats by continued pressure.

The natural process that reunites parts together after bleeding is produced by albuminous matter being effused from the edges of the wound, and shortly afterwards becoming organized and cicatrized;

but if any cause should intervene and prevent such union, then in too many instances phlebitis is the consequence.

*Commencement and progress of phlebitis.*—Perhaps, in a day or two after bleeding, a slight tumefaction appears around the incision; some sanious matter is seen to ooze from the orifice, and the hair about the edges is glued together. In a few days afterwards the swelling is enlarged; the lips of the wound everted; tenderness extends both above and below in the direction of the vein, and the horse begins to loathe his food, the constitution being sympathetically affected. If this is not soon got rid of, pus begins to be secreted, and ulceration takes place in the vein at every two or three inches from the original wound, and small abscesses form under the skin, and soon ulcerate through it. Great thickening of all the coats and of the cellular tissue around now takes place, and becomes a further source of irritation to the neighbouring parts. If this morbid action continues to go on, the different branches of the vein above the bifurcation take on a similar ulceration and thickening, and abscesses form about the neck and head, and, in a few cases, the same process extends downwards into the chest, even as far as the heart, producing caries and exfoliation of the ribs. At other times immense effusion of serum and lymph takes place on the breast, neck, head, brain, and spinal cord, followed by delirium, paralysis, and death.

Occasionally secondary disease of the lungs and chest supervenes in consequence of the constitutional irritation, the lungs being predisposed to, or actually labouring under disease at the same time.

*Causes.*—In some instances the cause may be unknown, and can only be guessed at, but in many cases it can too plainly be accounted for. Many horses have been bled in a slovenly way, and have had their necks sadly mangled with the fleam or lancet, yet the incised and injured parts have not taken on any morbid action; while others, having received only a single blow or puncture, have afterwards experienced the severest attack of phlebitis. Mr. Percivall states, in his very excellent work, that Mr. Cherry tried many times to produce the disease by using rusty lancets and escharotics of various kinds; by passing packthread through the wound, and by ligatures and frequent separation and friction of the granulating edges, but in vain. Professor Spooner has also tried to produce the disease, but could not. M. Patna, a continental veterinary surgeon, says that, after injecting the veins of fourteen horses, he had only one case of inflamed vein, although in each the injection of a caustic fluid was repeated twenty times, and although he had, in the course of his experiments, many openings to make in the veins of each, and considerable difficulty in introducing the tube.

I have occasionally struck with the fleam, and also punctured with the lancet three or four times in horses difficult to bleed, before I could effect my purpose, but in very few instances I do not recollect to have produced inflamed veins. I well remember bleeding

a half-bred horse from the superficial brachial vein with a clumsy bloodstick that was found at the farm-house, and from striking the fleam too hard it penetrated the bone underneath, and I was compelled to use a little force in order to pull it out, and yet no inflammation ensued.

Unaccountable, however, as these facts are, the practice of bleeding with rusty fleams or lancets, or using unnecessary force with the bloodstick, cannot be too strongly deprecated. Although I am myself favorable to the use of the fleam, I have seen in some cases of my own bleeding, while I was pinning up the wound, some little swelling in the direction in which the stick had passed, although I had not struck my patient by any means severely. I can very readily believe, therefore, that too violent a blow with the bloodstick has been an occasional cause in producing mischief.

I have no doubt that the mode of pinning up the wound is also a not unfrequent cause. The lips of the wound are not brought into apposition, or the hair is permitted to insinuate itself between the edges, preventing union taking place by what is called the first intention. The use of too large a pin may also irritate, by the violence used in inserting it, or by its pressure on the wound or neighbouring parts.

It is, I think, bad practice to draw the skin too far away in the act of pinning up. Sometimes the pin may be left in too long a time, and thus may be a cause of keeping up irritation in the parts; yet some people have told me that they never pull them out, but leave them to be got rid of by the process of ulceration. I have repeatedly known cows and calves have them left in, and no ill consequence has ensued. In these animals, however, from the great thickness of their skin, and the less irritability of the system, there may not be so great a liability to suppuration as in the horse. In the horse I am inclined to believe that in some instances inflammation is now and then produced by taking the pin out *too soon*, and thereby destroying the adhesive process.

In many cases the manner in which the pin is *taken out* may have some connection with the evil that follows, as there is every reason to believe that the wound is fatally opened again by carelessness or unnecessary force. Many persons are in the habit of taking it out by laying hold of the lower side of the wound and drawing the pin out on the uppermost, and thus the orifice is almost invariably reopened; whereas if the thumb and finger were kept on the upper side there will be little danger of this.

Occasionally phlebitis may be produced by the animal being too soon put to work, the collar and rein producing considerable irritation; or by the collar stopping the current of blood, and, perhaps, forcing it partially through the opening, and thus displacing the union. I am, however, disposed to believe that the principal cause is *friction*. The horse is turned out too soon, and, perhaps, teased with the flies about the wound, consequently rubs himself against the gate, posts, or rails, or, if he is left in the stable, against the stall or racks, or anything, in fact, he can come in contact with, and this

before the parts are united, or even when the external wound is still gaping.

“Peculiarity of constitution,” says Mr. Percivall, “has little to do with it, yet irritability of habit may prevent union from taking place.” Now, I think it not improbable that, as the late Mr. Vines would say, in an unhealthy state of the body, whether produced by atmospheric influence or otherwise, there may be a disposition for the parts not to unite, as it is well known that in certain unhealthy states or habits of the body wounds take on an unhealthy action and will not granulate, or heal up, until the body is in a more healthy condition, and that at times a wound may be of no importance, whilst at other times the smallest and cleanest cut, and especially a punctured wound, will be a serious affair. The late Mr. Daws, veterinary surgeon, has said that he saw more cases than usual during the prevalence of influenza.

Professor Spooner, after trying some experiments to produce the disease, and in which he was foiled, says “that he must be induced to look for the ultimate cause beyond mere mechanical or physical influence—to a peculiar idiosyncrasy in the animal, a susceptibility to take on the inflammatory action, let the exciting or proximate cause be ever so slight.”

Dr. Lee also says, “From the frequent occurrence of phlebitis at particular seasons, certain unknown conditions of the atmosphere have, probably, a more powerful influence than any other cause in the production of traumatic and other varieties of this disease.”

Mr. Youatt has said, “We can also believe that atmospheric influence has something to do with the case, but a great deal more than has yet been unfolded in our philosophy remains to be divulged. Atmospheric influence, modes of feeding, modes and degrees of work, exert great power, and the very emanations from a bad case may have much deleterious influence.”

By some of the Germans many cases of phlebitis are considered to arise from “a division of a valve, and a portion of it projecting through and preventing union.” This observation has been one cause why I have troubled you so much with the number and situation of the valves in various veins. This protrusion of some portion of a valve may produce the disease in some cases, and it may also arise from any portion of fatty matter external to the vein. I recollect, when bleeding a horse some years ago, a pedunculated tumour of the size of a pea made its appearance through the opening into the vein. I drew it out, and found that it had brought with it a portion of its attachment two inches long, and as thick as a pin. I cut it off. Even this pedicle might have remained in the opening undiscovered, and produced the disease.

I should not be inclined myself to bleed from the parts that are varicosed, as they are but thinly clad with skin and often united to it; so that there would be a difficulty, if not an impossibility, in avoiding the vein when pinning up, or there would be considerable probability of producing the disease by the contiguity of the pin to the vein.

Phlebitis is also likely to be produced by the too frequent opening of the same orifice within the first twelve hours after bleeding.

*Spontaneous cases.*—It is well known that spontaneous cases of phlebitis occasionally happen in the human subject, and that pus is sometimes secreted from the lining membrane without any opening having been made in the vein, and this is carried into the circulation, and produces disease of the lungs, &c. Does this ever occur in the horse?

I well remember being in the dissecting-room at London, when a Colonel Martin kindly fetched me to look at a five-year-old horse that was brought to the College to be examined, and that had obstruction in each of the jugulars, and no blood flowed through them. The horse had been in the owner's hands from a colt. So at least the servant said.

*Course of the disease.*—Mr. Percivall says, "that he believes it (the inflammation) will invariably be found to proceed in that direction in which the vein is blocked up," and that "in the horse it extends towards the head contrary to the course of the circulation; that in the human subject it attacks the vein in its course to the heart, and that it is a principle laid down by surgeons that *obliteration* is always found next to the heart."

I believe, however, that medical authors do not lay this down as an invariable rule. Mr. Hunter says that he has found it above and below the incision, both in the human subject and in the horse.

In three cases that Mr. Abernethy describes the inflammation extended as low as the wrist. Dr. Lee says, "When inflammation takes place in the arm after venesection, it may proceed upwards in the direction of the heart, or towards the distal extremity of the limb, contrary to the current of the blood," and that "the same circumstance takes place in crural phlebitis, originating in the branches of the internal iliac vein, the inflammation extending upwards along the common iliac towards the vena cava, or in the opposite direction from that trunk to the branches along the external iliac and femoral veins to the thigh and leg."

Professor Lizars says "it may extend both ways."

On looking over several volumes of the *Lancet* I found only four cases.

In vol. ix, page 376, a fatal case that was under the care of Mr. Lawrence is recorded. The principal disease was below the elbow, and extended quite down to the hand.

In vol. xi, page 715, is related another case, in which the attention of the same gentleman was requested, and here the disease was as bad below as above the elbow.

The other two cases were principally above the elbow, but the inflammation also extended below the joint.

In the horse the disease occasionally extends downwards. A case in proof of this is related by Mr. Riddle in the 7th volume of the *Veterinarian*. The inflammation extended along the whole of the neck.

The late Mr. Hales, of Oswestry, with whom I was apprentice, in a most interesting and valuable paper in vol. viii of the *Veteri-*

*narian*, p. 437, is of the same opinion; but he does not believe that it extends to any great distance from the orifice; seldom more than four inches.

Professor Coleman said that he had seen some cases of it, but they were of rare occurrence, not more than one in a hundred.

Gibson relates a case in which the horse was bled from the plate vein, and the inflammation extended upwards on the breast, and likewise down the leg. Mr. Clarke says he has known many cases of this sort.

So far as my own experience goes, and I have seen many cases, the inflammation now and then extends more than four inches, several of them five inches, down the neck. In a cow it extended nine inches, and in one case it penetrated into the chest, producing diseased ribs. (See *Veterinarian*, vol. xii.)

The late Mr. Charnley and Mr. Mulliner, of Wrexham, have had similar cases; but as a *general rule*, the inflammation does not extend above four or five inches *below* the wound, the principal mischief being produced above the puncture.

*Comparative number in the human being and the horse.*—It has been asserted that this disease occurs far more frequently in man than in the horse. Mr. Alcock asserts that one of his pupils had taken an account of more than 800 cases of bleeding, and only four among them had fistula. His father during nine years had bled some thousands, but had not met with a single untoward accident. A surgical friend of mine—the late Dr. Hopkins, of Malpas, says that he well recollects a patient of his that he must have bled at least fifty times, and generally from the same vein in the arm; that it only festered the first time he bled her, and never afterwards, and that quickly disappeared.

*Secondary effects.*—Mr. Hales, from having read a paper by Mr. Arnott, in the 'Chirurgical Transactions,' communicated one to the *Veterinarian* (vol. viii, p. 436), on the subject of the secondary effects of inflamed veins. He inclined to the opinion that disease of the chest and lungs may succeed as secondary effects, and produce death.

So far as I am concerned, I have no doubt whatever on the subject, although it is not an invariable rule, either in the human subject or the horse. In the cases quoted from the *Lancet* we find that there was no disease of the chest, and the other case was not fatal.

In the horse I have seen two fatal cases; in one the lungs had chronic abscesses, the other was sound in the lungs. I have had a fatal case in the cow where the lungs had chronic disease. In the three other cases mentioned in the *Veterinarian*, in only two was there disease of the chest.

That inflamed or diseased lungs may succeed this disease, and terminate in death, is highly probable; and it is well known that it is often produced as a secondary effect from other diseases, as well as from this—from garget. In short, I would say that the lungs appear to be the most vulnerable part of the body, and most likely

to take on disease when continued irritation has been set up in the system from any active or chronic disease. In the above paper by Mr. Arnott he gives the morbid appearances of the chest and other viscera in support of his opinion that phlebitis induces a secondary constitutional affection which is a cause of death, and not by direct extension of the inflammation of the vein.

*Post-mortem appearances.*—The late Mr. Hales, V.S., has said (*Veterinarian*, vol. viii, p. 438), “That as far as my limited acquaintance with veterinary writings goes, I am not aware of one well-related instance of the morbid anatomy of the inflamed jugular in the horse.” I may as well now give a few instances of it.

In one of Mr. Arnott’s cases, attended by one of the Fields, for paralysis, the horse, after an interval of only seven days, was “pithed;” and on examination he found the jugular vein could not be distinguished amid the general swelling, but the facial and all the other veins on the side of the head were turgid with stagnant blood. The cellular substance beneath the skin and over the course of the vein was loaded with coagulable lymph, becoming more firm as it approached the vessel, so that its cellular sheath was converted into a solid coat, having numerous red vessels distributed on its inner surface. The proper coats of the vein were enormously thickened.

The aperture made in the bleeding was filled with a granular-looking substance of a yellowish-white colour, which substance (coagulable lymph) completely plugged the cavity of the vein opposite the puncture, and for an extent of three quarters of an inch downwards. The canal through this portion of the vessel was greatly contracted, from the excessive thickening of the coats.

Above the portion of vein which was plugged with lymph the thickening of the coats extended (but in a much less degree than below) to where the jugular divides.

The canal through this extent was filled with coagula of blood, adhering somewhat firmly to the inner surface of the vein. The coagula extended into the smaller branches above.

In Mr. Arnott’s *other case*, attended by Mr. Jumpson, V.S., Chelsea, the report is, “eight inches of the jugular vein were removed: the part surrounding the orifice is ulcerated; the coats of the portion of the vein extending towards the head are nearly three times their natural thickness, and changed in colour. The internal coat has a dark rough surface. These changes terminated two or three inches beyond the orifice. This part of the vein contained dark coloured pus. Immediately below the orifice three inches of the canal are obliterated in a direction towards the heart. Proceeding downwards, the vein is quite natural, and contains coagulated blood.” The morbid appearance of the chest and other viscera are there given in support of the opinion that phlebitis induces a secondary constitutional affection, which is the cause of death, and not by direct extension of the inflammation of the vein.

Mr. Hales attended a two-year-old thorough-bred filly that had been bled by the owner’s groom when little was amiss with her

Inflamed vein came on for two or three inches on each side of the puncture, with slight swelling of the parotid gland. For six days she appeared to be going on well, and the inflammation in the vein was arrested; it was, however, evident that the cavity of the vein was plugged up and impervious to the passage of blood. Unpleasant symptoms of disease of the chest ensued, without any apparent extension of inflammation of the vein down the neck to the chest. In ten days she died from internal affection. On examination the vein, for about two inches above and two inches below the orifice, was completely obstructed, the coats of the vein being inflamed and thickened, and the caliber of the vessel filled with condensed coagulable lymph; the disease of the vein appeared to extend but little, if any, beyond this obstructed part in either direction. *Above*, the vein was full of dark-coloured blood; *below* it was quite empty, and exhibited no morbid appearance, and was pervious. The pericardium was inflamed, and there was effusion of a reddish serum within its cavity. Lungs inflamed, but not disorganized, with a little effusion into the chest. The pleura was inflamed."

*My first case.*—This was a cow, which had been labouring under disease of the near jugular vein for seven weeks. The whole of the vein felt like a thick rope. Its united coats, where pus was contained in them, were fully a quarter of an inch thick, and its whole diameter one inch and a quarter. For four or five inches just below its bifurcation it was quite solid and obliterated. Its branches above closed with lymph. For four inches more below this solid part it would admit one's finger, but was filled with pus. From the last-mentioned part, for five inches or more, a probe could with difficulty be introduced, and below that it would admit the finger. Where the vessel entered the chest, each side of it was enlarged to about the size of a walnut; one side had nearly ulcerated through the coats, and the other, it appeared, had done so, and was again uniting. There was also most serious disease in the vein for many inches inside the chest. Ulceration had taken place into the chest, and pus was making its way through the sides of the sternum and ribs, and the bones were bare, loose and exfoliating. The lungs were diseased.

*My second case.*—This was a grey cart-horse. He had been bled twice. He was ill with inflamed vein for five weeks before he died. Had been out at grass.

*Examination.*—All about the head, face, and neck, and internally about the larynx and tongue, there was immense effusion of lymph and serum. Each vein above the bifurcation, for four or five inches, was plugged up at a valve with, to all appearance, coagulable lymph. From the places where the animal had been bled, and all up to the bifurcation, the vein and surrounding parts were a mass of putridity, and only about one inch and a half of vein could be discovered which was still pervious, but very much thickened and contracted. The vein between the two punctures, and where a seton had been inserted, had sloughed away.

*Treatment.*—If there is nothing more than a little tumefaction and oozing of pus, we gradually find that by fomenting the parts three or four times a day, and afterwards applying a warm poultice, giving a dose of physic, and keeping the head up, and preventing the horse from rubbing the parts, we get rid of it in the course of a week or nine days. I have now and then, in addition, applied the actual cautery. Where there is an unhealthy abscess around the orifice I should apply some stimulating application, but I do not think it prudent at this period to destroy the coats of the vein by caustic tents.

If the inflammation does not stop here, it will extend along the vein upwards, and in some cases downwards, or both, and an abscess will form two or three inches distant from the wound, or show itself in a small tumour just under the skin, and on opening it only a very small channel can be traced into the vein.

I have often thought, from the abscesses forming at intervals of two or three inches, that the valves in these situations were the cause of the obstruction, and the abscesses between them the consequence.

In these cases the best plan would be to lay the abscesses open, or pass a seton through them, and inject a weak solution of sulphate of zinc or the bichloride of mercury, so as to bring on a healthy action, when sometimes the parts will soon heal up and the neck will get well in that place and all appear to be right; but soon afterwards, especially if the horse has been too early turned out or sent to work, or even without these things, similar abscesses will form above the others, at intervals of two or three weeks, and will heal up below, and continue to appear above, until they have almost reached the ear; ultimately, however, they will heal.

In some of these cases I have applied blisters with good effect, and I am almost inclined to think that blistering in most instances will be as efficacious as any treatment.

I had some years ago rather an unusual case under my hands for at least three months. Ulceration had existed a full month before I saw the animal. I tried various injections and tents, and blistered the neck five or six times, until at last, from excessive thickening of the vein and the parts around, and ulceration going on in several places, I began to fear I should lose my patient unless I adopted some more decisive course. I therefore cast him and dissected out the vein, which was as thick as my wrist for about eight inches in length, and which extended up to the bifurcation. This, of course, left a most formidable gaping wound four to six inches wide nearly the whole length of the neck. Immediately after the operation I applied a warm bran poultice, and in two or three days after, suppuration commenced. I then inserted a few metallic sutures to hold the parts together, kept the poultices occasionally on, and in the course of three weeks the wound was healed, and the animal went to work. I saw him two months after, and there was very little trace of so formidable an operation, and I never heard of any ill consequences from the loss of the vein.

I had almost endless trouble in keeping the poultices on and preventing the horse from rubbing the parts, for he was not quiet a moment; and one day I thought I should have lost him, for he had broken loose and rubbed his neck so much that the edges of the wound were swollen the thickness of my arm.

In some cases, in which the cautery has been applied to the wound, the integument has healed over, leaving an abscess underneath extending into the vein, and producing inflammation there.

I have seen several cases in which union has taken place in the integument; but abscesses have shown themselves in three weeks or a month, often proving that the too rapid healing of the external wound does not cure the disease.

One case in particular you will forgive me for relating. It was that of a mare that died in consequence of a rupture of the abdominal muscles from some unknown cause, when heavy in foal, and after she had travelled with a gig a distance of sixteen miles. I saw before she died that there was a tumour formed on the jugular vein, and after her death I cut away that portion of the vein and examined it. The vessel at this place was from one eighth to one quarter of an inch thick, and on the inner coat a deposition of lymph existed that extended from one side to the other, for about an inch in length, leaving a space on each side sufficient for the blood to pass. The tumour occupied a space between two valves. The valve above the tumour seemed to be larger than any of the others, and a little coagulated blood surrounded the tumour between this valve and the one immediately below. There was adhesion between the tumour and the parietes of the vein, but none between it and the valves.

This strange growth, and the thickening of the parietes of the vein, were confined to the space between the two valves, and broke off abruptly above and below, leaving the remainder of the vein sound.

Between the tumour and the bifurcation, a distance of six inches, there were two valves, and from the tumour to the breast, a space of about twelve inches, there were no fewer than six valves, so that the valves were more numerous below than above.

In one case of inflamed vein the external opening was completely healed in two or three days after bleeding, and all appeared to be going on well for about a month, when it opened again, and was five months in healing. I have heard of the vein being laid open through the parotid gland up to the ear, and that a cure has been effected, but with a great deal of trouble, occasioned by a sinus in the gland. I had once a case in which five or six abscesses had formed above the original wound, and the two superior ones burst through the parotid gland, the extent of the ulceration being evident from the quantity of saliva that flowed through each orifice. A cure was effected by a few simple injections.

Although somewhat objected to in the present day, yet I do think that great good may be done by the steady and persevering use of fomentations and poultices; but it must not be merely the applica-

tion of them for an hour or two now and then—their use must be long continued, and especially that of the poultice. The latter appears to me to have a most salutary effect in bringing about a more healthy action, both before and after suppuration, and, in fact, in every stage of the disease.

I also think that we occasionally do harm by the use of too strong and stimulating caustic dressings or injections, thereby destroying the very coats of the vein, and, of necessity, producing a long and tedious sloughing process. It is my firm opinion that injections of a more simple nature, and the continuance of the poultice, will, in the majority of instances, bring about a healthy action without so much sloughing.

We may also do harm by the caustic injections escaping down the vein and getting into the circulation, unless pressure is made on the vein below.

*Hæmorrhage.*—Sometimes secondary hæmorrhage takes place to a considerable extent in consequence of ulceration and sloughing, and in some instances it is the result of putting the horse to work in harness before the puncture is firmly united, whereby the collar presses upon the vein and stops the circulation.

In the 8th vol. of the *Veterinarian* there is an interesting case, by the late George Hawthorne, of Kettering, of laceration of the left jugular vein at the bottom of the neck. In a fortnight after, the animal was put to work, but it was found that the pressure of the collar produced frequent hæmorrhage, and that eating of hay always produced it.

In consequence of hæmorrhage always taking place when the mare ate hay, it was agreed to by the owner for Mr. Hawthorne to take the vein up, which he did by placing a double ligature on the vessel about the bleeding place.

The veins above the ligature began to swell exceedingly, almost to bursting, and he was fearful the ligatures would give way. By fomenting the throat and side of the face the enlargement of the veins subsided in a few days, and by the thirteenth day the ligatures had sloughed away and both wounds had healed up, and in a week after the animal was put to work. In six months after he saw her again, and the owner said she had been regularly worked, and to all appearance without producing the least inconvenience.

In the 8th vol. of the *Vetrinarian*, page 433, there is a very interesting case, by the late Harry Daws, of rupture of the left jugular in a bay mare, six years old. He saw the case on the 24th June, 1835. The wound, which had been produced, six weeks previously, from a shaft of a cab, was in the front of the chest on the left side, a little above the sternum. The wound had, to all appearance, healed, and she was considered fit for work a fortnight after the accident happened, when suddenly the blood gushed out in a stream from the seat of injury, and continued to do so every time the mare took any food. On the 8th July a ligature was placed on the jugular, eight inches below the bifurcation, with the desired effect. The ligature, with a portion of the vein, came away in

fifteen days after, and no untoward symptom exhibited itself, with the exception of a slight tumefaction around the wound in the chest.

On the morning of the 24th July (sixteen days after applying the ligature) the head, neck, breast and shoulders, commenced swelling and which pitted on pressure, while coagulated blood oozed from the wound in small quantities; her appetite failed, and she evidently experienced great uneasiness when she attempted to swallow. The swelling continued to increase until the evening, when suddenly blood began to flow in a stream from the mouth and nostrils, which speedily terminated in death.

*Post-mortem examination.*—The cellular membrane was filled with serous fluid. The vein above the ligature was firmly plugged with lymph. Below the ligature the vein contained blood in a fluid state. The wound below, which communicated with the jugular, looked very dark and unhealthy. The course of the vessel towards the heart was highly inflamed, and also the jugular on the opposite side. The heart was much inflamed. The lungs were also tuberculated, and vomicæ were beginning to form. A considerable quantity of extravasated blood was found in the left lung, which was the immediate cause of death. An effusion of serous fluid had also taken place in the cavity of the abdomen. The other viscera were healthy.

A case occurred, where I was apprentice, in which a fearful gash was made in the vein of a colt that swerved while another apprentice, contrary to his master's orders, was endeavouring to bleed the animal with a lancet. The blood gushed out at a fearful rate. The master, however, was presently at hand, and arrested the flow of blood by pressure above. He then examined the wound, and found it between three and four inches long; he could put two of his fingers into it. It required four pins to secure the neck from further hæmorrhage. This, however, returned at the expiration of eight days. Being aware that nothing but obliteration of the cavity of the vein would permanently restrain the bleeding, he says, "I again inserted the pins to wait for this event, and certainly not without apprehension, lest the bleeding might occur when no one was near (although I had directed the case to be strictly watched), or that the inflammation in the vein might be so intense that I should lose my patient. No further hæmorrhage, however, occurred; inflammation of the vein proceeded rapidly and severely; the tube of the vessel was soon filled up, and pins removed. Great enlargement of the parotid gland, soreness of throat, coma and stertorous breathing also followed, and it was, in fact, one of the severest cases of inflammation of the vein I have had under my care; still, it terminated favorably, and the gentleman used the horse for several years, and then sold him, perfectly sound, except the obliteration of the vein on the right side of the neck."

He also observed that he had a case in which, after profuse secondary hæmorrhage, an affection of the brain so considerable came on that the patient (a cart-mare), if moved about, would stagger and even fall down from giddiness of the head. By pur-

gatives and blistering the neck the case did well. He advises blisterings and early treatment, or the vein will be lost. (See *Veterinarian*, vol. viii, p. 443.)

In these cases it is usual to apply plugs, pins or the cautery, in order to staunch the blood; but I think the best plan, if there is no particular swelling or inflammation about the parts, is to cast the horse, and apply the ligature to the vein at once, as in the cases related by Messrs. Hawthorne and Daws; for it appears that in the first case, although the vein of the neck became in a few hours distended almost to bursting, and there was fear of the ligature giving way, yet by fomenting the head it subsided in the course of a day or two, and in twelve days after the operation the ligature had sloughed away and the wound healed up. In Mr. Daws' case the ligature sloughed away on the fifteenth day; but on the following day the head, neck, &c., commenced swelling, and in the course of that day the animal died. In this case there was secondary disease of the lungs, which was the cause of death.

In the case of the colt mentioned before, where the vein was so fearfully opened with the lancet, it would have been decidedly better to have applied the ligature in the first instance, as we could not expect so large a wound to heal up rapidly, and it would have averted secondary hæmorrhage.

In the 13th vol. of the *Veterinarian*, page 180, there is a review of "The Proceedings of the Royal Veterinary School of Alfort during the Scholastic Year 1838-39" by Professor M. Renault and Assistant-Professor Bouley, in which they treat on "the different phenomena which have resulted from a ligature on the jugular vein, whether in sick horses or in others, that were kept as subjects for experiments." The jugular was selected on account of its superficial position and volume.

As I consider this paper, Mr. President, a most important one in connection with our present subject, I will take the liberty of giving it to the meeting verbatim. They commence by saying—

"These experimental studies have served in a singular manner to enlighten the history of *thrombus of the jugular vein*, and the different phenomena which accompany it, when it is attended by inflammation of the vein, with or without ulceration.

"When the caliber of the vessel is effaced by pressure of a surrounding ligature, a clot of blood forms in the infundibulum which the vein presents above the ligature, and extends to the first considerable ramification of the jugular in the parotid gland. This clot being once formed, determines by its presence that degree of inflammation in the tissue of the vein, and in the cellular tissue around it, which seems necessary to the organization of the clot; and all the degrees of this inflammation are in direct relation with the modifications which this clot must undergo.

"If the animal is killed seven or eight days after the passing of the ligature, we can perfectly recognise the traces of that inflammation in the tissues which surround the clot.

"The cellular tissue adjacent to the vein is also infiltrated with a

great quantity of citron-coloured fluid. Having become more dense and friable, it adheres to and confounds itself with the exterior membrane of the vessel.

This membrane is itself thickened, infiltrated with serosity, becomes more friable, and confounds itself—to the extent that there is no longer any marked point of separation between them—with the central membrane, which assumes precisely the same characters; but—and it is of the highest importance to note this, in order to study the consecutive phenomena—the internal membrane of the vessel does not undergo any modification. It preserves all its white, pearl-like appearance, and its polish. The most minute inspection will not demonstrate the smallest vessel developed in its substance.

The clot which the vein contains is jet black and adheres already, by its whole periphery, to the internal membrane, to which it seems fixed, as if there were a true agglutination between them; and it is a remarkable fact that this adhesion is stronger in proportion as we examine it near the ligature.

If we dissect the clot, we shall find that it has already begun to undergo some modification. It seems to be composed of the superposition of numerous concentric fibrinous layers, which, by a tolerably careful manipulation, can be perfectly disengaged from each other.

If we follow, in a series of experiments, the different phases of the phenomena of the inflammation of the vein, and the disorganization of the clot which it contains, we shall see that, in proportion to the time which has elapsed since the application of the ligature, the exterior cellular tissue of the vein becomes condensed as it gradually and intimately mingles with the external and central membranes of the vessel, so that, about the 20th or 25th day, they resemble a white indurated tissue, creaking under the knife. Still the internal membrane preserves all its normal characters; and if there were not a greater degree of whiteness resulting from its transparency, which permits us to observe its subjacent white tissue, we should not be able to discover any difference, even after the 30th day of the application of the ligature, between this membrane and that of a healthy vein.

As for the clot, in proportion as time passes on its arrangement in concentric layers becomes more and more evident. It diminishes in volume on account of the absorption of the liquids which impregnate it; it changes its colour, and becomes of a fibrinous yellow hue by the disappearance of its colouring matter, and it adheres still more intimately to the internal membrane of the vein.

Such, rapidly described, are the phenomena which take place in a vein which is the seat of adhesive or cicatrizing inflammation; but there are some different conditions of this obliteration with which it is of considerable importance for us to be acquainted.

The first is, that the clot contained in the interior of the vein should be completely removed from the contact of the air, that the exterior inflammation of the vein should be elevated to a moderate intensity, and that the animal should be in other respects in good health.

M. Renault formerly made some experiments with a view to prove the indispensable necessity of the absence of air in order to the organization of the clot in the interior of the vein. These experiments have been repeated during the last session, and with the same results.

If the ligature of the vessel, which ordinarily falls off between the tenth and sixteenth day, detaches itself before the clot becomes perfectly adherent above, or if the membranes have been cut by a ligature too tightly drawn, or, finally, if with a view to a practical experiment an opening has been made in the vessel above the ligature—in all these conditions, the air establishing itself in contact with the blood, the concentric layers of the clot begin to be effaced. The clot itself becomes altered: it liquefies, and escapes through the opening in the vessel in the form of a deliquum, which diffuses a noisome gangrenous colour.

The canal of the vein being re-established in consequence of the termination of the adherence of the clot, hæmorrhage immediately succeeds, and the result is inevitable.

If the exterior inflammation is elevated to too acute a type, the incubation—if we may use the term—of the clot within the vessel can no longer proceed. It suppurates, and an abscess, formed by the softened fibrine and by the pus that is mingled with it, is developed in the very interior of the vein.

The condition of things, however, which may render this accident less serious is that often, above the place where the too intense inflammation has determined the suppuration of the clot, its type is sufficiently moderate for it to become adhesive. Then the clot becomes organized, and no hæmorrhage takes place.

Finally, when the blood, by reason of the bad constitution of the animal, is not in a healthy state, the organization of the clot is slow in its formation, the ligature falls before the adhesion is perfect, contact with the air is established, and all the phenomena described take place.

Let any one compare these phenomena of which the jugular vein is the seat, in consequence of a ligature, with those which exhibit themselves in the same vessel when thrombus has determined inflammation there, and he will be struck with their perfect identity.

Thrombus develops itself in a healthy animal, determines by its presence a degree of pressure on the jugular, and effects the obliteration of it; a clot forms in the interior of the vessel; the external membrane becomes inflamed; the organization of the clot is effected, and the vein is obliterated. This is the process of adhesive inflammation.

At other times, when at the period the clot is undergoing the process of organization, should the animal rub his neck, a dilatation of the vein is effected at the place where the puncture for bleeding was made, and the adhesion of the interior clot is broken. The air establishes itself in contact with it, and effects the softening of it; and then consecutive hæmorrhages manifest themselves, more abundant and more fearful in proportion to the largeness of the opening

At other times, whether it is because the animal has rubbed himself at a period more distant from the commencement of inflammation, or whether because applications too irritating have been made across the track of the indurated vein, inflammation rises too high, the suppuration of the clot is effected, and an abscess, formed in the interior of the vein, is not slow in finding an issue outwardly through the orifice effected in bleeding.

In this case, as we have said before, the obliteration of the vein being effected in the very branches of the jugular, there is no hæmorrhage to fear, but an obstinate fistula at the place of the abscess, throughout the whole of the vein, and lasting until the exfoliation of the internal membrane is completely effected. Finally, who has not been struck with the frequency of the hæmorrhages which manifest themselves so often in consequence of thrombus in horses out of condition or of weak constitution?

The indications of treatment which result from this anatomical study of the phenomena of inflammation of the jugular vein are simply and easy to be understood.

At first, the flowing of blood and the contact of atmospheric air are effectually prevented by the application over the tumour, or thrombus, if such should exist, of a pledget covered with blistering ointment, or a bandage sprinkled with powdered cantharides, which is very efficacious in producing this double result. Afterwards, when inflammation is developed, it is to be moderated by the continuous employment of emollient applications. Then, when the induration is formed, the application of irritants, or of the cautery, in order to produce its absorption, is required.

If fistula exists, following the track of the vein, some stimulating fluids may be injected, or a seton may be passed to destroy the internal membrane, imperfectly organized, and which must exfoliate before cicatrization can be effected.

Such are the simple means which will generally be sufficient to adopt in order to bring about the cicatrization of the vein.

The ligature of the jugular, which has been advised in case of hæmorrhage through a considerable orifice, is a measure too often unsuccessful for me to think it necessary to dissuade the surgeon from having recourse to.

The principal cause of the little efficacy of that operation is the production of inflammation, which renders the walls of the vessel so friable that the ligature is soon disengaged, and thus permits the disorganizing action of the air upon the clot.

*Is loss of a vein unsoundness?*—I do not know whether it is now the practice at the London Veterinary College to pronounce all horses that have lost a jugular vein unsound; but I recollect many years ago the late Professor Sewell saying “that there could be no question of animals that have lost their jugular veins being unsound for ever afterwards; at any rate, *he* always rejected such horses as unsound, in consequence of their being liable to cerebral attacks, as vertigo (*vulgo megrims*), apoplexy, &c., and also because such horses were unsafe to turn out to grass.”

Now, I have before mentioned that the late Harry Daws, of London had a horse which had lost both jugulars, and which he rode for nine years, the horse being apparently none the worse for the accident. And the late Professor Coleman, in the 'Veterinary Transactions,' and Mr. Youatt, in his work on the 'Horse,' have also said that a horse with obliterated jugulars was not the worse for it. I have also previously mentioned other cases where the veins have been lost without the animal suffering any ill effects.

I know not, Mr. President, whether this Society considers the loss of a vein as unsoundness, but it seems quite natural to infer that the loss of a vein, or at any rate the loss of both, must be prejudicial to the animal for a time, and predispose him, one would think, to cerebral attacks, ophthalmia, &c. No doubt in the course of time the smaller vessels become enlarged and anastomosed with the jugular lower down.

I well remember seeing in the dissecting room of the London College a beautiful preparation of a horse's head and neck belonging to Mr. Markam, now of Rugeley, Staffordshire, in which there existed a mass of veins ramifying about the part where the jugular was obstructed, as numerous as a ball of hair, and which were seen to empty themselves into the jugular below, by several branches. Professor Sewell also mentions a similar case where both veins had been tied, and where there was a beautiful network of veins formed from above to below. In the early stage of the obstruction, and especially where both veins are lost, one would think we ought to pronounce the animals as "unsound;" but where the loss has existed for some length of time, and the numerous anastomosing branches of the vein, or veins, have carried on the circulation, to pronounce them as "*sound*." Still, as I conceive, there is some difficulty in some cases which way to decide.

Professor Spooner, at one of the meetings of the Veterinary Medical Association at the College, thus expressed himself:—"Under all circumstances I consider it not advisable to pass a horse as sound that had lost one of these important vessels."

*The President*, in opening the discussion, said that he should most certainly pronounce a horse having an impervious jugular vein an unsound animal, and in this opinion all the gentlemen, who spoke during the evening, concurred. In cases of inflammation of the jugular vein consequent upon the operation of phlebotomy, he believed the best treatment to be to at once apply a blister to the part and tie up the animal's head.

*Mr. A. Lawson*, Bolton, believed cases of inflammation of the jugular vein were now rarely met with, and was of opinion that it was owing to the almost entire abolition of the operation of phlebotomy at the present time.

*Mr. Thomas Greaves* stated his belief that the inflammation in cases of phlebitis, the result of bleeding from the jugular vein, commenced in the lining membrane of the vein, and attributed the cause to wounding of the membrane of the opposite side from too

severe a stroke of the fleam when opening the vein. In such cases he would blister at once.

*Mr. Peter Taylor* thought that the different modes of performing the operation of phlebotomy ought to have been considered in the essay. He did not believe that phlebotomy was becoming extinct, and should always adopt it where necessary. He submitted that when animals suffering from a diseased condition of the blood were bled, there was always a greater tendency to phlebitis than when the animal was the subject of a purely inflammatory malady. In discussing the treatment he discarded fomentations and poultices: he would apply the Ung. Hydrargyri Biniodid. to the part affected, tie the animal's head to the rack, give saline medicine, and allow a fluid diet.

*Mr. Woods* usually applied the strong mercurial ointment.

*Mr. Howell* had not seen many cases, but always applied a blister. He described at some length a specimen, which he prepared when at college, of anastomosing branches being thrown out from an obliterated jugular vein, as an example of nature's efforts to carry on an uninterrupted flow of blood from the head towards the heart.

*Mr. Buckley* had seen instances of phlebitis occurring as a sequel to bleeding in cases of itch.

*Mr. Walley* advocated the injection of Tinct. Iodinii into the diseased vein, in order to accelerate adhesive inflammatory action.

*Mr. Bromley* related a case in which he applied the Tinct. Ferri Perchlor. to the inflamed jugular vein twice a day for five days, but the disease extending, it necessitated the laying open of the whole of the diseased portion of the vein. The patient, however, finally succumbed to anæmia and diseased lungs.

*Messrs. J. Taylor, Challinor, Lomas, Hopkins,* and the *Secretary* having offered a few remarks, the discussion ceased.

*Mr. Thomas Greaves*, in moving a vote of thanks, said that the essayist, who was the oldest member of the Society, was most deservedly entitled to the thanks of the meeting for his very great kindness in coming such a distance to read a paper for the benefit of the members of the Association.

The motion was seconded by *Mr. Howell*, and carried amidst applause.

At the request of the members, *Mr. Cartwright* promised to forward his essay to the *Secretary* for publication with the report.

The next meeting of the Society will be held in September, when *Mr. Thomas Greaves* has kindly volunteered to introduce a paper on "Enzootics and Epizootics."

W. AUGUSTUS TAYLOR,  
*Hon. Secretary.*

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## Veterinary Jurisprudence.

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OXFORD ASSIZES—NISI PRIUS COURT.

*Thursday, July 13.*

*Before Mr. BARON PIGOTT.*

LIABILITY ON A VETERINARY SURGEON'S CERTIFICATE.

LORD RANDOLPH CHURCHILL *v.* FREDERICK JOHN DAY.

THIS was a special jury case. Dr. Stavelly Hill and Mr. Griffiths were counsel for the plaintiff; instructed by Mr. John Davenport. Mr. Powell, Q.C., and Mr. Jelfe, were retained by the defendant; instructed by Messrs. Paley and Husband, of York.

*Mr. Griffiths* opened the pleadings. The plaintiff, who was purchasing horses, desiring that they should be sound, employed the defendant as a veterinary surgeon to certify to their soundness or unsoundness, and the defendant did not use reasonable skill. The second count alleged money paid for such services.

*Dr. Hill* said the case was, shortly, to try the liability of a veterinary surgeon for a certificate given by him, stating that a horse was sound when it turned out not to be sound. It was a question whether, being an agent receiving payment for work done, for work which he professed to do, he did it truly and accurately. Lord Randolph Churchill, well known as the son of the Duke of Marlborough, was on the 19th December last on a visit in Yorkshire, and desirous of buying horses to be hunted in that country. On that day he went to look at two horses which Mr. Topham had for sale at York. He had been recommended to the defendant as a person of experience likely to say whether the horses would suit. The sum asked for the two horses was £190. Lord Churchill said he would give £150—£80 being for the brown gelding, the subject of this inquiry. He left York on the 19th, but met the defendant at the station there on the 22nd, by appointment, who told him he had bought for him and handed him a certificate—"I certify that I have examined the bay gelding five years old, by King Bryan, and pronounce it sound in every respect." Lord Churchill paid him for the certificate and his labour in the purchase of the horses five guineas. The horses were sent to Oxford, and on the 27th were examined by Mr. Wadlow, who found that the gelding was suffering from constitutional ophthalmia in the left eye, and was badly spavined. The horse was taken over to Blenheim, and its defects were plain enough when tried in the presence of Lord Churchill and Colonel Thomas, master of the horse to the Prince of Wales. The horse was subsequently examined by Messrs. James and Sabin, who found cataract. Now, with reference to damages against the

defendant for breach of warranty. The horse being found entirely unsuitable, Lord Churchill sought first to return the horse to Mr. Topham, who very properly said that he had nothing to do with the warranty of the horse, and that the plaintiff must go to the defendant. The horse was sold by auction to Mr. Joseph Tollet for £22 1s.—a difference of £57 19s. on the original price. Then there was the carriage from York to Oxford; the fees paid to the veterinary surgeons, about £8; the keep of the horse till sold, £5 5s.; and last the fee paid to the defendant—all put together making a total of £80 3s. 3d. As to the last item he did not know how much of it his learned friend would claim in respect to the other horse with which Mr. Day had to do, and which had turned out all right. The defendant was in this dilemma—he was either most careless in his examination, or he was grossly ignorant in his profession. In either case his client had a right to recover.

*Mr. Powell* said he would take the damages from his Lordship; all they desired to try was the question of liability.

*Lord Randolph Churchill* said he generally resided with his father, the Duke of Marlborough, at Blenheim Palace. On the 19th December last he was at York, and saw Mr. Topham, with whom he negotiated for two horses. One was a brown gelding. He asked £120 for it. He took Mr. Day, who had been recommended to him, with him to see it. He never asked Mr. Topham about the condition of the horse. He told Mr. Day he should buy the horse, if he (defendant) would pass it sound. Mr. Day had examined two other horses in a yard where a sale was going on. Defendant examined the horse there and then. He told Mr. Day he would give £80 for the gelding if it was sound. Defendant left York that night, but before he left Day at the station, told him Topham would not accept the £80. Witness said perhaps Topham might alter his mind, and he had better let him know. After telegrams between witness and Day, he met Day at the station on the 22nd. (On the 20th December Day telegraphed that £80 had been accepted and Lord Churchill told him to take the horses to his stables and look well after them.) On the 22nd Day produced the certificate pronouncing the gelding “sound in every respect;” witness gave him a cheque for the horses and his own fee, 5 gs. About ten days after he saw the gelding walked and run out at Blenheim; Colonel Thomas was present. Witness saw the unsoundness in the hocks. He afterwards gave directions, and it was sold by auction. Mr. Wadlow, Mr. James, and Mr. Sabin had examined the horse.

Cross-examined.—Mr. Day was with witness and Mr. Yeoman looking for horses. He gave him £5 5s., meaning to include his examination and trouble. He said his fee for each examination was 10s. Witness looked at the horse on the first occasion. It was extremely cold later on. He presumed the horse travelled from York to Oxford by train. Looking at the letter produced, he remembered that the certificate was sent by Mr. Day in answer to a letter dated 1st January. Mr. Wadlow examined the horse with others on its arrival at Oxford, in pursuance of special in-

structions ; and he received a letter from Mr. Wadlow enclosing a report on the horses. Witness was at that time staying at Preston. (Letter put in dated 27th December, from Mr. Wadlow, stating, "I find the blood horse to have constitutional disease in the near eye, which impairs his vision, also spavin on the off hock.") He did not tell Mr. Day of this, because he thought if he did he might not get the certificate. He directed Mr. Napier, the agent to the Duke of Marlborough, to write to Mr. Topham. This was on his return to Blenheim. (Letter put in, stating result of Mr. Wadlow's examination, and stating that the horse would be returned.) The certificates of the other veterinary surgeons were likewise put in.

*Charles Hamlyn Wadlow*, veterinary surgeon, Oxford, said he had had thirty-six years' experience. On the 27th he examined the gelding at Mr. Sabin's stables, and sent a report to Lord Churchill. Cataract took from four to six weeks going through its stages. There was, first, swelling of the eyelids. After that the aqueous humour became turgid, and after four or six weeks it left cataract or opacity of the lens. He believed, in this case, the defect would have been patent to almost anybody on the 19th of December. The small bone spavins were sufficient to amount to an unsoundness, and must have been in existence on the 19th of December, and, he should think, ought to have been detected on a professional examination.

Cross-examined.—He could only explain their not being seen by a professional examiner, on the 18th of February, by supposing they were not looked for. He did not mention the cataract in his report to Lord Churchill, because he avoided technical terms when he could. He said there was "constitutional disease in the near eye." Ophthalmia preceded cataract. He was not aware that cataract might come on suddenly.

*Mr. Powell*.—To use a familiar phrase, "Would you be surprised to hear" that it comes on in eight days? (Laughter.)

Witness said he should. He did not think, but he was sure, that the disease was chronic, and plainly visible on the 19th of December ; did not call the disease cataract in his certificate.

*William Thomas Sabin*, veterinary surgeon, of Oxford, said he obtained his diploma a year ago. On the 27th of December he examined the gelding. The cataract and spavins were of considerable standing, and both should have been detected on the 19th of December. On the 2nd of June the horse was perfectly blind. It was sold on the 17th of June at Reading.

Cross-examined.—He examined the gelding a second time on the 13th of January, after the horse had been to Blenheim. The cataract was still in the same state. He said the near eye was "diseased," so that the horse was nearly blind. Cataract was not the only disease. There were other marks of constitutional ophthalmia, which he pointed out to Mr. Wadlow. Mr. James examined the horse the same day ; did not mention the cataract in his certificate.

By the Jury.—The first time he examined the horse it was for practice, and not at anybody's direction.

*Mr. John Wortley Axe*, assistant-professor at the Veterinary College, London, said he examined the horse in London on the 18th of February. It was then suffering from extensive cataract. The minimum period of the existence of opacity would be six weeks or two months. It was in its ultimate stage. He examined the horse for *Mr. J. M. Davenport*, and certified that it was suffering from "extensive cataract." He did not detect spavins in the hind legs.

Cross-examined.—He could not feel certain that he would have detected the cataract on the 13th, but he should think so. If it existed at all on the 19th of December it would have been in the same state as on the 28th of February. Opacity might come on in ten days, but not such a cataract as the one in question. Cold would bring on ophthalmia—also dust or a blow. He looked for any and every defect, but did not find spavins.

Re-examined.—Opacity in the superficial portion of the eye might prevent cataract in the lens being observable. A blow in the eye causing opacity would be plainly noticeable.

By the Jury.—The cataract in the horse in question must have existed more than ten days, because the opacity in the superficial portion, resulting from ophthalmia, had cleared away, and the cornea was as clear as could be expected with such a cataract.

*Mr. Sabin*, recalled, said there was nothing externally visible, as though resulting from an accident while in the railway.

*William James* said he had been in extensive practice in Oxford for nearly thirty years. He was called upon specially to examine the eyes and the hocks, and he certified on the 13th that the near eye was unsound from constitutional ophthalmia, and there were ossific deposits in both hocks. He was sure the disease in the eye was of long standing—not less than six weeks; on the ground of the absence of acute inflammatory action in the eye. The spavins, too, were of old date.

Cross-examined.—One of the results of constitutional ophthalmia was cataract. Called the disease "constitutional ophthalmia" in his certificate; did not say the horse had a cataract.

By the Jury.—Constitutional ophthalmia is unsoundness.

By his Lordship.—And is lasting.

*Daniel Butler Howell*, veterinary surgeon, of Reading, said on the 6th of June the horse was blind in the near eye, and the other was far from being good. Both hocks were bone-spavined. The horse was sold and sent to France.

*Dr. Hill*.—It was good enough for the Frenchmen—for eating.

By *Mr. Powell*.—It sold for 35 guineas.

This was the case for the plaintiff.

*Mr. Powell*, in opening the case for the defendant, said the issue was far more important to his client than the mere money consideration, because if the plaintiff's case was correct it charged him, as a professional man, with either unskilfulness or neglect. He

would prove that at the time of the examination by Mr. Day the horse was, as he certified, perfectly sound.

*Frederick John Day*, the defendant, said on the 19th of December, from 11 o'clock in the morning until 3 in the afternoon, he was engaged in looking at horses for Lord Churchill. He examined the brown horse now in question the same as he did the others. He used every possible means in examining the eyes and the hocks, and he was not able to detect anything wrong about them. Mr. Topham, the owner of the horse, a farmer, near Malton, was a stranger to witness. The horse, with others, was three nights in his stables, and then witness saw them off by train on the 24th. On the 1st of July he had a letter from Lord Churchill, in reply to which he sent the certificate. It was written in the book on the 19th, and copied afterwards. He had experience in many cases of cataract. From the beginning of ophthalmia to the beginning of cataract he had known as little as three or four days.

By his Lordship.—In such a case the inflammation might have eluded observation.

Examination continued.—Catching a violent cold—a long journey in very cold weather might produce violent inflammation, so as to hasten on cataract. At the time the horses were sent off it was very cold, as cold as it usually is about Christmas.

Cross-examined.—His man who took the horses to Oxford reported that the horses had travelled well—he said nothing about a cold or a blow in the eye. In the four days' case the dimness was not preceded by the inflammation as usual. The case was so extraordinary that he made a note of it. On the 7th he received a letter from Mr. Napier, and on the 28th another from Mr. Hawkins, telling him the horse had been sold. He did not think it necessary to send a person down to Oxford to examine the horse. On the 22nd of Feb. Mr. Davenport wrote to him about the case and counsel's opinion as to his liability, and Mr. Axe's certificate. Lord Randolph Churchill left it to him to conclude the bargain with Mr. Topham. He did not get a warrant from Mr. Topham.

The reply to Mr. Hawkins was read. The defendant stated that he had used every possible care at the time of the examination, and he was still of opinion that the horse was then sound.

The defendant said he did not answer Mr. Napier's letter.

By the Jury.—Mr. Yeoman, who introduced witness to Lord Churchill, lived at the Hill Top, Richmond, and witness had done business for him before. Lord Churchill also mentioned that he had been recommended by Lord Harewood.

*George Hudson*, landlord of the Red Lion, York, was present at the examination of the horses by Mr. Day. It was remarked in the yard that Mr. Day examined them most carefully.

*William Williams*, veterinary surgeon and Principal of the Edinburgh Veterinary College, said cataract was not ophthalmia. The latter was deep-seated inflammation of the eye (hence called constitutional), arising from any cause—cold, foul air, or a blow. It is very often produced by travelling in cold, damp weather. The

horse in question might have been perfectly sound, and yet at the several dates mentioned by previous witnesses might have the symptoms described. Cataract commenced with ophthalmia, but was concealed by the opacity of the anterior portion of the eye, so that until the ophthalmia had more or less subsided the cataract would not be perceived. Percivall was a writer of authority on the subject. He agreed with him that cataract was sometimes formed in a short time. This might have been so in the present instance. His experience was that cataract had been formed within as little as ten days. If there had been any disease on the 19th of December, leading to such an extensive cataract as was described existing on the 18th February, it must have been discovered at the first date on examination by a veterinary surgeon. The fact that it was not then seen induced him to believe that it did not then exist. As regards spavins there was nothing concerning which veterinary surgeons differed so much.

Cross-examined.—He was in practice in Edinburgh. He was not sent there by the Veterinary Protection Society. True cataract was the result of periodical ophthalmia in 95 cases out of 100. He agreed with Mr. Youatt that, generally speaking, it was the lighter attacks of cataract that proved so rapid. A blow upon a horse's head might produce dislocation of the crystalline lens, and produce cataract.

Re-examined.—Horses were often restive and struck their heads in travelling by railway. In his own experience at the College, three or four years ago, he had a case of a large cataract being formed within ten days. He knew nothing of the defendant. He was once engaged in a case against him.

*Benjamin Cartledge*, Sheffield, President of the Royal College of Veterinary Surgeons, and a member of the Court of Examiners, said he agreed generally with the evidence of the last witness. A horse perfectly sound on the 19th December might have specific ophthalmia on the 27th; it often came on very suddenly. Cataract formed while ophthalmia existed, but the cloudiness of the eye prevented its being seen. If the disease described as existing on the 27th of December had existed on the 19th, it must have been visible to an ordinary observer.

Cross-examined.—Cataract could not have been produced without external violence in the eight days.

By his Lordship.—There is no other name for cataract. "Constitutional disease of the eye" he understood to mean specific ophthalmia.

*Edward Coleman Dray*, veterinary surgeon for upwards of forty years at Leeds, said he concurred in the evidence of the two preceding witnesses.

*Mr. Powell* summed up his evidence, and commented on the non-calling of Mr. Topham, who could have given them every particular concerning the horse.

*Dr. Hill* said it was the defendant who should have called Mr. Topham, or somebody about his stables, to tell the jury that the

horse was sound on the 19th. The plaintiff left it to the defendant to buy the horse if it was sound. He did buy it, and certified it "sound in every respect." Dr. Hill went through the case, and laughed at the suggestion to which Mr. Powell was driven—that the crystalline lens was dislocated by an accident, about which no tittle of evidence had been given.

*His Lordship* said the jury had to determine whether the defendant used reasonable skill and care in the discharge of the duty put upon him by the plaintiff. It was not a matter to be decided by a hop-skip-and-jump, for the doctors disagreed, and it was left for jurymen to weigh their statements and strike the balance. As to calling Topham, it would have been conclusive on either side, but it was to be presumed that neither side found him exactly such a witness as they desired. The learned Judge went through the leading points in the evidence, and commented with much acumen thereupon.

The jury, after retiring for a quarter of an hour, found a verdict for the defendant.

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## BROKEN-WIND. HORSE-COPING.

### MILLS *v.* HUDSON.

IN this case the plaintiff, James Mills, a horse-dealer, of Bradford, brought an action against the defendants, John and George Hudson, carters, of Healey, to recover damages for breach of warranty of a grey mare sold by the defendants to the plaintiff at Bury Fair, on the 3rd of May last. The sum sought to be recovered was £27 19s., being £24 paid for the horse, £2 2s. paid to a veterinary surgeon, and travelling expenses incurred by the plaintiff in making inquiries into the circumstances. Mr. Berry, of Bradford, appeared in support of the plaintiff's case, whilst Mr. Charles Roberts was for the defendants. The case, as stated by the plaintiff's attorney, was to the effect that on the day named the plaintiff Mills was on his way to Bury Fair when he overtook the defendant George Hudson, who is a son of the other defendant, in charge of a grey mare. The conversation turned upon the price of the animal, when he, Hudson asked £25 for it. When they got into the town the plaintiff agreed to buy the mare for £24, and paid the money at a cook-shop kept by a person named James Howarth. The plaintiff was assured that the animal was right and straight, and was told by Hudson that he had worked her four years. The bargain concluded, the mare was given into the charge of a man, who started homewards with it. The first night it was stabled at Littleborough, but the man in charge of it was astonished the next morning to find that it had not eaten its food. Proceeding further, the animal was attacked with diarrhoea, and though the usual restoratives were applied, when about five miles the other side Halifax the animal died. A *post-mortem* examination of the carcass was made by Mr. Joseph

Carter, an experienced veterinary surgeon, and the result was that the mare was ascertained to have been broken-winded.

Nearly 1 lb. weight of small lead shot, taken from the intestines, were produced in court, and the veterinary surgeon stated that these were signs that some sedative agent, in conjunction with a mechanical one, had been administered to the poor beast, for the purpose of concealing the peculiar character of the breathing. It was probable that foxglove had been used, with some purgative oil, and that all these circumstances had tended to its death.

The defence was that the defendants purchased the mare a short time previously, and found it broken-winded. The plaintiff, as an experienced horse-dealer, ought to have known the condition of the animal, and no warranty had been given with it. It was also contended that plaintiff's man had ill-used the animal, and that the shot had been administered to it by some other person than the defendants.

*His Honour*, after a lengthened hearing, gave judgment in favour of the plaintiff, with all costs.

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#### DISEASED SHEEP.—SCAB.

##### BOWLER *v.* DALE.

At the Wirksworth County Court, before G. Russell, Esq., this case was re-heard, and being of great importance to the farmers, there was a very full Court. The trial, which was commenced at half-past 10 a.m., was not concluded until a little before 7 p.m. The action was brought to recover the sum of £5 damages alleged to have been sustained by the plaintiff in consequence of the defendant having placed certain sheep upon Carsington pasture in the month of May, 1870, which were then affected with "scab," and that the defendant knew they were so affected when placed upon the pasture. At a previous Court, in February, the case was heard before His Honour, who feeling it, as he said, to be a most important one, inasmuch as there were other cases depending on it, thought it was one in which a jury ought to be engaged, and although he inclined to the side of the plaintiff he preferred to direct a nonsuit in the hope that the case would, as he thought it should, be tried before a jury, and the plaintiff took this course.

Carsington pasture is a very large one, and comprises several hundred acres of moor land, upon which a number of flocks of sheep, and other cattle, belonging to different farmers, are placed for pasturage. The disease was not known to the owners to exist upon the pasture until the month of September, when it was customary to take the animals off. A sheep belonging to defendant was first found to have the disease, and several of the farmers who had placed flocks of sheep there took the one affected and asked defendant if he had not got the scab in his flock at home? He said he had not, that he

was aware of. His flock was examined, and it was found to be affected. The disease was quite apparent to the deputation, one of whom told defendant he must be a fool not to know of it. In the month of June two labourers who were working in the pastures observed that a sheep marked with the letter D had something the matter with it, and on examination they found it had the scab. A lad named Hewson, who lived with the defendant from February to May, 1870, said he fetched some sheep in March or April, from another farm to the defendant's, and that two of these sheep did not seem in good condition. He had a difficulty to get them along the road. Some of the wool was off one or two of them, and was dangling down. He further stated that he held several sheep two or three times whilst his master dressed them with something out of a bottle. This would be in March or April, after he had fetched the new sheep. Where the sheep were dressed, which was on the shoulders and between the forelegs, was, he said, "all scurvy-like," and the wool was off. He did not know what his master was dressing them for. He did not see any maggots or lice. He had seen maggots in sheep. He further gave evidence that some time after he left his master's service defendant went to him and asked him whether Mr. Woolliscroft (one of the farmers who had sheep on the pasture) had been to him, and what he had told him. He said he had, and that he told him he could remember him (defendant) dressing some sheep with stuff from a bottle whilst he had held them. Defendant said he could not remember dressing any unless it was one for maggots, and then told the boy he had better have nothing to do with it as he had got witnesses to swear "again it," or him (he would not be sure which). The boy said he should state what he had told Mr. Woolliscroft.

On the previous hearing of the case *His Honour* remarked that he never knew a witness give evidence more carefully than this boy had done, and he never knew one more anxious than he was to state not one atom more than the truth, and the solicitor on the opposite side admitted that this was so. The whole of the farmers who had placed sheep upon the pasture swore positively that their flocks were sound and free from all disease when placed upon the pasture, in May, 1870.

At the hearing on Friday *Mr. Kingdon*, who appeared for the plaintiff, pointed out that at the hearing of the case in February the defendant said that what he dressed his sheep for, both before they went to the pasture and whilst they were there, was for maggots, which defendant said broke out several times during the summer, after they had been cured. Now it was said the dressing was for red lice. The defendant emphatically denied that any of his sheep were affected with scab when placed upon the pasture, and said he was not aware he had the disease on his farm at home until it was pointed out to him by Mr. Hall and others, in the month of October.

*His Honour*, in summing up to the jury, remarked that mere suspicion would not be sufficient to justify them in finding a verdict

for the plaintiff; but that they would have to satisfy themselves beyond all reasonable doubt that the defendant did put diseased sheep upon the pasture, and that he knew they were diseased when he put them there. If they were satisfied that such was the case then the defendant would be clearly liable for *all* the damages which had been sustained from such an act.

The jury retired for half an hour, and on their return the foreman said, "The evidence being circumstantial, we give our verdict for the defendant."—*Mark Lane Express*.

## MR. COWIE'S REPLY TO PROFESSOR M'CALL'S LETTER ON THE RECENT EXAMINATIONS.

SUNDRIDGE HALL, KENT;  
*July 12th, 1871.*

DEAR SIRS,—Last month you inserted a letter from Prof. M'Call, wherein he objects to some remarks I made at the Council Meeting of April, respecting his pupils. If he will read the sentence according to the meaning which I think it conveys, he will find there is no misrepresentation on my part, but a misinterpretation on his part. The facts are simply these:—Professor Williams objected to send any of his pupils to be examined in Glasgow, on the presumption that an unfair contrast might be adduced between his and Professor M'Call's pupils in the practical examination department, as the latter might have had an opportunity of seeing the living subjects previously, and consequently "would be well up to the mark, but that was not the case;" *that is*, they had no such advantage afforded them, as the horses, cattle, and sheep, were selected at random, out of large stocks, which had not, as we were told, been seen by the pupils until the examiners were present.

I am, dear Sirs,

Yours faithfully,

JAMES COWIE.

*To the Editors of the 'Veterinarian.'*

## MISCELLANEA.

### THE BARBERRY.

FARMERS long held the notion that the presence of the barberry (*berberis vulgaris*) in their hedges was prejudicial to the wheat crops in the adjacent fields. As there seemed on the surface no good reason for this, botanists and scientific men scouted the notion. That the fungus so common on the berberis (*æcidium berberidis*)

should have anything to do with the uredo rubigo of the wheat, or with the puccinia, seemed too absurd a notion to be at all credible. Nevertheless, changes as strange do occur in other cases, and the forms and stages through which some of the fungi pass should at least lead us to give a fair hearing even to the enunciation of the most startling notions, provided they are made by persons whose attainments are such as to warrant us in placing some confidence in their judgment. Few things in nature, for instance, can be more unlike than the fleshy orange-coloured fungus so often found on the savin (*podisoma juniperi sabinæ*), and the small crisp, flask-like fungus which appears on the leaves of pears (*ræstelia cancellata*), yet it was shown by Professor Oersted, of Copenhagen, that the one is but a form of the other. The Danish professor, as we have previously recorded, proved this by inoculating the pear with the fungus of the savin. Naturally the statement was received with incredulity, and requires the concurrent testimony of many witnesses before it can be definitely accepted. One such witness is M. Roze, who repeated Oersted's experiments with success. Last May we had an opportunity of seeing in Paris another case of the same nature, in which the French botanist just named had succeeded in inducing the presence on the hawthorn of *ræstelia* (*æcidium*) *lacerata*, by placing on the young shoots the minute spores of another fleshy fungus commonly found on the juniper, viz. *podisoma clavariæforme*.—*The Gardener's Chronicle*.

## OBITUARY.

WE regret to have to record the death of Mr. W. Cheeseman, M.R.C.V.S, Wandsworth, in the 60th year of his age. His diploma bears date November 27th, 1832. Mr. Cheeseman served the office of Member of the Council, and also Vice-President of the Royal College of Veterinary Surgeons.

To this we have to add the death of Mr. Edward Hardman Whitworth, Bolton, Lancashire. His diploma bears date April 30th, 1867.

And also of Mr. Archibald Duncan, of Colingsburgh, Fifeshire. His diploma bears date April 18th, 1834.

## ERRATA.

June No., page 446, line 30, *for* "President of the Veterinary Society,"  
*read* "Principal Veterinary Surgeon."

July No., page 469, line 9, *for* "Fleming's tonic aconite," *read* "Fleming's tincture of aconite;" and in line 40, *for* "hydrochloric acid," *read* "hydrocyanic acid."

„ page 482, sixth line from the bottom, *for* "Mr. Steele,"  
*read* "Mr. Hoole."

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Communications and Cases.

OBSERVATIONS ON THE ANATOMY AND  
PHYSIOLOGY OF THE HORSE'S FOOT.

By GEORGE FLEMING, M.R.C.V.S., Royal Engineers.

*Physiology of the Horse's Foot.*

(Continued from p. 529.)

*Formation and Growth of the Hoof.*—Our study of the Anatomy of the Horse's Foot has made us acquainted with the wonderful disposition, structure, and character of the different parts which compose it, and which render it a somewhat complicated piece of mechanism. We have now to inquire into its PHYSIOLOGY in order to learn the nature, relations, and vital and mechanical functions of this part of the animal's body—functions which, by reason of certain specialities of form, structure, and operation, give to the horse's foot a particular and interesting character that distinguishes it in a special manner from the feet of all other animals.

In speaking of the vascularity of different parts of the foot when examining its structure, particular allusion was made to the large, extensive, and complex arrangement of blood-vessels in that organ; an arrangement equally manifest in the interior of the principal bones as on their surface, and around the coronet as on the sole; but most of all in the tegumentary membranes enveloping these bones, and lying immediately within the hoof. It is, in reality, to endow these membranes with the highest degree of vitality, and to ensure their possessing the most perfect secretory and repara-

tive powers, that the remarkable networks of vessels which cover the organ everywhere have been devised.

This exaggerated vitality, consequent upon the great quantity of blood directed to these membranes, is not brought so prominently into notice while the foot is in a healthy condition as when its circulation has been disturbed or deranged from some cause, and congestion or inflammation results. Then the intense vital energy with which the living portions of the foot are endowed is manifested in the most unmistakable manner by the rapidity with which the various phenomena peculiar to these conditions are developed and extended, and pass through their several phases, implicating more or less of the organ in a very brief space, giving rise only too frequently to very serious consequences and the gravest pathological alterations, which nothing but the most prompt and skilful surgical treatment can avert, palliate, or cure.

The exalted vascularity and vitality which is so conspicuous in this organ have doubtless been conferred to enable it to meet the excessive demands to which, during life, it is subjected; demands which are incurred either through the various movements and fatiguing strain to which it is exposed, and which entail renovation and repair of texture, or those arising from the constant wear of the horny case protecting it, and which must be anticipated by an uninterrupted secretion\* of the dense material of which that protection is composed.

It has been observed that the hoof is a most essential part of the horse's foot, and fulfils its office in a perfect manner through the combination of certain conditions, some of which are apparently incompatible with each other—such as elasticity and rigidity, solidity and suppleness, durability and lightness. The qualities which the hoof possesses in so marked a degree would soon become deteriorated or destroyed by the incessant attrition to which it is exposed between the ground and the column of support, as well as by the influence of other and less discernible causes, were they not always maintained intact by the activity of the living tissues

\* I have used the word "secretion" in this place, perhaps, for lack of a better term, and also because it is that most frequently employed to designate the generation of the horn. Strictly speaking, however, it is not a correct word to apply to the keratogenous process, as this is no more a secretory function of the living textures of the foot than is the production of the epiderm of the derm. When, therefore, the "secretion" of horn is spoken of, it will be understood that the transudation or formation of that material from the surface of the vascular membrane is meant, and not an actual secreting process.

lodged within the inner face of this covering, one of whose chief functions is the maintenance of its integrity. These tissues, in fact, are incessantly engaged in the formation of the new horn needed to counterbalance the effects of external agencies, and in keeping the whole covering in a condition to meet the requirements exacted from it, just as the skin and other parts are being regularly supplied with new material to compensate for that removed by wear.

But even before the birth of the animal, and at a somewhat early period of foetal existence, nature has begun to make provision for this contact with the ground, and consequent wear, by surrounding the extremity of the limb with horny matter, which, though comparatively immature and pulpy at the period immediately preceding birth—because if hard it would prove dangerous to the mother—is quickly transformed into a denser and more resisting protection shortly after that event, when it is necessary that it should be so.

This special function of the living parts may be aptly and properly designated the “keratogenous” or horn producing; and that it belongs to the tegumentary membrane within the hoof is made evident from daily experience, and the results of surgical operations on the foot. For instance, a piece of horn is removed either from the sole, frog, or wall, and the living textures beneath it are exposed, but otherwise not materially injured. In the course of one or two days the reparative or restorative process has made some progress; the surface of the denuded textures has exuded a kind of semi-fluid, yellow, or greyish-looking substance, that entirely covers it; if carefully observed, it will be seen that this caseous sort of matter becomes hourly increased in volume, and in doing so acquires solidity, from exposure to the air, the dessication of its outer surface, and its gradual removal from the living membrane that generated it, and on which, of course, it is exactly moulded.

When the regenerated horn has attained a proper degree of thickness, it commences, in certain regions of the foot, to exfoliate. This new concompressible matter, if examined by means of the microscope, is found to possess the same cellular elements as the horn which has been removed.

After the application of a blister to the skin, we witness the same results as those that follow the removal of a portion of hoof from the foot of the horse; the regeneration of the epiderm from the denuded surface of the derm, and the formation of a new skin possessing the identical histological characters of that destroyed by the vesicant. So that it may be unhesitatingly asserted that, after the operation, the solu-

tion of epidermic or horn material thrown out from the "keratogenous" membrane became converted or formified into cells, the same as those represented as constituting the mass of the hoof.

Understanding the direction in which the fibres of this envelope pass or grow, it may therefore be received as an axiom, that the constant desquamation or wear taking place on the exterior of the horny covering in a healthy condition is compensated for by the cellular multiplication that is incessantly going on at the origin of the fibres from the surface of the living tissues, whereby these fibres, and consequently the entire hoof, are being continually pushed downwards in mass by the deposition of new cells, the material for which is derived from the horn-producing membrane.

This keratogenous membrane envelopes every part of the foot shielded by the horny carapace, and may be supposed to be allied to, or a mere continuation of, that covering the derm, and which constitutes the formative matrix of the cuticle. It, therefore, extends from the upper border of the periopic ring, where the hair-roots cease to become implanted, over the entire coronary and plantar cushions, the vascular laminæ, and the sole. As, however, the hoof is composed of several parts which are somewhat dissimilar in structure and texture, it follows that the horn-generating membrane likewise differs in its function to a certain degree, and in points corresponding to these dissimilar portions; but everywhere over its surface this membrane has the faculty of producing horn, though whether it usually does so or not in particular situations, and under ordinary circumstances, we will inquire hereafter.

A proper understanding of the manner in which the hoof is formed, its mode of growth, and the various circumstances which influence these is of great moment to the farrier and scientific student, and must always be a subject of interest to those who are generally concerned with the welfare of the horse. For more than a century the structure, formation, and growth of this horny mass has been the subject of investigation and much dispute among men of science, no less than with some of those accomplished amateurs who have done so much to perpetuate a love for, and to increase the utility of, this indispensable creature; but it is only now that it can be said that the mystery which hung over very much pertaining to this subject is beginning to be solved through the enlightened and indefatigable exertions of a few eminent members of the veterinary profession. The importance and the great value to equine physiology and pathology

of some of the facts so acquired, must be the apology offered should this portion of the treatise become extended to a greater length than is consistent with the space at our disposal.

With one exception, perhaps, it may be laid down as a rule that the horn found in contact with the living surface is formed from that surface. Pathological observation, no less than direct experiment, have proved the truth of this, and thus established the fact that distinct parts of the subungular membrane have a special function in the keratogenesis.

Thus, the perioplic ring and fissure originate the periople. In proof of this, we see, when this horny band has been stripped off the living surface, along with a portion of the wall covering the coronary cushion, a semi-fluid horny matter thrown out from both surfaces, which meets at the bottom of the fissure and constitutes a regenerated periople and commencement of a new wall, the former o'erlapping the latter.

Destroy the coronary cushion, but leave the perioplic ring intact, though denuded of horn, and you have the periople again restored, but no wall; whereas if the ring be so seriously injured as to lose its function, but the cushion be merely deprived of its corneous growth, the former cannot be reproduced, though the latter is restored unaltered.

Should the perioplic fissure alone be subjected to destruction of its secretory power, as in a malady which is somewhat unfrequent in well-conducted stables, while the perioplic ring and coronary cushion are merely laid bare, and the keratogenous membrane remains intact, the periople and wall grow down as usual from these surfaces, one above the other, but there is no adhesion or agglutination between them as when the fissure escapes without damage, and they remain isolated from each other. The continuation of the periople—the horny frog—is produced from the surface of the plantar cushion, which, externally, is identical with the perioplic ring.

That the coronary cushion is the generator of the wall is a fact of which nearly every horseman is cognisant; but that it is the source whence its entire mass, including the “keraphyllæ” or horny laminæ is derived, has been much contested by veterinary authorities. That it is the matrix for the production of the fibrous portion of the wall is not disputed. As the wall is the most essential portion of the hoof, and as its reproduction in health and disease is a matter upon which the utility of the horse greatly depends, we can scarcely wonder that attention should have been most closely

directed towards it. The controversy as to how its total mass, including the keraphyllæ, is secreted, arises from the fact that its upper border, or cutigeral cavity, is in contact with the coronary cushion, while the whole of its inner face is in juxtaposition to the vascular laminae. It is the exact share which each of these portions takes in the secretion of the wall that has given rise to discussion, and which has compelled me, at the commencement of this section, to make this division of the hoof a doubtful exception to the general rule laid down with regard to its formation.

That the coronary cushion is the source from which the fibrous portion of the wall is generated, as already remarked, experiment and daily experience prove. When a piece of the wall is torn off at its origin as far as the white zone or lower margin of the cushion, so as to lay bare the living structures, but without seriously injuring the villi, in about a day a quantity of matter is thrown out which entirely covers these villi and the general surface; in a fortnight or so this exudation or elaboration of new horn has made such progress that, should the animal be destroyed, and its hoof removed by maceration, scarcely any difference can be perceived in the cutigeral cavity between the old material and that thrown out to repair the breach. Should the animal be allowed to live for a month instead of a fortnight, the newly formed horn constitutes a hard mass projecting even beyond the level of the other part of the wall, and has grown down more than a quarter of an inch during this period; its inner aspect does not differ from the adjacent cutigeral space, and its texture is fibrous, though the fibres are markedly undulating.

In three or four months this piece has grown something like an inch or an inch and a quarter from the termination of the skin, and though the exuberant growth at the commencement of its formation is still indicated by the prominent ridge of horn, yet the more recent growth has gradually subsided until that just thrown out is level and uniform with the undisturbed horn on each side, and the fibres have resumed their ordinary rectilinear direction. In eight or nine months the prominent ridge has reached the lower margin of the hoof, and the horn above it offers nothing dissimilar on either of its surfaces or in its texture to the other parts of the wall.

This experiment, the effects of a blister, the actual cautery, and trifling or serious injuries to the coronet, all amply demonstrate that the surface of the coronary cushion is the chief, if not the sole agent in the production of the entire

wall. But the vexed question immediately arises, Are the keraphyllæ produced from the coronary cushion or from the podophyllæ? And if they are not from the latter, then what is the function of these?

Pathological observation might appear to favour the supposition that these horn leaves are really secreted by the living ones around the pedal bone; whereas anatomy and physiology lend their evidence to prove that such is not the case, and that the horny laminæ are an integral portion of the wall, are formed with it, and in a healthy foot do not owe their production to the vascular laminæ. So contradictory did the observations acquired appear, and in so much obscurity did the question remain until recently, that recourse was had to direct experimentation to set the matter at rest.

With this object it was first deemed necessary to ascertain the exclusive share taken in the keratogenous function by the coronary cushion when isolated from all the parts in its vicinity; therefore a section of the wall was removed from below upwards, so as to lay completely bare the vascular laminæ and the surface of the cushion for an equal width throughout, while a transverse incision separated these two parts, and the laminæ were entirely excised from the pedal bone, leaving the exposed part of the cushion alone to form a new section. In a few days a layer of concrete horn was exuded from this surface to repair the breach, and below the process of granulation was going on to compensate for the loss of the podophyllous tissue. In about a month a horny tumour, to all external appearance the same as that formed in the first experiment, had been constituted at the origin of the hoof, immediately beneath the hair, but below this growth the breach remained as wide and complete as at the moment after the operation, owing to the vascular laminæ having been destroyed. In three or four months, during which time care was assiduously taken to prevent the formation of a cicatrice in the situation of the vascular laminæ, so as to avert their intervention in the experiment, the reparative horn had descended more than an inch, and in a more exuberant and prominent fashion than in the first described experiment. In addition to its more salient position, the horn also offered a difference in its physical characters; it was excessively hard throughout, so that a hammer and chisel could scarcely make any impression upon it; its outer surface was dry, without polish, often split longitudinally, and displayed its fibrous structure more markedly than in the other parts of the wall, while its internal face, examined after the animal had been destroyed and the hoof removed by maceration, did

not show the slightest trace of laminae, but was on the contrary uneven, rough to the touch, and exhibited even more clearly than the outer face the fibrous framework of the horn.

In eight or ten months, when the breach had been quite filled up, and the horn had extended as low as the ground border of the hoof, so that the wall cylinder was complete, it was noted that the whole mass of the interposed material was more prominent than that on each side, its outer surface was rugged, dry, destitute of the varnished-like appearance of a healthy hoof, and was furrowed longitudinally as well as transversely; its inner face was only regularly formed in the cutigeral cavity, as beneath this the keraphyllæ were entirely absent from above to below, and instead of the junction of the lower border of the wall with the sole in the ordinary manner, there existed a solution of continuity between these two.

This experiment only demonstrated what is often met with in veterinary surgery, when, in consequence of injury or disease, the vascular laminae have been wholly or partially destroyed, altered in texture, or modified in function, and proved that, without the concurrence of the podophyllæ, the coronary cushion alone could not produce a perfect wall as we are accustomed to see it in a healthy foot, and apparently cannot produce the horny laminae; whereas when the podophyllæ are intact these are reproduced and with them the wall in an unaltered condition.

It remains, therefore, to ascertain what share the vascular laminae take in the elaboration of the principal portion of the hoof, and in its maintenance in an efficient condition. Surgical experience and physiological experiment abundantly testify that they are incapable of secreting the wall when isolated from the coronary cushion. When a section of this wall is cut away from bottom to top, leaving the living tissues unprotected, though uninjured, we have seen that in a brief space they are covered with a corneous exudation so solid and consistent that there is no longer pain or inconvenience. But this exuded material, though exactly moulded on the living laminae, and therefore perfect with respect to its inner face, is remote from constituting even the basis of a complete wall, so far as the keraphyllæ are concerned. Until the growth from the cushion has covered it, or pushed it downwards before it, this horny matter is only a provisional protection, which no doubt acquires a certain degree of thickness, and shows the keraphyllæ much as they are in ordinary circumstances, but is otherwise notably different.

It is formed in horizontal strata instead of vertical fibres, as in the normal wall; it reaches only a limited thickness, and is dry, brittle, and readily removed in scales, no matter what length of time may have elapsed.

Such appears to be the result when, from some cause or other, the podophyllæ are suddenly deprived of their ordinary covering, and they are, as it were, placed at a disadvantage and under pathological conditions, during which, for their own preservation, they assume an inordinate activity. This is well illustrated in the following experiment:—Excise a portion of the wall from bottom to top, and divide the coronary cushion from the vascular laminæ by making a transverse incision in the direction of the coronary zone; into this incision insert a band of lead, so as to mechanically separate the two, and thus prevent their corneous exudation from becoming fused in one mass. In the course of time a double wall will be formed, the cushion throwing out a thick mass that grows downward, above another mass developed from the laminæ, both of which remain independent of each other. In this way we produce artificially what is a somewhat frequent result of disease, and which is vulgarly known among farriers and grooms as “seedy hoof.”

But in these experiments, and in these abnormal conditions, do we really discover the function of the podophyllæ during health? and can we satisfy ourselves that they in reality form any portion of the wall or the horny laminæ with which they are so intimately and firmly interdigitated? I think not; for careful microscopical investigation, and the most attentive anatomical and physiological study, go far to demonstrate that these circumstances are exceptional, and give rise to a corresponding exceptional energy in the formative powers of these vascular leaves for their own protection; and also that their share in the production of the wall may be said to be nil, while the part they take in the constitution of the horny laminæ is a comparatively unimportant one.

When a portion of the wall is cut away as deep as the vascular laminæ, but without denuding these, and leaving the horny laminæ attached to them, we do not find a new wall reconstituted from this surface, or the slightest addition made to the thin pellicle of horn remaining. And if in an ordinary hoof we measure the thickness of the wall at the commencement of the keraphyllæ and at their lower ends no difference will be found in it; whereas if an addition to its substance was being constantly made by the vascular laminæ, we should have it gradually increasing in volume from its upper to its lower border, at the same time the

direction and relative disposition of the fibres would be materially altered; these, however, as we have seen, pass in exactly the same line and maintain the same distance from each other from top to bottom. The microscope does not reveal any accretion on the inner aspect of the wall.

Neither does the microscope or polarized light attest that there is any distinction between the mass of the wall and the leaves on its inner face; but that, on the contrary, they are merely continuations of that mass, and pass from between the inner strata of fibres; that they are constituted, in fact, by the interfibrous cells arranged in a particular manner, and projected beyond the level of the wall, and that this arrangement can be traced for some distance into its substance. There is not the faintest indication that these keraphyllæ have been added to it after it has left the generating surface of the coronary cushion and the commencement of the vascular laminae.

The question then arises as to how the keraphyllæ are formed, and what parts are chiefly concerned in their formation. I think there can be no doubt whatever as to their being generated at the lower margin of the coronary cushion, at the part we have designated the coronary or white zone, and at the junction of this with the vascular laminae. We have remarked that in this situation the villi are so disposed as to leave narrow spaces between them, and that these spaces correspond to the more or less regular linear imprints in the cutigeral cavity which are continuous with the horny laminae; this feature alone would almost suffice to prove that these leaves commence to be formed at the coronary zone, and that they are part and parcel of the wall itself,—not a subsequent formation proceeding from the podophyllæ and merely attached to it by simple agglutination, as has been imagined. The horn-cells or epidermic material intended for the constitution of the laminae is formed on the surface of the coronary zone and between the vascular laminae at their origin, the latter serving as a mould, so to speak, in which this horn material receives its characteristic foliate shape.

As a proof that under ordinary physiological conditions the vascular leaves do not secrete the horny ones, we may point to the fact that soon after their commencement there is no material difference in the width or thickness of the latter until their termination. This would not be the case did the podophyllæ continue to throw out additional material throughout their length, for the constant accretion would notably affect the dimensions of the horn-leaves from above

to below, and instead of their remaining invariably the same we should have them more or less increased in breadth and thickness, and far from offering that regularity and parallellism which is so striking in a freshly separated hoof. Did the living leaves, indeed, pour out a corneous matter over the whole of their surface, and add this matter to the leaves on the inner face of the wall, we should have a deformed hoof, such as we are familiar with in serious cases of chronic laminitis, or one of a very different shape and character to the hoof we would select as a healthy and perfect specimen.

In a normal state, then, the horny laminæ are not formed by those springing from the *os pedis*, but are the joint production of the coronary zone and the keratogenous membrane covering the commencement of the latter; from this circumstance it is that the fibres of the crust and the leaves on its inner face constitute one continuous mass, which cannot by any process or means known to me be shown to offer any agglutination or simple apposition of texture, such as can be proved to exist between the sole and wall, periople and wall, or frog and sole.

Under ordinary conditions, therefore, the podophyllæ contribute but little towards the formation of the horn plates with which they interdigitate, and that only at their commencement, where they combine with the coronary cushion to complete the keratogenesis and lamellar configuration of the inner face of the wall. But, it may be asked, what are the ordinary functions of these highly organised podophyllæ, if they are not intended to secrete the laminæ of the wall? Surely their great vascularity was given them for some important end, and if not for the production of the hoof, what then? The uses of the laminæ are most important. At their origin, as we have just said, they aid in giving shape and material to the inner face of the crust; they likewise secrete over their entire surface a certain, though limited, quantity of horny matter in the shape of pulpy epidermic cells which lie between their enveloping membrane and the horny laminæ. These pulpy cells not only protect this highly sensitive living surface by interposing themselves as a kind of cushion between it and the dense wall, but they likewise maintain the horny laminæ and the wall itself to a certain depth moist and elastic long after these have left the coronary cushion, until, in fact, they have extended beyond the sole. The vascular laminæ also, in addition to the functions enumerated, not only aid in attaching the hoof in the most intimate manner to the pedal bone, but by their peculiar

arrangement into parallel ridges and furrows they, through this adherence, compel the fibres of the wall, and therefore the mass of the wall itself, to follow invariably in the direction of these ridges and furrows during growth. As the wall and its laminae are incessantly growing from the coronary cushion downwards, and as the vascular laminae are fixtures, and do not extend beyond the lower border of the os pedis, it follows that the inner face of the wall must glide along the latter in its course from above to below, and that this movement could not take place were the vascular and horny laminae indissolubly united, instead of being connected merely by the soft unctuous horn-cells interposed between their interdigitations, and which act as a lubricant in this downward movement of the wall.

These cells interposed between the horny and vascular leaves are in every respect analogous to the mucous or Malpighian layer of cells beneath the human nail, which also lies upon and passes over ridges that might aptly be compared to the laminae of the horse's foot.

*(To be continued.)*

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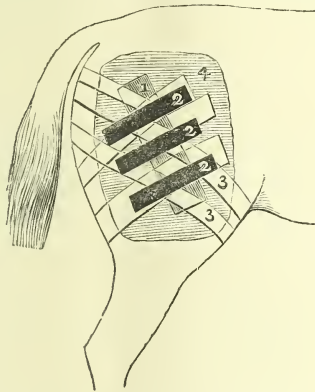
## UNION OF A FRACTURED FEMUR IN A COLT.

By J. W. HILL, M.R.C.V.S., Wolverhampton.

ON October 19th, 1870, I was requested to attend at the residence of Edward Emery, Esq., Abbots Bromley, to examine a nearly thoroughbred colt, four months old, which I was informed by the messenger had either dislocated or fractured its thigh. Upon my arrival I found the case to be one of oblique fracture of the femur, a little below its centre. The accident occurred as follows:—The colt was at pasture with his dam, and Mr. Emery, in company with a man servant, went to fetch him up for the purpose of weaning him. To accomplish this object they haltered the young animal, and, as a natural consequence, he being unaccustomed to such a mode of restraint, reared and fell backwards, fracturing the bone in the fall. Possibly there was no separation at first, as after getting up the colt limped home, a distance of a mile. At the time, however, I examined the parts, a distinct separation between the fractured ends of the bone could be plainly felt.

More to oblige the owner than from any hope of success, I set the fractured limb in the best way I could; but from the

situation of the injury—the bone being so surrounded with muscle—and the restlessness of the patient, it was no easy matter, nor was the operation likely to give much satisfaction. My procedure was as follows:—After applying fomentations of hot water and vinegar to the parts for a considerable time, I made a broad splint and placed it in the direction of the bone (see fig. No. 1), keeping it in its situation by smearing it with pitch; across this splint I placed pieces of stout pasteboard (2), and connected them to each other in the same manner; and over these I put long strips of sheepskin, also smeared with pitch. The latter were passed from the outside of the limb, round the inner part of the thigh, close up to the perineum, and then back again to the outside (3). Over the whole broad pieces of linen, saturated with starch, were placed (4).



The animal was supported in an erect position during the process, but almost immediately afterwards he got down (upon the opposite side) from sheer exhaustion. Luckily he laid quiet sufficiently long to allow the materials to get pretty well set. In this position he remained for six weeks, only occasionally drawing himself about the box with his fore legs. He partook freely of the food which was offered him, which at the onset consisted chiefly of milk and gruel. After the period named he was turned over regularly every day for three weeks, and the sores which had been caused by lying so long properly dressed. He was subsequently got up with assistance, and continued to stand with little difficulty. When I saw him in the following February, the splints, &c., had come off, and he could walk, almost sound, for a short distance. Upon examination, however, I found that a perfect union of the fractured bone had not yet taken place; the extremities were still movable, and made

a crackling noise similar to luxation of a joint when manipulated. I now applied an ordinary charge over the part, where it remained for nearly two months, only coming off with this changing of his coat. I again saw him at the end of that time and found that he could walk perfectly sound, but limped in trotting. A month afterwards he could go through all his paces sound, but when turning short in his gallop in the meadow it appeared to hurt him. This defect has since passed away, and beyond an ossification around the fractured part there is nothing to be detected.

I had the pleasure to receive a letter from the owner yesterday, August 11th, saying that the colt "is all right, and gallops like a steeple chaser." I have no doubt that his extreme youth had much to do with the success of the treatment, though under the most advantageous circumstances cases of this kind are far from satisfactory ones to deal with.

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### ACONITE *versus* HYDROCYANIC ACID AS REMEDIES IN TETANUS.

By ANDREW SIMPSON, M.R.C.V.S., Kendal.

THIS heading seems more appropriate than any other, as indicating the view which Mr. J. W. Hill seems to take of my record of a few cases of tetanus published in the June number of the *Veterinarian*, viz. that it was for the purpose of throwing discredit on aconite, by extolling the curative potency of hydrocyanic acid, that I troubled your readers with that paper. I now beg to correct this impression (if Mr. Hill still holds it), by referring him to the concluding remarks in that communication, in which he will find I lay more stress upon other things in the management of the tetanic patient than the medicinal agent employed, whether that be hydrocyanic acid, aconite, or anything else which I may be giving a trial to.

I may also be allowed to remind Mr. Hill that his experience (as he informs us), being confined to a solitary case, is not of that value which it would be could he give us the result of the treatment of a dozen.

Fleming's tincture of aconite (I never use any other) was at one time a favourite agent of mine, and was used mostly in every case where such an agent was supposed to be indicated—from a drop of it on cotton wool to the aching tooth of an attendant, to a drachm of it to a poor horse suffering from enteritis. In no case, however, have I observed the

marked effect spoken to by Mr. Hill in the last-named malady, when, as he says, he has repeatedly seen 10 minims reduce the pulse from 100 to 70, "in less than five minutes." "This surely is something more than frothy saliva," says he; undoubtedly it is, say I; and I would add, why not in a little time give another 10 minims? If followed with the same result, the case would stand recorded thus:

Attended case of enteritis in a valuable horse; found animal standing, but shivering and gasping; bathed in perspiration; ears, extremities, &c., cold; breathing laboured, pulse 100, and very indistinct. 1 a.m. Gave Fleming's tinct. aconite  $\text{m}\times$  in cold water. 1.4 a.m. Marked effect on breathing and general state of the patient; pulse 70. Repeat the medicine as before. 1.10 a.m. Continued improvement, pulse now 40, and all anxiety as to the ultimate recovery of the patient over.

I at once confess I have had no such experience, for when I am unfortunate enough to meet with such a disease, aconite, prussic acid, morphia, subcutaneous injection, counter-irritants, hot fomentations, enemas, &c., have too frequently failed, and the result has been death.

The reason that I made mention of Mr. J. W. Hill's name in my last communication arose from my reading his very interesting and well-conducted case. It was that which suggested the probable usefulness of my troubling you by my views respecting tetanus, as founded on personal observation. I have not the slightest doubt but that any case which may be entrusted to Mr. Hill will meet with his best attention, and that nothing serious will happen by his being unduly wedded to any single remedy after it ceases to answer his purpose, whatever the name of that agent may be.

I may now be allowed to say a word or two in reference to the communication of Mr. A. E. Macgillivray on the same subject, in which both myself and my paper are pretty freely handled, and I am sorry that, as I look at it, in not the best spirit possible.

Mr. Macgillivray commences by expressing surprise at the success of my treatment of tetanus, and remarks that this surprise is not confined to him, but must strike many of his professional brethren, seeing that "he has always found and always seen its treatment to be extremely difficult and most unsatisfactory," and that during his college and student practice, added to by six years in his present situation, he "has only managed to bring through three cases."

Mr. Macgillivray does not inform us what system of treatment he adopted and had seen used by others before he was

led to admire and follow Mr. Hill's "very rational system." If he had done so, his previous failures might surprise the readers of the *Veterinarian* less than the comparative success attending the plan recorded in my paper.

I do not think the supplementary addition on Mr. Macgillivray's own account, viz. the six weeks in slings, and the fortnight's course of arsenic, was any improvement, or in any way necessary. For the first fortnight the mare ("a handsome four-year-old," presumably in good condition) always partook greedily of oatmeal and bran; at the end of which time "eating and drinking were soon performed with comparative ease." On what, then, could the "extreme weakness" depend? If the mare could partake greedily out of the hand, why not out of the manger?

It is only thus, by the by, that we get a glimpse of Mr. Macgillivray and his friends' original system of treatment, and are better able to understand his having only been able to bring through three cases.

Mr. Macgillivray's ideas of the distinctive characters of *traumatic* and *idiopathic* disease are somewhat hazy as expressed in the concluding part of his paper; and I cannot characterise them as "plausible and self satisfactory," whatever that is, as he is pleased to do mine.

I stated my ideas in a few plain words, and I see no occasion to add to or take anything from the views there expressed, although, as Mr. Macgillivray says, "medical experience and records prove the reverse, and with good reason," I may add.

Mr. Macgillivray gives as an instance of a cause of *idiopathic* tetanus easily combated "the presence of intestinal worms." I contend that where the indication of the disease can be clearly traced to the irritation caused by such parasites, it is as truly traumatic as if depending on the irritation caused by an open joint.

I will conclude by repeating what I said in my last paper, that the practitioner who thinks it absolutely necessary to combat each symptom as it presents itself in this disease, such as when the ears or legs are cold, by giving stimulants, when the back, by applying sheep skins and triple rugs, and when any of the evacuations don't quite suit him, applying the appropriate remedy, or when he imagines extreme weakness to exist though the animal is feeding greedily, he erects slings, and prescribes arsenic, &c., will not be wrong in considering its treatment extremely difficult and most unsatisfactory.

[We should have much preferred to have seen Mr. Simpson writing in a less censorious spirit. Discussion on medical

subjects ought never to be thus tarnished. We cannot allow our pages to be used for mere invective; but of this we have no fear from the gentlemen who are open to reply to Mr. Simpson.]

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## THE PRINCIPLES OF BOTANY.

By Professor JAMES BUCKMAN, F.G.S., F.L.S., &c. &c.

(Continued from p. 545.)

THE plants now to be noticed form one of the most curious, varied, and interesting assemblages that the botanist has to investigate. The ORCHIDALES, of which the orchids are the centre, is an alliance full of interest in every point of view. In themselves the orchids form a most natural group. They are pre-eminently varied in almost every particular; and, as stated by Professor Lindley, "At this point there is an abrupt break in the series of direct affinity. No gradual change can be traced from other natural orders, to that of the orchidal alliance, which is distinguished by the embryo not only having no albumen, but being a solid homogeneous body, equally destitute of any visible radicle or cotyledon." Their grand characteristic is that, according to the Linnæan system, they are gynandrous, that is, the male and female organs are joined in one column. The seeds, again, are enveloped in a sort of case called an aril. The flowers are mostly irregular, often assuming highly curious forms, so as to be said to personate insects and other creatures.

The alliance possesses three natural orders, as follows :

### ORCHIDALES.

*Burmanniaceæ*—Flowers regular, stamens free.

*Orchidaceæ*.—Flowers irregular, gynandrous.

*Apostasiaceæ*—Flowers regular, half gynandrous.

In these, then, we have two small natural orders, as it were, approaching to and receding from the central one, which contains a very long list of genera, and to which our attention will now be more particularly confined.

The orchids are tolerably well known through our native species; but of late years they have attracted especial attention from the curious and showy characters of different culti-

vated forms, which are not only interesting from their form, size, and colouring, but many of them have a most bewitching fragrance. Irregular as the flowers of orchids are, they are yet composed of a calyx of three parts, or *sepals*, and a corolla of a like number of *petals*; but the variations in these parts, and especially in the lower or lip of the corolla, are ever startling one with some unexpected surprise; thus, as says Professor Lindley, "Orchids are remarkable for the unusual figure of their irregular flowers, which sometimes represent an insect, sometimes a helmet with the visor up, and are so various in form that there is scarcely a common reptile or insect to which some of them have not been likened."

Whether these out-of-the-way forms of flowers have contributed to enhance any superstitious feeling with regard to orchids it would be difficult to say; but certain it is that, small as is the list of our native species, yet many of them are popularly viewed with a feeling almost amounting to fear. Thus, every country child attracted by the showy "long purple," *Orchis mascula*, is sure to pluck it, and yet whoever saw it forming part of a cottage nosegay! The primrose and cowslip are treasured in the cottage window, or find a place on the table, but the orchis seldom comes nearer the dwelling than the last stile before reaching it. Our rustics teach their children that orchises are "bloody man's fingers," doubtless taking the notion from the white palmate roots of some of the species, so like dead and withered fingers that both themselves and children are afraid to have them in the house.

The long purple *Orchis mascula* is also called dead men's fingers in the midland counties of Gloucester and Warwick, a circumstance alluded to by Shakespeare in the following strain:

"Therewith fantastic garlands did she make,  
Of crow-flowers, nettles, daisies, and *long purples*,  
That liberal shepherds give a grosser name,  
But our cold maids do *dead men's fingers* call them;  
Then on the pendent boughs her coronet weeds  
Clambering to hang, an envious sliver broke,  
When down her weedy trophies, and herself,  
Fell in the weeping brook."

Full of interest as are the orchids to the cultivator and the student of vegetable physiology, varied as they are in obvious properties, it is yet curious that none of their species find a place in the 'Pharmacopœia,' and even Pereira, in his most comprehensive 'Materia Medica,' only mentions two products

derived from orchids; these are salep and vanilla, to which we must now briefly refer.

Several of our English species are remarkable, as also are many foreign ones, for the possession of two tubers to the roots, something like those of the *Arum maculatum*. These tubers form the substance known as salep, the origin of which is thus described by Dr. Syme:—"The early purple orchis is, perhaps, the best known of all the British orchids. Its tubers abound in a starch-like matter, called by chemists *bassorin*, which is likewise found in the roots of *Orchis morio*. This substance, which is a kind of starch, is contained in the tubers of various species of orchis, which are prepared in Turkey and Persia, and exported as an article of food under the name of 'saloop' or 'salep.' At one time salep was a favorite beverage in England, as procured from the native species of orchis, but has fallen into disuse. The mode of preparation is to dig up the new roots at the end of the summer, when the seed is fully formed, the bulbs being then in perfection; they are then scalded in water, and dried in an oven until they acquire a horny consistence, the outer skin being first rubbed off. When used as food this horny substance is simply boiled in water to the required consistency. Salep appears to form a very healthful article of diet, and has been frequently recommended in delicate conditions of health. It is said that a small quantity of salep added to milk has been found to retard the commencement of acetous fermentation in that fluid, and that a moderate proportion of it added to wheaten flour is a useful and economical addition for making bread. A very small quantity of salep is sufficient to support life, an ounce a day having been known to sustain a man for nearly a week."\*

Dr. Pereira says that "salep possesses the dietetical properties of the starchy mucilaginous substances. Its medical properties are those of an emollient and demulcent.

"It was formerly in repute as an aphrodisiac and restorative, and as a preventive of miscarriage, but has no claim to these powers. The notion of its aphrodisiac properties seems to have been founded on the doctrine of signatures.

"Indigenous salep was recommended by Dr. Thos. Percival as a wholesome article of food, and in a medicinal point of view as a restorative, emollient, and demulcent."†

Doubtless the signature here spoken of may be found in the two tubers, and hence also the term *O. mascula*, or male

\* Sowerby's 'English Botany,' new edition, vol. ix.

† Pereira's 'Materia Medica,' vol. ii, p. 264.

orchis, as applied to our more common and prominent native species.

Medicinal qualities have, from time to time, been ascribed to various species, but orchids have ever had but a slender hold upon the profession, and it must be confessed that, after all, the confectioner seems to get the best of the family—*Vanilla planifolia*, and others—from which is obtained the article known as “vanilla,” said by Prof. Lindley to be “one of the most delightful aromatics known; it is used in the manufacture of chocolate, of liqueurs, and of various articles of confectionery.”

We have, then, in the plants of this order a most interesting series, in as far as structure is concerned; but numerous as are its species, they are scarcely sufficiently potent or nauseous to obtain for them any great medicinal repute.

(*To be continued.*)

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## AMPUTATION OF THE UTERUS OF A EWE.

By H. BARNES, M.R.C.V.S., Malpas.

HAVING seen but very few cases of amputation of the uterus recorded in your valuable journal, I am induced to send you the particulars of one which came under my care a few months ago.

Late in the evening of the 15th of April last I was requested to visit a ewe, the property of Mr. Brown, Old Hall, Malpas. I ascertained from the messenger that the ewe had everted the uterus, and that the owner not being at home at the time, his man had thought it advisable to send for a butcher and have the ewe slaughtered; but, on examination, he—the butcher—found that the carcase would not be fit for human food, and, consequently, the animal was spared. On my arrival at the field, situated about a mile from the house, I found the poor animal with the remainder of the flock, and it was not without some difficulty that we succeeded in catching her.

Upon inquiry I was informed that she had yeaned some five or six hours, and that the prolapsus had existed for at least four hours previously to my visit. I at once ordered her removal to the house, and after well cleansing and carefully examining the uterus, I found that it was very much torn, and also swollen from congestion to such an

extent, that it was impossible to effect its return into the pelvic cavity. This state of things at once determined me to amputate the organ by placing a ligature tightly around its neck, and then detaching it with a sharp bistoury. As a further security against hæmorrhage, I applied ligatures to the arteries, and also stitched up the vulva to prevent a protrusion of the still remaining parts. By the time all was finished the poor creature was in a sinking condition. I therefore administered some whisky and water as a stimulant, which had the desired effect of producing a reaction. I then left her for the night.

Subsequently to this I attended her daily, and administered at intervals for two days a few drops of Tinct. Aconite as a sedative. The general state of the secretions was carefully attended to. Under this treatment she gradually improved, and in little more than a week after the operation I had the pleasure of reporting her convalescent.

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## REMARKS ON THE LATE TRIAL, CHURCHILL *v.* DAY.

By THOMAS WALLEY, M.R.C.V.S., Manchester.

THE vexatious trial recorded in your last impression, in which Mr. J. F. Day was the defendant, opens up anew a question fraught with annoyance and one not of much profit to the veterinary practitioner.

The examination of horses as to soundness is ever a thankless office, and often the means of giving offence (innocently) to unreasonable clients; especially is this the case in country districts, where, if the animal be rejected, either the buyer or the seller will take umbrage at the veterinary surgeon, and for ten shillings and sixpence, he loses, it may be, £10 or £12 per year.

The first question I would ask is this:

1st. Is the fee of 10s. 6d. usually charged a sufficient remuneration for such a responsible duty? And to it I answer, no! for it would seem that if a veterinary surgeon unwittingly overlooks any point of unsoundness which another by accident or otherwise detects, he is liable to be mulcted in heavy damages, not only pecuniarily but professionally.

2ndly. Should not the fee for examination be regulated by the value of the horse? Surveyors, valuers, and others, who

examine and report upon property, goods, &c., charge a percentage on the real or assumed value; if we did this we should be protected somewhat against the increased responsibility.

3rdly. Would it not be always best in giving a certificate to introduce some such clause—"to the best of my judgment the animal is sound or unsound," thus doing away with the responsibility?

4thly. Is it wise for a veterinary surgeon to volunteer an opinion as to the value of a horse when examining him as to soundness? and

5thly. If he is requested to give an opinion as to value, capabilities, &c., is he not entitled to a larger fee?

These are all questions which present themselves to the mind; and I am of opinion that they should be thoroughly sifted, and some definite conclusion arrived at, before the matter is allowed to remain *in statu quo*. It is by no means unfrequent for the veterinary surgeon to be blamed for not telling his client that the animal was a kicker or rearer, or something else of a like nature, which it is perfectly impossible for him to have known. I have also known instances in which it has been attempted to hold him responsible for defects which originated perhaps two or three months after purchase, and in one or two cases as the result of a severe illness, of the occurrence of which the most far-seeing prophet could not have foretold.

Seeing that such things happen, I reiterate, we are not sufficiently remunerated for our trouble, and further than this the fault lies with ourselves.

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## CASE OF PAROTITIS.

By "MAUVAISE HUMEUR."

GENTLEMEN,—Not having seen a case of the following description in print, I have thought that it might be of some professional importance to communicate it through the medium of your journal (the *Veterinarian*), to the members of the veterinary profession at large, and by so doing lay an additional stone to the building which will one day prove that the profession has attained that position in the social world it so deservedly merits.

## PAROTITIS.—CYNANCHE PAROTIDEA; THE MUMPS.

The subject of this affection was a horse about five years old, of a chestnut colour. He was but little affected constitutionally, that is to say, as far as his pulse and respiration went, but yet he was a little feverish. He had on the right side of his throat, immediately over the parotid gland, a large swelling measuring (at a guess) about seven inches by six; it was very hard, but possessed little or no sensibility beyond that ordinarily belonging to the parts. It was, in fact, so hard that at first I was disposed to think it was callous; but it was not, for towards the termination of its career, which lasted about three weeks, it got soft. It had come on "all of a sudden" during one night. Ultimately it disappeared, leaving but very little trace of where it had been. There was but a slight discharge from the nostrils, and what there was came chiefly from the opposite nostril, viz., the left one.

As the animal was not one of my own, I do not feel hardly justified in detailing the treatment which was had resort to. I may say, however, that the gentleman under whose care the animal was placed blistered the part, which had a very good effect. My own treatment would have been the use of a good strengthening diet, and the application of hot fomentations to the swelling. I should also have prescribed the following:

℞ Aloes Barb., ʒij;  
Hyd. Subchl., ℥j;  
Opii Pulv., ʒij.

*Ft. bolus.*

Trusting you will kindly find space in your valuable journal for the above,

I am yours, &c.

*To the Editors of the 'Veterinarian.'*

[Our readers will easily understand why we have complied with our correspondent's request to give a place to this communication. A little more experience in equine pathology would remove all the mystery which seems to have taken possession of his mind.—ED.]

## FIBROUS DEPOSIT IN THE UTERUS, ASSOCIATED WITH ASCITES, IN A CLUMBER BITCH.

By GEORGE WATERS, M.R.C.V.S., Cambridge.

THE following case, I think, will not be uninteresting to the readers of the *Veterinarian*. An aged bitch of the Clumber breed was sent to me one day last week for the purpose of making a *post-mortem* examination, to ascertain the cause of her death. I found the abdomen distended to an enormous size, and on puncturing it with the point of the scalpel a colourless fluid issued out, which I had the curiosity to collect and measure. Twelve pints came away, and with the quantity that escaped on the floor there could not have been much less than fourteen pints altogether. On enlarging the opening into the abdominal cavity, a tumour of considerable size immediately projected, which proved, on examination, to be the uterus, much enlarged by deposit of fibrous material; there were two cysts, about the size of a bantam's egg, on its outer surface, each of which contained a small quantity of clear fluid. The mass weighed about two pounds. With the exception of the peritoneum being of a dull leaden colour, owing to congestion, and which contrasted with the blanched appearance of the stomach and intestines, the remainder of the abdominal viscera were healthy. I may mention that the animal had been petted for some considerable time, and was fat. A slight swelling of the abdomen was first observed about twelve months ago, and had continued gradually to increase in size up to the time of her death, but never appeared to affect her general health until the day before she died, when her breathing became laboured.

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EXAMINATION OF URINE BY CHEMICAL TESTS.

By Jno. DICKSON, V.S., Dumfries.

1. <i>Sp. gr. above 1025.</i>	2. <i>To test-paper the urine is—</i>	3. <i>Concentrate</i>	4. <i>The urine is highly coloured.</i>
Add $\text{NO}_3$ to an equal bulk of KO HO, heat cold urine. Red precipitate of $\text{Cu}_2\text{O}$ . Crystals of nitrate of urea, in rhomboidal plates, deposit.	Neutral or feebly acid. Alkaline. Add a few drops of $\text{NO}_3$ or HCl precipitate. Precipitate insoluble	The urine + HCl. Cold; needle-shaped crystals.	Heat; dark coagulum; confirmed by microscope.
Urea.	Excess of earthy phosphates	Crystalline. Add $\text{NO}_3$ to crystals. Add + $\text{NH}_4\text{O}$ . Purple. Excess of uric acid.	+ $\text{NO}_3$ , Green colour, + violet, + pink, + yellow.
Sugar.	Albumen.	Albumen.	Excess of yellow colouring matter.
		Hippuric acid.	Biliary matter.
		Blood.	Red colouring matter or purpurine.

EXAMINATION OF URINARY DEPOSITS BY CHEMICAL TESTS.

1. <i>Heat the deposit contained in urine in a tube.</i>	2. <i>If the deposit be neither of the foregoing, it may be one of the following.</i>	
Sediment dissolves.	The deposit is red or brown. The fluid is coagulable.	The deposit when shaken with ether yields a solution on evaporation which leaves an oily residue.
Add CaO.	The deposit is greenish-yellow granules.	The deposit is soluble in $\text{NH}_3$ Sol. Hexagonal crystals.
HO, to deposit + $\text{NH}_3$ .	(1) A. Heat tube; sediment soluble.	
Urate of ammonia.	(2) HCl. Sediment soluble.	
	(3) + $\text{NO}_3$ + $\text{NH}_4\text{O}$ . Purple.	
	Pus.	Cystine.
	Mucus.	Blood.
	Nitrate of soda.	Fatty matter.
	Uric acid.	Chylous matter.
	Oxalate of lime.	

## Pathological Contributions.

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### CATTLE PLAGUE.

OUR information from France with regard to the cattle plague is more precise than it has been for some time past, nevertheless the events which have recently occurred in that country render it very difficult to obtain all the particulars we desire. Early in August we learned that the disease had re-appeared in the Arrondissements of Lille and Cambrai, and was also very prevalent in the Department of Ardennes. Since then, we have information of its existence in the Communes of Wahagries, Haubourdin, and Aubres, in the Arrondissement of Lille; at Rœulx, in the Arrondissement of Valenciennes; at Fampoux, Department of Pas de Calais; in several communes in the Arrondissement of Sedan; and also in the district around Albert, in Department of Somme, where it is making great ravages. Outbreaks have also occurred in the Arrondissement of Havre, among cattle brought from other districts.

The departments south of Loire are reported to be free of the disease, and consequently no restrictions now exist in them with reference to the movement of cattle. Fairs and markets have likewise been re-established in that portion of the department of Finisterre which lies north of the canal between Nantes and Brest, excepting in the Cantons of Landerneau, Ploudiry, and Pounéaur-Ménez, in which sufficient time has not elapsed since the last case to warrant the belief that the malady is completely exterminated.

Further from home the cattle plague, besides existing in Transylvania, Buckowina, and contiguous countries, has broken out in the extreme western parts of Galicia, the district around Cracow being especially infected.

The outbreak also of the disease in Lower Austria, to which we alluded in our August number, seems up to the present to have resisted the efforts made for its suppression, and, according to the latest intelligence, the disease has spread to other communes westward of Vienna. It is even reported to have established itself in the district around St. Pölton, a town nearly forty miles west of Vienna. Germany is, however, said to be free of the disease as yet, but restrictions are imposed against the entrance of Steppe, Podolian, and other grey cattle, as well as against hides and animal products in general. Cattle from France are likewise prohibited from entering Germany.

The news from Persia is most distressing. Famine and pestilence are abroad in the land, and both man and animals seem doomed to destruction; while cholera is destroying its hundreds, cattle plague is literally sweeping away its thousands. In many parts of the country nearly all the oxen and buffaloes have perished. The particulars of this state of things have reached us through the authorities at Constantinople. Dr. Castaldi, the Persian reporter, in alluding to the infectious nature of the disease, says a remarkable instance of this has just occurred: "The hides of the cattle that have died from the disease are preserved at various depôts along the Caspian shore in order to send them into Russia as soon as the prohibition against such traffic, arising from the existence of the malady, had ceased. No sooner was one of these depôts formed at Caratepe, where no sign of cattle plague had previously shown itself, than all the cattle there became affected and perished from it."

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### PLEURO-PNEUMONIA.

IN our last month's report it was stated that pleuro-pneumonia was less rife in the metropolis, and also upon the whole that the fresh outbreaks were fewer in number than they had been of late. Since then we find that the malady has increased to a serious extent in and around London, as well as in some of the English and Scotch counties. No less than forty-three counties in Great Britain are now infected, while the centres of the disease number two hundred and fifteen.

Town dairymen, especially in London, are doing their utmost to suppress information respecting the existence of the disease in their sheds, and many of them are getting rid of the diseased animals in a surreptitious manner. We would caution these persons against a continuance of this practice, for doubtless prosecutions will follow in every case in which proof can be established.

From Holland we learn that the disease has considerably decreased.

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### FOOT-AND-MOUTH DISEASE.

DURING the past month the foot-and-mouth disease has been on the increase in Ireland, particularly in the grazing and dairy districts; and as might be expected under these circumstances, many cattle have been found to be affected on being landed at Liverpool and other parts. Some of the

animals brought over with infected cattle, and sent onwards to the Metropolitan Market, have been exposed for sale in a diseased condition, and others have been detected in the market lairs. This has been a source of complaint among the consignees of foreign cattle, who consider that Irish cattle, when diseased, should be dealt with at the port of landing in the same manner as foreign. If all the animals were fat, and intended for immediate slaughter, there would be less difficulty in thus dealing with them; but it must be remembered that a large number of them are "stores," and to slaughter these at the port is something "like killing the goose which lays the golden egg." Our store cattle must be increased from every available source, so long as we are assured that they will not bring in cattle plague or pleuro-pneumonia. If this is not done there will be little hope of meat becoming cheaper, although feeding stuffs may fall in price in consequence of the superior hay, turnip, and root crops which we possess over those of last and some former years.

At home the disease exists in no less than fifty-nine counties, and is rapidly attaining the dimensions it acquired in 1870, when in the corresponding week to that in which we write, the entries numbered upwards of 2000. Several prosecutions for moving diseased cattle are pending, and in one which took place last week in Liverpool, an Irish dealer was fined £5 and costs for exposing diseased beasts in Stanley Market.

From the Continent we learn that the disease is less prevalent in Portugal, Spain, Italy, and Sicily. It has also abated in New York.

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### SHEEP-SCAB.

BOTH at home and abroad the scab of sheep seems to be much more rife than of late. In Great Britain the malady exists in eighteen counties, and very many large flocks are seriously affected. According to the official Gazettes of Stettin, Stralsund, and Köslin, in Pomerania; sheep-scab prevails in five districts in the Department of Stettin, and in two of Köslin.

It will be seen by reference to another part of our journal that, by an Order of Council of August 5th, the local authority can now make special regulations for the dressing or dipping of affected sheep, and also for the cleansing and disinfecting of places which they may have occupied. It is to be hoped that these means, rightly employed, will go far to keep in check this very serious disease.

## INFLUENZA AMONG HORSES IN NEW YORK.

WE learn that the outbreak of disease among the horses in New York and Brooklyn, to which we drew attention last month, has begun to decline, both in severity and in the number of animals attacked. The malady appears to be identical with the one which recently prevailed in the Metropolis, and to be chiefly confined to the horses of the railway and omnibus companies.

Unwholesome food and badly-ventilated stables are believed to have led to the spread of the disease to a very great extent, as in numerous large establishments, where these causes were not in existence, the animals remained unaffected. The deaths have been numerous, particularly in those cases in which depletives were too freely used, or where the treatment was confided to the care of uneducated practitioners. Where the opposites existed, the recoveries have been far more rapid, as well as numerous, than the severity of the attack would have led the owners of the animals to suppose.

## THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

“RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of July, 1871, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	NUMBER OF ANIMALS AFFECTED.					DISPOSAL.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered at place of landing.
Coruña	Plymouth	Foot-and-mouth	195	...	...	...	195	195
Lisbon	London	„	42	...	...	...	42	42
Oporto	Southampton	„	3	...	...	...	3	3
Vigo	London	„	15	...	...	...	15	15
Total . .			255	...	...	...	255	255

“ALEXANDER WILLIAMS,

Secretary.

“Privy Council Office,  
“Veterinary Department, 14th August, 1871.”

## Facts and Observations.

**APPOINTMENT OF A BOTANIST AND ENTOMOLOGIST TO THE ROYAL AGRICULTURAL SOCIETY.**—The Royal Agricultural Society has just appointed Mr. Carruthers, F.R.S., the Superintendent of the Botanical Department of the British Museum, "Consulting Botanist to the Society." It is also reported that the Society has in contemplation the appointment of an entomologist, whose duties will essentially consist in inquiring into the diseases of plants due to, or associated with, the development of insects.

These are important appointments, and calculated to lead to good results in practical farming.

**REMARKABLE MUSHROOMS, AND THE POTATO DISEASE.**—The somewhat unusually wet month of July unfortunately laid the foundation for the further spread of the potato disease, and it is much to be feared that very serious losses of this indispensable esculent will consequently follow, both in Great Britain and Ireland.

The same stormy month produced a remarkable growth of mushrooms, many of which attained a size very rarely seen. One of these fungi is said to have been gathered at Fenton-by-Newark, Lincolnshire, which measured fifty-four inches in circumference, and weighed no less than four and a half pounds. The *Chamber of Agriculture Journal* also reports that another was gathered on Mr. T. Percivall's farm at Duddington, which measured forty-six inches round, sixteen inches across, and weighed two and three quarter pounds.

**CATTLE POPULATION OF HOLLAND.**—Holland is said to comprise an area of at least 12,000 square miles, and to possess, according to recent agricultural returns, 1,400,000 cattle.—*Correspondent to the North British Agriculturist.*

**NUMBER OF LICENSED DOGS IN GREAT BRITAIN.**—We learn from official sources that during the first half of 1871 the number of licences issued for keeping dogs amounts in England to 951,501, and in Scotland to 119,671, making a total of 1,071,172. This number exceeds, but only very slightly, the licences for the year 1870.

**A NOVEL USE FOR ASPHALTE PAVEMENT.**—It appears that during the siege of Paris the asphalte pavement was

largely used, both for fuel and for the distillation of gas to fill balloons.—*Journal of the Society of Arts.*

**IODINE AND MILK.**—It is well known that milk takes up iodine, disguising its taste, smell and colour completely; and, as iodine is antiseptic, iodized milk keeps for some time. Dr. Hagar calls attention to this fact, and suggests that this, perhaps, is the mildest form of administering iodine. Its therapeutic effect seems to be equal only to about one fifth of the iodine.—*New York Druggists' Circular.*

**COAL.**—Mr. R. Hart, F.R.S., has published in the *Popular Science Review* a calculation, showing that one pound of pure coal yields, in combining with oxygen in combustion, theoretically, an energy equal to the power of lifting 10,808,000 lbs. one foot high. The quantity of heat necessary to raise a pound of water one degree will raise 772 lbs. one foot; a pound of coal burning should, therefore, yield 14,000 units of heat.

**BROMIDE OF POTASSIUM IN POISONING BY STRYCHNINE.**—Dr. Herbert contributes a paper on this subject to the *New York Medical Journal*. He gave the agent in a case of poisoning by strychnia as a *dernier ressort*, in doses of ninety grains or more, every half hour. Dr. Herbert says that “in twenty minutes after the administration of the first dose there was perceptible improvement, which continued. In two hours the patient could move his arms. The bromide was then given at the rate of one drachm every hour; but, the convulsions coming on again with greater severity, the remedy was given for one hour every fifteen minutes. At the end of that time the patient felt easier again, and the bromide was continued in smaller doses, at intervals of a half-hour to two hours, according to circumstances, during the day and following night. In thirty-six hours from the time that the bromide was first given the man was walking about, feeling a little weak, and having occasionally a slight twitch. Concerning this case there are several important points that it would be well to note:—1. The length of time that elapsed before the effect of the poison was manifest. 2. A very marked tolerance of opium. 3. Vomiting afforded great relief. 4. The antidotal power of bromide of potassium. The naked facts only are presented; my professional brethren, says the Dr., may draw their own inferences.”—*Popular Science Review.*

**THE EFFECT OF IODATE OF POTASSIUM ON ANIMALS.**—

In a recently published paper, read before the Royal Academy of Belgium, Dr. Meslen, the author, gave the record of some experiments upon dogs, to which this salt was given along with their food. He concludes from his experiments that iodate of potassium is a violent poison. The paper is, however, only a preliminary one, it being the author's intention to publish an exhaustive account of his experiments, and of the effects of this salt on the blood and internal organs of the animals experimented with.—*Ibid.*

CONTAGION BY VOLATILE VIRULENT MATTER.—The Academy of Sciences of Paris heard (July 10th, 1871) a paper of M. Chaveau, of Lyons, the eminent veterinarian, describing experiments which prove that the fluid evaporated from virulent matter fails to convey disease by inoculation, whilst the matter itself succeeds. M. Chauveau concludes that the contagious principles are not floating in the atmosphere in the shape of gas or vapour, but that they are always adherent to some solid matter which is taken up by the gastric mucous membrane. Contagion at a distance takes place in this manner. In the rinderpest, for instance, the conveyance of the disease is more frequent and more rapid in confined spaces than in the open air. One of the experiments is performed thus:—Virulent matter is poured into a capsule, which is placed on a piece of glass, and the whole covered with a transparent bell. Under the glass is a sand bath, which promotes gentle evaporation. To facilitate condensation, the bell is covered with cotton wool, on which ether is now and then dropped. Some fluid now fixes on the inner aspect of the bell, and is obtained by means of a pipette. The liquid is then inoculated, as also the actual virulent matter in the capsule. The effects with the latter are positive, and negative with the former.—*Lancet.*

SULPHOCARBOLATE OF ZINC IN OTORRHŒA.—At a recent congress of German surgeons in Prague, Dr. Zaufal said that he had used solution of the sulphocarbolate of zinc in fourteen cases of otorrhœa, with satisfactory results. The strength of the solution was one or two grains to the ounce.—*The British Medical Journal.*

## THE VETERINARIAN, SEPTEMBER 1, 1871.

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Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

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### VETERINARY SCIENCE AND VETERINARY SOCIETIES.

TAKING into consideration the numerical weakness of the veterinary profession, the numerous veterinary societies which are flourishing throughout the country have good reason to be proud of their strength. We have no statistics to guide us in our conclusions; but, even in their absence, we have no difficulty in deciding that a very large proportion of qualified veterinary surgeons are members of a society or association, the avowed object of which is the advance of veterinary science.

We do not propose to discuss the origin of these societies, because that point is of no importance to our present purpose; it is enough for us that they exist, that they are generally well supported, and exercise a benign influence upon the social welfare of the profession. The one important question which occurs to us in connection with veterinary associations is, as to the manner in which the real business is conducted. What has been done for the progress of science? The answer which the published records of the different societies furnishes, is not altogether satisfactory. A certain number of essays are read every year, on subjects which the daily routine of practice supplies in sufficient abundance. Various diseases, principally affecting the horse, and occasionally also those which attack other domesticated animals, are described by the essayists; opinions in reference to the causes, nature, and treatment of these maladies are advanced by the writers, and refuted or sanctioned, as the case may be, by the members who take part in the discussions, and it cannot be denied

that a certain amount of advantage arises out of this expression of opinion in the way of friendly controversy ; but there yet remains the unsatisfactory reflection that much more good might be gained with very little addition to the existing machinery.

Writing essays, and afterwards reading them in public, for the purpose of inducing a free discussion, is in more ways than one a good exercise, for the student ; it is indeed an essential part of his education, and it would probably, even on this account alone, be very difficult to overrate the value of the Veterinary Medical Association at the Royal Veterinary College ; but it does not follow that the system which has worked so well in a society of students should be slavishly copied by the members of an association of practitioners ; on the contrary, there is an urgent necessity for considerable modifications. The student, in the enthusiasm of a newly acquired knowledge, may harmlessly give his fancy play—he may, without compunction, enunciate what he terms an opinion, without even comprehending what the word implies. Should the propositions which go to make up his oratorical feat be all “ baseless as the fabric of a vision,” “ it may yet be well with him.” Not so, however, with the man of practice and observation ; his words are not presumed to be “ but breath ;” on him is thrown the onus of being always exact, and when he advances a new proposition it is fairly expected to be the result of quiet and close discrimination, as well as of stern and uncompromising analysis.

Every morbid specimen that is worth the notice of a society of scientific men is worth a critical examination. All that can be found out about it is worth saying or writing, and no one fact can be omitted without injury to the completeness of the investigation. Opinions are commonly of little scientific value ; but facts are too scarce, in our profession particularly, not to deserve the highest consideration. A moment’s reflection will show how much easier it is to get opinions than facts ; how many members of the profession, for example, hold an opinion respecting the nature of the common disease “ pleuro-pneumonia ” of cattle, and how few have

taken the pains to accumulate all the facts which belong to its history. Over and over again we have been able to obtain very useful information up to a certain point, and then all has become vague and undefined. A man of many years' experience in a district will speak in general terms of the progress of the disease, its comparative fatality and period of duration, but in reference to any dozen centres of infection, he cannot tell how many days intervened between the attacks, the development of the disease in animals of different ages, or the precise period when recovered animals have been allowed to associate with a healthy herd without communicating the infection. It may appear that these are points of inferior importance; which admitting without cavil, it nevertheless remains clear that they, with the many other points of higher importance, ought to be definitely known, and so recorded as to be easy of reference, by the veterinary surgeons in every district in the country.

Veterinary medical associations might, if they acted in concert with the central society, do an incalculable amount of work in the right direction without abandoning what is really rather recreation than work, the reading of papers for discussion. They might, for example, select certain diseases, as exudative pleuro-pneumonia, splenic apoplexy, and other forms of blood diseases, and investigate them exhaustively with the aid of their members living in districts where those affections are rife. The inquiry would have to be conducted upon a uniform system—each man must know his work and be prepared to do it thoroughly, and all expressions of opinion must be ruthlessly struck out of the reports, while all the facts relating to the natural history of the district, including geology, botany, and meteorology, must be carefully arranged and classified. Every fact connected with the origin, progress, symptoms, products, and termination of the diseases would, of course, be conscientiously recorded, and the natural result would be that in a few years we should possess a complete history of many affections which are now only spoken of, with hesitation, as obscure maladies.

We advance these criticisms in a friendly spirit ; indeed, having the welfare of the profession at heart, we could scarcely be suspected of writing in a hostile spirit, and we are convinced that the members of the various veterinary medical societies will accept our suggestions amicably, even if they elect to disregard the advice which they convey.

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#### THE VACANT CHAIRS AT THE EDINBURGH VETERINARY COLLEGE.

In the *Veterinarian* for July, we informed our readers that it had been decided that, for the future, vacant professorial chairs at the Edinburgh Veterinary School were only to be given to those candidates who had been successful at a competitive examination ; and also that certain gentlemen had been appointed examiners of the competitors for the chairs now to be occupied.

We have since then learned that a meeting of the board was held in July, when several candidates offered themselves and passed a very creditable examination—one gentleman in particular eliciting most favorable commendation.

At a subsequent meeting of the College Trustees, however, instead of the election of candidates who had proved themselves most competent being proceeded with, it was resolved that other candidates should be advertised for. A weekly contemporary for July 31st contains the following notice :

“ At a meeting of the magistrates and Council of Edinburgh, as trustees of the late Professor Dick, last week, it was decided to re-advertise for candidates to the vacant chairs of Anatomy and Cattle Pathology in the Edinburgh Veterinary Medical College, omitting, however, the proviso that they should undergo a preliminary examination on making their application.”

It would therefore appear that we were in error when we expressed our belief that the competitive arrangement had

been adopted, not only with a view to ensure the selection of fully qualified teachers, but as a guarantee that such selection should be made solely on meritorious grounds, and without any reference to party or personal feeling.

There is now no guarantee that personal feeling may not influence the selection of teachers. It may even be that gentlemen who do not belong to the veterinary profession will be appointed.

In the mean time it will be perceived that the Trustees have broken faith with the Committee of Management, and, most vexatious of all, with the unfortunate candidates, who have had their time, toil, and money, expended for worse than nothing. Seeing the fate of these and other gentlemen who have presented themselves for lectureships at this school, and seeing also the only guarantee for efficiency so quickly abolished, there can be but one opinion, we think, as to the wisdom of placing such powers as the appointment of scientific teachers in the hands of a Town Council, and but one piece of advice to be given to those members of the veterinary profession who aspire, through a belief in their own merits, to become professors under such a system—the advice which our ever witty contemporary, *Punch*, once tendered to those who were anxious to become Benedicts,—“Don’t!”

It may be mentioned that every candidate for a lectureship at the College of Surgeons in the same city, is compelled to undergo a test by experts, before he is licensed to teach. Surely what is deemed so essential in the medical profession cannot be less so in our own. No veterinary school can flourish, or do justice to veterinary science whose teachers are selected in this fashion; and the truth of this is evidenced most clearly in the case of every institution which has the misfortune to be placed under the *régime* of an unscientific electoral body.

## Extracts from British and Foreign Journals.

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### THE LOCAL ACTION OF PUS.

DR. S. SAMUEL, of Königsberg, gives the following as the results of his experiments on the local action of pus:—1. Putrid material introduced subcutaneously into the ears of rabbits, to the extent of from ten to fifteen drops, occasions a more or less rapidly developing putrefactive process to take place in them, accompanied by swelling, green discoloration of the part, and intense putrefactive odour. These effects not only constitute the most characteristic reaction of putrid matter, but they also serve to detect the existence of a putrefactive process when the matter possesses no odour and has no chemical reaction. 2. This local process of putrefaction, which for the most part extends in only a slight degree beyond the part originally affected, is the more distinctly circumscribed by a well-defined line the longer the time the local process has for its development. 3. For, coincidentally with the local putrefactive process septicæmia is developed, apparently by absorption of the injected material, which leads sooner or later, according to its intensity, to death. 4. The putrid material, when introduced in smaller quantities or in more diluted form, occasions the most varying degrees of inflammation, accompanied by more or less extensive suppuration, so that even the slightest prick is followed by a certain amount of suppuration. The forms of inflammation thus excited have nothing peculiar about them, and they may in their progress lose the putrefactive odour of the fluid to which they owe their origin. 5. The occurrence of characteristic symptoms of putrefaction goes hand in hand with the cessation of the local circulation. 6. Not all putrefactive materials produce within the same period of time the same quantity of putrid poison, and their consistence occasions variations in the rapidity of their action. 7. On comparing the effects produced by the subcutaneous injection of the various substances capable of being chemically separated in putrefying fluids with those of the pus itself, it was found that a saturated solution of leucin (1 to 27) was followed by very slight effects; carbonate of ammonia, formic, butyric, and baldricianic

acids, and sulphide of carbon, all acted in quite a different manner, causing coagulation of the blood, with and without secondary vesication of the parenchyma. Solution of sulphuretted hydrogen, containing 3 vol. H S to 1 vol. aq., caused a weak green discoloration in the first instance, then slow suppuration, and therefore also a different effect. On the other hand, the effects of sulphides of ammonium presented many points of analogy, a few drops of a solution of the yellow sulphide of ammonium, or of the bright red sulphide, producing very similar effects when subcutaneously injected to those of putrid fluids, except that the smell is peculiar. Integrity of the skin gives immunity to sulphide of ammonium as well as to putrid fluids. 8. The subcutaneous action of the products of inflammation varies in producing the most different disturbances of nutrition, from slight inflammation to strong suppuration, putrefaction, and mummification. But the contagious nature of non-specific pus can be no more established than the existence of a special inflammatory poison. Amongst the inflammatory products, however, very different chemical and physical agencies are operative which induce quite distinct effects. 9. The chemical nature of the products results from the nature of the part originally affected, the cause of the inflammation, the violence of the suppuration, &c. A collection of pus is an albuminous mass in the body in which an anomalous metamorphosis of tissue is taking place. 10. The tenacious mucus of the nose of a violent catarrh produces a thick, yellow, and dense sac; the thick pus of a mammary abscess produces a violent inflammation, leading to coagulation in twenty-four hours; the pus of a boil acts in the same way, whilst the pus *bonum et laudabile* of a bubo produces a persistent, strong, and firm infiltration of the ear. 11. The glycerophosphoric acid found in fresh pus gives rise in weak solutions to slight, in strong (1 to 9) to severe inflammation, not however running on to suppuration. Solution of common salt causes suppuration when injected of no greater strength than of 1 to 100.—*Lancet*.

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## CATTLE DISEASES IN INDIA.

REFERRING to the general state of Indian affairs, the *Pall Mall Gazette* says, "The agricultural department has commenced operations, but as it has made no sign yet, it may be assumed that the subjects which engage its attention are still in the region of discussion. It is probable it will have shortly to undertake charge of the whole opium department, which is now managed by the Bengal Government, but which has outgrown the limits of that province. It will also have to take up a question in which Lord Mayo is known to have a strong interest—namely, the proper mode of dealing with those epidemics among cattle which are so much more formidable in many parts of India than is at all generally known. The facts brought out by the Cattle Plague Commission assembled last year show how terrible the loss of horned cattle has been in some of the districts of Bengal, and this means something more than dear beef; it means fields unploughed and unirrigated, crops uncarried and markets unsupplied. There is no reason to suppose that rinderpest could not be as thoroughly stamped out in India as in England; for though religious prejudices would prevent the killing of infected cattle, there would be nothing to prevent their being swept within certain limits to be rigorously maintained so long as circumstances might require it. But a first step towards the reduction of these epidemics is the diffusion of some veterinary knowledge among the 'beast-leeches' of the country. Here and there, in the lines of the native cavalry or in the stalls of some rich native, you will find a salutri, or native 'vet.' with an almost intuitive insight into certain horse diseases; but even his knowledge is empirical and very limited, while as a general rule the ignorance of those who affect to treat horses or cattle is absolutely complete. A scheme is, I am told, under consideration in the agricultural department for establishing a veterinary college here for the instruction of natives in the art, much in the same way as the medical profession has been popularised among them. The idea is a good one; after a very short time there would be no sort of difficulty in getting any number of students, and as the institution is one which would commend itself thoroughly to the natives of all ranks, whether Hindoo or Mohammedan, as all would have a direct interest in it, it would soon become self-supporting."

## CATTLE DISEASE IN GLASGOW.

The *Glasgow Herald* of Monday, August 21st, states: "We are sorry to have to report that the foot-and-mouth disease continues to spread. Last week upwards of 100 animals were seized by Professor M'Call and his assistant inspectors. Cattle were not allowed to leave the market until they had been inspected and certified as sound, but, notwithstanding these precautionary measures, several outbreaks have taken place among the animals removed under license to the fields in and around the city. The steamers and railways are now under inspection, and, as far as we can learn, this course has not been taken a day too soon. Animals affected with foot-and-mouth disease are not allowed to move except under license to the nearest slaughter-house, and their carcasses in every case are subjected to an examination before removal. The disease principally affects the mucous membrane of the mouth, stomach, and intestines, and the delicate and finer portion of the skin betwixt and around the hoofs, and in the udder in cows giving milk. In fully-developed cases, portions of the covering of the tongue fall off, leaving the organ highly inflamed and intensely sensitive and painful. Ulcers are also found in the intestinal mucous membrane, associated with diarrhœa. The symptoms are characteristic, viz. dribbling of saliva from the mouth, smacking the lips, blood-shot and watery eyes, lameness, arching of the back, and disinclination to move. In every case of foot-and-mouth, the feet, tongue, stomach, and intestines at least are condemned as unfit for human food, and to this loss a fee for inspection of the carcase has to be added, so that the total loss to the butcher cannot be stated at less than 10s. on each affected animal. This may appear to some a very insignificant sum, but to the butchers of Glasgow, judging from the complaints which are made, it is more than they can well bear. It is but justice to the trade, however, to state that they do not so much object to the condemnation of the parts affected as to the fee for inspection; and although the Police Act doubtless sanctions the levying of the fee, it is thought by some that the sooner the Police Board discontinue to make this charge the better.

"During the prevalence of rinderpest, the Local Authority under the Contagious Diseases (Animals) Act and the Police Board jointly paid the inspector a fixed salary, and the fee formerly charged the butcher was discontinued. The arrangement was cancelled shortly after rinderpest was

stamped out, but why it is not obvious, for during the twelve months it continued in operation, in consequence of all carcasses being inspected, a marked improvement was discernible in the quality of the butcher meat exhibited in the shops, and the quantity of unsound meat seized and condemned as unfit for human food was greatly in excess of that confiscated during a like period before or since.

“ Pleuro-pneumonia at present exists in five byres within the police bounds, and the first outbreak of foot-and-mouth in the dairies was reported on Friday last, so that, unless active steps are taken, we may look for its extension among the city byres. We regret also to learn that an outbreak of foot-and-mouth has been reported in a flock of sheep depasturing in a field beyond the police bounds. Persons having among their stock contagious pleuro-pneumonia, foot-and-mouth disease, scab, glanders, or any other contagious affection, are required, without delay, to report to the police or the inspector, and are not at liberty to remove their animals without a license. On Thursday, a dairy-keeper at the West End was convicted before the sheriff and fined for concealing the existence of pleuro-pneumonia in her cows. We understand that the Local Authority are determined to enforce the provisions of the Act in every case.”

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#### THE CAMPHOR TREE.

The Camphor Tree (*Dryobalanops camphora*) is, according to *Nature*, one of the most interesting and important trees of Sumatra. This camphor attracted the attention of the earliest voyagers, and was then, as it is now, an important article of commerce with China and Japan, the people of those countries attributing to it extraordinary virtues, and paying a high price for it. The tree grows to a height of 100 or 130 feet, and forms a trunk 7 to 10 feet in diameter. The quantity of camphor contained in the trunks is very unequal; the young trees appear to contain little or none. It is said that, on an average, about nine trees are required to produce 100 lb. weight of crystallised camphor. It is obtained by cutting down the tree and dividing the wood into small pieces, in the divisions of which the camphor is found. It differs in the form of its crystals from the camphor of commerce—is harder, more brittle, and does not so readily condense. Great quantities are used by the Bataks for the preservation of the corpses of their chiefs. The trees are spread over a portion only of

Sumatra and Borneo, and generally occur in localities into which commerce and civilisation have as yet but little penetrated. Notwithstanding the continued destruction of the trees, for the sake of procuring the camphor, no means are taken for the future preservation of the species. This camphor is seldom seen in this country, except in museums. The Chinese eagerly buy it in preference to the ordinary camphor—their own produce—which they send in such large quantities into the European markets.—*Society of Arts.*

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#### PROPAGATION OF SOUND.

PROFESSOR TYNDALL, in his first lecture on “Sound,” recently delivered, began by ascribing all our sensations to a kind of motion conveyed by the nerves to the brain; thus, the effect of an explosion upon the ear is propagated through it as a wave or pulse which strikes on the drum of the ear, causing it to shiver; its tremors are transmitted to the auditory nerve, and hence to the brain, giving the sensation of sound. Illustrations were then given of the propagation of sound in waves, analogous to those of water; and a sonorous wave was described as consisting of two parts, in one of which the air was condensed, and in the other rarified, the rate of propagation depending upon the elasticity of the medium. It was shown, by means of an air-pump, that sound cannot pass through a vacuum, and that it becomes very indistinct in an attenuated gas like hydrogen. The distant effects of great explosions, such as those of gunpowder-mills, were referred to in illustration of the enormous increase of the elasticity produced by the violent evolution of heated gas; and the formation and propagation of the waves of sound were strikingly illustrated by means of diagrams, by the wave-machine, and by tuning-forks, to which small mirrors were attached—the optical effects being thrown upon a screen. In reference to the velocity of the passage of sound, Dr. Tyndall stated that at the freezing temperature the rate is 1090 feet a second, and that it increases about two feet for every degree of the centigrade scale added to the temperature of the air. Newton, who did not consider the change of temperature, gave the theoretic velocity at 916 feet a second. The velocity of sound in water is more than four times its velocity in air; in iron, seventeen times; and in pine-wood, ten times. Among many other interesting illustrations was an example of the “telephonic concert” of Sir Charles Wheatstone. The notes of a musical-box in a room two

floors off were distinctly heard in the lecture-room, when a guitar was placed on the end of a deal rod connected with the box.—*Journal of the Society of Arts.*

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STRUCTURE OF STEPHANURUS DENTATUS, OR SCLEROSTOMA PINGUICOLA.

DR. W. FLETCHER gives a somewhat lengthy account of this worm. It appears not to have been correctly known in America till last year. A specimen was brought to Dr. Fletcher in 1866 by a farmer whose hogs were dying of cholera. He had removed the lungs of several, and also cut out fragments of the liver, all of which were spotted over with little cysts containing the worms; in the bronchial tubes down to the minutest branches, they were found in abundance and in situations where no one could have placed them. With these specimens his conclusion was that they were the *Filaria bronchialis* of Owen, or *Strongylus bronchialis* of Cobbold; and not having at this time made microscopic examination of this well-known kidney worm, the relationship between them did not occur to him at that time.

In November, 1870, while demonstrating the portal circulation in the liver of a pig, full grown, he observed a worm which measured an inch and a half in length, and in all respects resembled the kidney worm, and also reminded him of the worms he had examined five years before. Upon further dissection of the liver he found the worms not only free in the portal veins, but in cysts in various portions of the organ; also some were found in freshly cut holes, directly across the hepatic lobules. The gall-bladder was distended with a dirty yellowish fluid, the consistency of soft-boiled eggs, and although no worms were found, yet the ova were abundant, as they also were in the fluid of the cysts. Being convinced that the worm formerly examined in the lungs was the same as the worm now found in this new locality, and finding it oviparous, he gave up his opinion as to its being a *Filaria bronchialis*. From the date of this discovery he frequented the slaughter-houses and pork-packing establishments, and found the worm in most instances in the pelvis of the kidney, or in cysts in the fat around them. Four times he has found the worm in the bronchial tubes, twice in the hepatic vein and in the right side of the heart, also in cysts throughout the fatty part of the animal. Frequently, when no worms were discovered, the eggs were abundant in the thick mucous-looking fluid in the pelvis of the kidney. This fluid contained, besides eggs,

desquamated renal tubules, or casts and oily granules. In no instance has he found worms in an immature state, which shows that the eggs, in all probability, go through some other beast before they enter the swine, to become sexually mature.

The symptoms in hogs which are referred to the "kidney worm" are due to a paralysis of motion in the hind legs; the hog drags the hind quarters along the ground from place to place in search of his food, although it is by no means proven that the worm is the real cause, unless some one is able to demonstrate its existence in some cerebro-spinal centre, or some point more likely to destroy the reflex power in the cord itself.

The head and oral cavity are alike in male and female. The oral cavity is rather oval than round, and is surrounded by an hexagonal frame, each corner having a papilla and hooklet, while each side is armed with six serrate teeth. Looking into the oral cavity, it is funnel-shaped, having three openings at the back, one of which connects directly with the œsophagus, while the others appear to connect with the water vessels. The intestine is long and contains some pigment granules, arranged in dendritic forms, throughout its length; the whole is thrown into convolutions, and gives an almost black appearance to the worm, except when the white oviducts distended with eggs, or the seminal vessels of the male, are folded over the intestine, when it has a white, mottled appearance. The caudal extremity of the female is spindle-shaped, but has two little bursæ higher up. In the male it is formed by three-lobed bursæ, above which are two well-developed flexible spicula.—*The American Journal of Science and Art.*

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#### AUSTRALIAN SHEEP FARMING.

SOME weeks ago we commented upon the valuable reports made by the chief inspector of stock on the horses and cattle of Australia. The official report on the colonial flocks is now before us, and also contains much interesting information. In New South Wales the present number of sheep is estimated at upwards of sixteen millions. Since 1860 the numbers have increased about one third. Such increase has resulted from the large importations of sheep from South Australia and Queensland; from the heavier stocks which the fenced-in stations are now enabled to keep; and also from the enhanced price which has of late years been obtained for the best brands of wool. The drought during the latter part of

1868 and throughout 1869 has caused, however, very serious losses—upwards of a million sheep having perished, and a great deal of trouble and expense being further entailed in preserving the survivors in good health. During the past six months the Australian flockmasters have been troubled with exactly the opposite grievance—an excessive rainfall has flooded many grazings, the rankness of feed has destroyed many lambs, whilst foot-rot and fluke worms have prevailed.

The Australian Merino sheep, descended from the original Camden stock, appears to be the most profitable throughout most parts of the colony. Stud rams in considerable numbers are annually imported from Victoria, and a few are also brought from Tasmania, Europe, America, and England. The Rambouillet Merinos have generally answered better than those bred in England. The average drop of lambs is 78 per cent. In the neighbourhood of the large towns, Leicesters, South-downs, with a few Cotswolds and Cheviots to the number of about 60,000, have been kept for breeding lambs. The Leicesters are stated to shear from 5 to 7 lbs. of washed wool; whilst the lambs when three or four months old, fully matured, have reached 200 lbs. in weight, showing that they are by no means unsuitable for the Australian climate. The inspector remarks that great mistakes are made by many breeders of coarse-wooled sheep in breeding from mongrels. A half-bred Leicester Merino ram is put to a ewe of the same stamp, with the idea that the progeny will turn out as good as the sire or dam; but we are authoritatively told that “these half-breeds deteriorate both in carcase and wool, and become useless rubbish.”

The 16,000,000 of colonial sheep are said to produce on an average  $2\frac{1}{2}$  lbs. per head of washed wool, of which the average price at Sydney for the season 1869-70 is  $1\frac{1}{2}$ d. per lb. This would give a return for the wool of  $2\frac{1}{3}$  millions sterling. One fifth of the sheep are estimated to be sold fat at 7s. 6d. per head, bringing in about  $1\frac{1}{4}$  millions sterling. Three and a half millions of money is thus the estimated annual yield of the Australian flocks. Nearly 2,000,000 sheep are every year boiled down and preserved in the Australian and Victorian colonies, and this trade is rapidly on the increase. Better returns are likely to be secured by greater care in the washing and getting up of the wool. Washing with hot water, which has on many stations been prosecuted at a considerable expense, is found to have the serious disadvantage of fixing the grease and other impurities in the wool, and the ordinary cold water washing, conducted as it is usually done in this country, is found to answer best. The careful sorting

of the ewes, the culling of the bad-coated, and the purchase of superior Merino rams, have on many stations greatly enhanced the value of the crop. The enclosing and fencing of the runs, which is being actively proceeded with, increases the profits of the stockmaster by enabling him to dispense with more than one half of his shepherds. A bill for the compulsory poisoning of the jingo, or native dog, is expected to be of great advantage in the remote and upland stations; whilst for the getting rid of noxious weeds which overrun the pastures, a "Thistle Bill" is also at present before the Colonial Parliament.—*North British Agriculturist*.

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### YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE Summer Quarterly Meeting of this Society was held at the Queen's Hotel, Leeds, on Friday, the 28th July, at 12.30 noon.

In the unavoidable absence of Mr. Nicholson, the President, through indisposition, and also of the Vice-Presidents (none being present), Mr. J. S. Carter, of Bradford, was voted to the chair.

The following members attended, viz.—Messrs. Greaves, Dray, Edmundson, Patterson, Naylor, Cuthbert, Fearnley, Ferguson, and the Secretary. Messrs. F. J. Day, of Yorkshire, and — Carter, jun., of Bradford, were present as visitors.

Apologies for non-attendance were received from Messrs. Nicholson; James, Joseph, and John Freeman; Pratt, Walker, and P. Smith.

The minutes of the last meeting were read and confirmed.

Mr. Alfred May, M.R.C.V.S., of Hull, was elected a member. Mr. F. J. Day, M.R.C.V.S., of York, nominated for election.

*Mr. Dray* made some remarks upon the late trial of Lord Churchill *v.* Day, and concluded by moving that the thanks of this meeting be awarded to Mr. Day for the spirited manner in which he defended his professional reputation.

*Mr. Naylor* seconded the motion, observing, in the course of his remarks, that he had known cataracts to form in a very few days.

In the discussion which followed, *Mr. Carter* observed that he also had known cataracts to form in a very short time.

*Mr. Greaves* said, the fact of the action having been brought was an additional reason for veterinary surgeons to join together

in supporting the *National Veterinary Defence Fund*. The motion was carried unanimously.

*Mr. Day* returned thanks, and stated that he made an unusually careful examination of the horse in question, and could not possibly have overlooked the alleged unsoundness had the defects complained of existed at the time.

*Mr. Greaves* then read his paper upon "The Education of the Veterinary Pupil." The subject was very ably handled by the Essayist.

In the discussion which followed, Messrs. Naylor, Dray, Carter, Fearnley, and the essayist took part.

At the close of the discussion a cordial vote of thanks was awarded to *Mr. Greaves* for his kindness in introducing so important a subject.

WM. BROUGHTON,

*Hon. Sec.*

## THE NORTH OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

THE half-yearly meeting of this Association was held in the Mechanics' Hall Buildings, Aberdeen, on Thursday, 20th July, *Mr. Hay, Ellon*, President, in the chair. There was a full attendance of members present.

The minutes of the previous meeting having been read and approved, the President called on *Mr. Duncan*, of Methlick, to read his essay "On Tetanus in Domestic Animals." The essayist handled his subject scientifically, giving a brief but substantial outline of his views on the causes, pathology, symptoms, and treatment of the disease. The essay was listened to with marked attention throughout, and a hearty and profitable discussion followed. Several members expressed their minds freely on the subject, and narrated their experience and treatment of the disease, which in every instance tended to show that the affection is a most formidable one for veterinarians to contend with, and that quietness and soothing remedies are indispensable in promoting a successful result.

The essayist, in speaking of the treatment of tetanus, said that it embraced three important considerations:

1st. Removal of the cause of the tetanic spasms, if possible. The remedies here will depend on the parts affected, as to whether poultices or other soothing agents are practically the most useful. In some cases the actual cautery will set up a healthy action.

2ndly. Soothing the irritable state of the nervous system

by the use of such agents as hydrocyanic acid, tinct. aconite, tinct. cannabis Indica, Calabar bean, &c., with or without cathartics. Above everything, quietness is essential, as the least noise will bring on a paroxysm in a tetanic patient.

3rdly. Supporting the vital powers by sloppy and nutritious provision, such as gruel, boiled barley, carrots, &c.

In concluding his essay, Mr. Duncan observed, "I will now relate my own experience in the successful treatment of two tetanic patients. Perhaps it may be expected that I should give an account of some of my failures also, but, as you know, this would not be so agreeable. The history likewise of such cases would be too voluminous, for by this time you must be well-nigh weary both of me and the subject also. I would, however, crave your attention for a short time, this being the most practical and important part of my subject. The *first* case I shall relate is that of a one-year-old colt, which some seven or eight years ago came under my care when suffering from tetanus as a sequel of castration. The operation had been performed by the use, in the ordinary manner, of the actual cautery. Healthy supuration followed, and in due time the swelling of the parts passed away; in fact, the animal made what would be called an excellent recovery. Subsequently he was turned out to grass for the summer. In something less than three weeks from the date of the operation he became tetanic, and, as our President can testify, so completely that he had to be conveyed part of the way home on a sledge. The animal was put into slings, and an occasional dose of cathartic medicine given in the form of a ball from the tip of a piece of cane. Tinct. cannabis Indica was injected by means of a small syringe into the subcutaneous tissue. (Bear in mind that one third part of any medicine thus administered produces as much effect as an ordinary dose by the stomach.) Twice a day he was put under the influence of the drug, and from the first there was considerable relaxation of the muscles. In a few days continuous improvement set in, and in little more than a fortnight he was able to go out to graze; but it was not until late in the summer that the peculiar gait, often seen as a result of tetanus, thoroughly left him.

"The second case occurred to a four-year-old farm mare. In this instance the disease arose from a prick in the foot while the mare was being shod. Tetanic symptoms showed themselves in about a fortnight from the time she received the wound, and, as the owner was perfectly aware of that which had occurred, I was immediately summoned. I found the patient very excitable; among other symptoms of the disease, the least noise would cause the *membrana nictitans* to protrude to such an extent as to cover the eye.

“ I first cleansed the wound, and poulticed the foot, and then gave a cathartic. I tried to administer hydrocyanic acid in water given her to drink ; but she refused to take the agent in that form ; and as it was almost impossible to give her anything by the mouth, I exhibited the acid, mixed with gruel, as an enema, after the rectum had been cleared out. The use of the agent was then continued, with the addition of ten minims of Fleming’s tinct. of aconite three times a day for nearly a week. The bowels were kept open by sloppy mashes and water-grass. After poulticing the foot for some time, the parts seemed sufficiently healthy for the shoe to be put on ; but in a few more days the animal became so much worse that the shoe had to be again taken off, and the poultice reapplied. The foot was afterwards dressed with carbolic oil, but I did not allow the shoe to be put on again until I was satisfied that no harm would be produced by it. During the treatment the animal was removed some distance from the farm steading, and only approached three times a day when the medicine had to be given. A sheep’s skin was applied to the loins, twice during the treatment. She required close attention for three weeks, and when convalescent was kept in the same place for a considerable time for the sake of quietness.

“ I don’t believe in blistering the spine, nor in the exhibition of much purgative medicine. Nevertheless, there are cases recorded in which success is mainly attributed to the use of these means. Such may be the case ; but I believe that striking at the root of the matter is the principal thing to be attained, and that soothing treatment and supporting the strength of the animal at the same time are chiefly to be relied upon.”

In the discussion which followed—

*Mr. Robertson*, Stonehaven, asked the meeting if they approved of slinging, and if so, at what stage of the disease, as in his practice he had had two tetanic patients which he thought were in a fair way of recovery, but which got down and never afterwards rose.

The members in general approved of slinging.

*Mr. Robertson* next remarked that he had always been most successful in those in which particular attention was paid to the bowels, keeping them in a lax state, and adhering strictly to quietness. He had tried different modes of treatment from time to time, which had been recommended by others, but with less success than the simple means he employed. Success, in his opinion, depended greatly on the mildness of the attack and the strength of the patient. In three cases of traumatic tetanus he had tried the remedies recommended by *Mr. Horsburgh* of Dalkeith, and lost them all, in from twelve to twenty hours. *Mr. Robertson* also related a peculiar case which occurred in a mare near

foaling. The animal had been fourteen days ill with tetanus, and had not, during the whole of this time, taken any solid food. He (Mr. Robertson) was examining her for the purpose of ascertaining if the foal was still alive, as he had instructions to save the foal if possible, it being the offspring of a celebrated horse, when, partly by the excitement caused by the examination, and partly by a slight accident which occurred, the animal became alarmed and escaped out of the box; and, strange to say, that the next day there was a decided improvement in the symptoms. The improvement continued; she foaled soon after, and her recovery was rapid.

*Mr. Keith*, Strichen, recommended the use of belladonna internally, and also its external application along the course of the spine, and leaving the patient a good deal to nature. He was doubtful whether treatment of any kind was of much use, as he had succeeded as well without medicine as with it. He had tried chloroform, but was of opinion that it only relieved the spasms for a time. He related an instance of treating a mare with chloroform, in which the animal became apparently so conscious of the momentary relief obtained by the drug, that when he opened the door of the loose box she would meet him, as if asking to have more given her.

*Mr. Stewart*, Rothiemay, recommended purgatives and stimulants, such as whiskey or brandy. He also considered that quietness was very important.

*Mr. Barron*, Cullerlie, was in favour of blisters, and also of administering chloroform to relax the spasms. He would first give a cathartic, and then employ soothing remedies.

*Mr. Cassie*, Newmachar, said that he could not make a boast of his success in treating the disease; he had ever found it a most formidable one to contend with, and, indeed, if it developes itself rapidly and severely, all treatment, as far as his experience went, was useless. In different instances he had tried Indian hemp, belladonna, aconite, and a host of other remedies of a similar description, but never with good results.

The very administration of medicine in cases of tetanus often aggravates the intensity of the disease, instead of producing the opposite effect. In mild attacks, in which the patient can always manage to take a little food, and will take medicine without much inconvenience, cures now and then are effected, more especially if strictest quietness be insisted on. Everything done about a tetanic patient should be in the gentlest manner possible.

*Mr. Niel Barron*, Turriff, related an interesting case that came under his notice two years ago, which occurred in a mare about ten years old. The disease was caused by the cord of a sale-ticket having been too tightly fastened round the tail.

The patient was placed in a quiet and dark loose-box, and soft

food given her, of which she partook moderately. Tinct. aconite, from twenty to thirty minims, was given night and morning in water, which was taken freely. The attendant was ordered to increase the dose gradually and carefully, which he did for some ten days; but seeing little alteration in the symptoms, he determined to try the effect of an extra quantity, well-nigh half an ounce of the agent. The animal soon became frantic, made severe attempts to vomit, and to all appearance the end was at hand. After an hour or two, however, the symptoms of poisoning began to abate, and gradually disappeared, and with them the tetanic contractions of the muscles. These did not again return, and in about a week or ten days afterwards the mare was sufficiently restored to be able to return to her usual work.

Subsequently to the discussion on tetanus, the meeting took into consideration the Contagious Diseases (Animals) Act, and some of the diseases dealt with under it. The unanimous opinion was that the periods of *ten days* for foot and mouth disease, and *thirty* for pleuro-pneumonia, as enjoined by the Act, for the isolation of animals affected with these complaints, or that had been in contact with animals affected by them, were far too short; the former disease being frequently communicated to clean stock by animals that had neither been diseased themselves nor in contact with the diseased for double the prescribed period, and the latter disease often not manifesting itself till the expiration of several months after exposure to the infection. The meeting was also unanimously of opinion that the prevalence of these diseases was in a great measure owing to the exposure, on public roads and in public markets, of animals recently recovered from them, or affected with the disease in its undeveloped form; likewise to the want of proper restriction on unscrupulous dealers' sales; to carelessness on the part of owners of diseased stock for the safety of neighbouring healthy stocks, and to the want of caution in making purchases. Till more attention be paid to these matters, it was felt that all the exertions inspectors could make to rid their districts of contagious diseases must be comparatively ineffectual.

*Mr. Niel Barron*, Turriff, consented to read an essay at the next meeting.

Votes of thanks were awarded to the essayist and the chairman, after which the meeting separated.

THOMAS MELLIS, *Secretary*.

## CENTRAL VETERINARY MEDICAL SOCIETY.

THE monthly meeting was held Thursday, August 3rd. Mr. Josh. Woodger, sen., in the absence of the President, occupied the chair. The preliminary business being concluded, Mr. W. Hunting introduced for consideration his essay on "Obscure Foot Diseases in the Horse," and commenced by stating that it was not his desire his remarks should be accepted without question, but rather that they should be submitted to critical examination in test of their correctness. The obscure character of foot diseases had always been acknowledged, and he feared that it would be difficult for him to render the subject as clear and intelligible as he could wish. If, however, the spirit of inquiry were aroused in reference to foot diseases, his object would be attained.

Mr. Hunting first alluded to "concussion of the feet," so much insisted upon at the present time, and to which is attributed much of the lameness existing among horses. He believed that 70 per cent. of the cases of lameness met with in horses to be due to faulty methods of shoeing, giving rise to the consequences which are mistaken for the results of jar or concussion.

In support of this argument the anatomical and physiological peculiarities of the horse's limbs were succinctly and clearly commented upon, for the purpose of showing the unmistakable fact that so much order and precision could only have been secured by nature to confer a most elaborate system of co-ordination of movement in parts destined to important correlative functions.

On the subject of "fever in the feet," Mr. Hunting declared himself to be a disbeliever in the existence of such a pathological state. He considered the appellation to be incorrect, and pertinently put the queries, why the existence of fever, as a constitutional state, is limited in these instances to the feet? and upon what grounds are similar diseases of other organs excluded from the same kind of description? Navicular disease, or navicularthrititis, he also looked upon as a convenient term for designating the existence of all obscure diseases of the feet. Many affections to which a proper term cannot be applied, by reason of the signs to which they give rise being unintelligible, are described as navicularthrititis, notwithstanding the animals affected therewith, are known to recover. It was not his intention to deny the existence of such a disease as navicularthrititis, but he would assert that in every hundred cases of lameness, from so-called navicular disease, not more than 10 per cent. could be clearly defined as such, while the remaining 90 per cent. are due to faulty shoeing, and are recoverable under proper management.

Mr. Hunting next attacked the system of "springing the heels," which he designated as highly prejudicial, giving rise to concentration of pressure, abnormal action and undue yielding of the horny covering, by which internal parts are bruised and damaged, and obscure disease originated. Basin-shaped shoes, as commonly made and fitted, likewise produce very deleterious results. By concentration of pressure, and also by the form of the foot surface of the shoe directing that pressure inwards from each side, the internal parts are held between two surfaces, as they would be in a vice—the wall is pressed inwards—and by such means 30 per cent. of the animals so shod have their lameness aggravated and perhaps rendered incurable by the amount of change which the coffin bone is caused to undergo from absorption.

Minor evils were pointed out and commented on, *e. g.* the limitation of bearing surface allowed by the "seated" shoe; loss of function entailed by the heels being allowed to be too high; pernicious influence of a long toe, as entailing greater exertion, as well as inducing rupture of important parts; unequal height of the sides of the feet, as productive of inordinate pressure upon the lowest; effects more particularly serious in feet improperly reduced by the farrier's knife, &c. &c.

A lengthy debate followed, in which all present took part and exhibited a warm interest. At the close, a cordial vote of thanks was awarded to Mr. Hunting for his instructive observations, and to Mr. J. Woodger for having officiated as chairman *pro tem.*

In the course of the proceedings the following Fellows were balloted for and unanimously elected:—Messrs. S. H. Withers, London; G. Balls, Brixton Hill; and J. G. Dickinson, Boston, Lincolnshire.

At a meeting of Council, held prior to the above, it was resolved to hold the anniversary meeting on Thursday, October 5th, and to omit the usual monthly gathering in September.

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## THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY.

THE Sixth Annual General Meeting of the above society was held in the Hen and Chickens Hotel, Birmingham, on Thursday, 17th August, the President, P. Taylor, Esq., in the chair.

The minutes of the meeting at Edinburgh having been read and confirmed, the President addressed the assembly. The Secretary and Treasurer next read their reports, from which it



*President*—P. Taylor, Manchester; *Vice-President*—G. Heyes, Liverpool; *Treasurer*—Thos. Greaves, Manchester; *Hon. Sec.*—Geo. Morgan, Liverpool.

*Council*—William Field, Jun., London; Prof. Williams, Edinburgh; Prof. McCall, Glasgow; John Lawson, Manchester; John Cuthbert, Leeds; Wm. Broughton, Leeds; Wm. Whittle, Worsley; A. L. Gibson, Manchester; Jos. Carter, Bradford; D. McTaggart, Halifax; Jas. Freeman, Hull; Francis Blake-way, Stourbridge.

A vote of thanks was awarded to the officers for their services during the past year, and also to the President for the able manner in which he had performed his duties. These being acknowledged, the meeting separated.

GEORGE MORGAN,

*Hon. Sec.*

## Veterinary Jurisprudence.

NISI PRIUS COURT.—SATURDAY, JULY 29TH.

(*Before Mr. Justice LUSH.*)

ACTION FOR SLANDER.—PITT *v.* CLAYWORTH, M.R.C.V.S.

MR. HUDDLESTON, Q.C., with Mr. Warren, for plaintiff; Mr. Powell, Q.C., and Mr. Motteram for defendant.

*Mr. Warren* having opened the pleadings, *Mr. Huddleston* stated the case. The plaintiff, a veterinary surgeon, residing in Birmingham, was formerly an assistant to defendant's father. Defendant keeps a horse repository in Birmingham, and a horse having been purchased by a Mr. Marlow, the latter applied to plaintiff for a certificate, according to the usual custom. Plaintiff certified that the horse was unsound. Defendant then refused to accept the certificate on the ground that plaintiff was not a veterinary surgeon, but only a cowleech.

*John Pitt*: I am the plaintiff in this action; I am a member of the Veterinary College, Edinburgh, and of the Highland Agricultural College; I attended three courses of lectures prior to 1857; I kept my terms at the college; I passed the examination in 1857, and that entitled me to a diploma (diploma read); I also received a certificate from the Veterinary Medical Society,

Edinburgh; my name is on the register as a member of the society; up to August, 1869, I was in the employ of the defendant's father; he was a veterinary surgeon; I then set up in business myself; I was in the habit of attending sales at Clayworth's; on the 28th of April, 1870, I examined a dun cob for Mr. Marlow; I heard something that the defendant said, and ceased to go to the sales; before then I was in the habit of giving two or three certificates a week; I received half a guinea for each certificate; my business has fallen off since.

*Josiah Marlow*: I keep the "Old Crown Inn," Deritend, Birmingham; on the 27th April last a man named Potter bought a dun cob at the defendant's repository; the plaintiff gave me a certificate of unsoundness; on the following Monday I saw the defendant, who said he should not recognise plaintiff's certificate, as he was not a veterinary surgeon, and he should not take a cowleech's certificate; on the Wednesday after the defendant said again that the plaintiff was not a veterinary surgeon, nor a member of the Veterinary College, and he would not take a cowleech's certificate.

*John Penstone*: I am a builder; I accompanied the last witness to the defendant's repository; I heard Marlow apply for his money, and the defendant refused; he said he should not give it him, as he was not a duly qualified veterinary surgeon; after a few words between Marlow and the defendant, the defendant said he should not take Pitt's certificate, as he was only a cowleech.

*Sidney Veale*: On the 3rd of May I went with Marlow to the defendant's repository; the defendant said he would not take Pitt's certificate; he could not take a cowleech's certificate.

*Mr. Huddleston* read a letter from the plaintiff's solicitor to the defendant, and the latter's answer.

*Mr. Powell* argued that the defendant was not a veterinary surgeon according to the Charter of the Royal College of Veterinary Surgeons. The point was reserved.

*Mr. Paul*: I am the general manager at the repository; on Saturday, 29th April, a dun cob was brought to the repository by Marlow and Veale; the one handed me a certificate; I told him I could not take it; I had some conversation with them, and then went to see Mr. Clayworth; while I was gone they tied the cob up and went away; I went after them; on the Monday Marlow and Penstone came, and Mr. Clayworth said he could not accept the certificate, because Pitt was not a member of the Royal College of Veterinary Surgeons; Marlow said, "If he's not a veterinary surgeon, what do you call him?" Clayworth said "I call him nothing, you can call him what you like;" Marlow said "If he is not a veterinary surgeon, do you call him a cowleech?"

*Joseph Marshall Clayworth*: I am a veterinary surgeon, and served in that capacity in the Abyssinian War; I keep the repository at Birmingham; on Monday, the 1st May, Mr. Potter, with Marlow, and Penstone, came to me and said they wished to return the cob; I said I could not take it on plaintiff's certificate, as he was not a member of the Royal College of Veterinary Surgeons, and I was sorry to do so; it is my practice not to receive a certificate except from a member of the College; when I refused to take the certificate they said, "If he is not a veterinary surgeon, what do you call him, a quack or a cowleech?" I said, "You can call him what you like, I know that he is not a member of the Royal College." On the 22nd May I was at Rotterdam, and knew nothing about the correspondence; on the day I returned home I was served with a writ; it was on the 26th May that I returned.

*William Marshall*: I am foreman of the repository yard; I remember two gentlemen coming to the repository; I heard them ask Clayworth to return the money for the cob; he said he could not, as they were not the men who bought the cob, and that he could not take plaintiff's certificate, as he was not a member of the Royal College of Veterinary Surgeons, and he was sorry that he could not; the men were very excited.

*Mr. Joseph Clayworth, sen.*: I am a veterinary surgeon, and father of the defendant; I have been in business forty years; the plaintiff was at Birmingham when I took to the business of the late Mr. Waters; the plaintiff was there, and remained from February to August; I did not know that the plaintiff was not a member of the College until after he left; I was at the repository on the Monday when Marlow came, and I heard the conversation; my son said he could not take the cob in as plaintiff was not a member of the Royal College of Veterinary Surgeons, and that his employers would not be satisfied with his mode of conducting his business; he was sorry to reject the certificate for his own defence.

*John Potter*: I purchased the dun cob at the sale; on the Monday morning after the sale I met Marlow, and accompanied him to the repository; we saw the defendant; Pitt was not there; the defendant said he could not take the cob back on Pitt's certificate as he was not a member of the Royal College of Veterinary Surgeons; I heard one say "What do you reckon him, a quack or a cowleech?" the defendant said they could call Pitt what they liked, but he would not.

*James Loveridge*: I am a farmer near Birmingham; I remember some persons coming to the repository about a dun cob; I heard a conversation in the office; the first I heard was, "What do you call him; do you call him an impostor, a cowleech, or

what?" the defendant said, "You may call him what you like, I am only sorry that I can't take his certificate."

*John O'Neal*: I am a horse-dealer in Birmingham; I was at the repository on Monday when some men came about a dun cob; I heard the defendant say that he could not take the pony back upon Pitt's certificate, as he was not a member of the Royal College of Veterinary Surgeons.

*William Henry Coates*: I am the registrar of the Royal College of Veterinary Surgeons; I have here the register of the members of the College, both those who have studied at London and at Edinburgh; the plaintiff's name is not in the list.

*Mr. Powell, Q.C.*, then addressed the jury on behalf of the defendant.

*Mr. Huddleston* replied, and

*His Lordship* having summed up, the jury, after a short consultation, found for the plaintiff—damages £10.—*Eddowe's Shrewsbury Journal*.

## MIDLAND CIRCUIT.—LINCOLN, JULY 26th.

### NISI PRIUS COURT.

(*Before Mr. Justice Mellor.*)

#### GRAY *v.* BURROWES.

THIS was an action upon a special warranty to recover the price of a cart-horse. There was also a count for false representation. The cause was commenced on Saturday, July 23; but owing to the absence of witnesses it had to be postponed until the special jury cases had been tried. The trial was resumed yesterday, and was not finished till this morning.

*Mr. Digby Seymour, Q.C.*, and the Hon. Chandos Leigh were for the plaintiff; *Mr. Field, Q.C.*, and *Mr. Lawrance* for the defendant.

The plaintiff's case was that the horse was warranted not to be a "shiverer," and that it was a "shiverer." The defendant denied the warranty, and also denied that the horse was a "shiverer." It appeared that "shivering" is caused by partial paralysis, or some affection of the spine acting upon the nerves of the hind quarters. One chief symptom of the complaint is a difficulty in backing. The plaintiff is a horse-dealer in Grantham, and the defendant a farmer at Swinstead. The defendant sold

the horse to the plaintiff for £46, and according to the plaintiff's case a warranty was given at the time of sale. When the horse was taken to Grantham it was found to be a "shiverer," and was immediately returned. The defendant refused to receive it, and it was afterwards sold by auction, and bought in by the defendant for £33. The plaintiff and his servant were called as to the warranty and the shivering, and two veterinary surgeons were called, who had examined the horse and pronounced him to be a "shiverer."

The case for the defendant was that he never warranted the horse, and three persons who were present at the time of the sale were called to confirm his evidence. Two of the defendant's servants were also called to show that the horse had always worked well, and had never shown any symptoms of "shivering." The horse was six years old, and was bred by the defendant. Professor Pritchard and two other veterinary surgeons were called, who had examined the horse. They stated that the horse was not a "shiverer;" but one of them had treated the horse for an abscess in the scrotum some time ago, and gave it as his opinion that the peculiarity of action spoken to by the witnesses was attributable to a chronic thickening of the spermatic cord.

The learned *Judge* summed up with great care and went through the whole of the facts.

The jury almost immediately returned a verdict for the defendant.

The business of the assizes for this county finished with this case. The commission will be opened at York on Thursday. The learned Judge will charge the grand jury for the city on commission day.—*Times*.

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## PARLIAMENTARY INTELLIGENCE.

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### IMPORTATION OF PLEURO-PNEUMONIA FROM HOLLAND.

*July 27th.*

IN reply to Colonel GILPIN,

Mr. W. E. FORSTER said that he had received no information that animals imported into this country from Holland, and passed by the inspectors, had on several occasions shortly afterwards shown symptoms of pleuro-pneumonia. Complaints had been made that in two or three instances such was the case; but on instituting inquiries it was found that there was no ground for the complaints

made. If the hon. and gallant gentleman knew of any special case, and would bring it under his notice, he should be glad to inquire into it. Pleuro-pneumonia existed in Holland, as it did in this country, and it had not been thought right to prevent the importation of animals from Holland on account of a disease existing there which disease also existed in this country. He did not think it right to make the quarantine longer than at present. The quarantine of twelve hours was the *minimum*, and it was a quarantine of twelve hours in daylight, and the inspectors had a power to detain animals longer on the ground of suspicion. He might mention that there was reason to believe that the introduction of store cattle had been of very considerable advantage to the farming interest (hear, hear), as the introduction of fat cattle had likewise been of benefit to the consumers.

## DOG ACT. CHAP. 56.

AN ACT TO PROVIDE FURTHER PROTECTION AGAINST DOGS.

[24th July, 1871.]

WHEREAS it is expedient that further protection should be provided against dogs :

Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows :

1. From and after the passing of this Act any police officer or constable may take possession of any dog that he has reason to suppose to be savage or dangerous straying on any highway, and not under the control of any person, and may detain such dog until the owner has claimed the same, and paid all expenses incurred by reason of such detention. Stray dogs may be detained and sold or destroyed.

Where the owner of any dog taken possession of by any constable is known, a letter, stating the fact of such dog having been taken possession of, shall be sent by post or otherwise to the owner at his usual or last known place of abode.

When any dog taken in pursuance of this Act has been detained for three clear days where the owner is not known as aforesaid, or for five clear days where he is so known, without the owner claiming the same, and paying all expenses incurred by its detention, the chief officer of

police of the district in which such dog was found may cause such dog to be sold or destroyed.

Any moneys arising from the sale of any dogs in pursuance of this section shall be paid to the account of the local rate, and be applied to the purposes to which that rate is applicable.

All dogs detained under this section shall be properly fed and maintained at the expense of the local rate.

Dangerous dogs may be destroyed.

2. Any court of summary jurisdiction may take cognizance of a complaint that a dog is dangerous, and not kept under proper control, and if it appears to the court having cognizance of such complaint that such dog is dangerous, the court may make an order in a summary way directing the dog to be kept by the owner under proper control or destroyed, and any person failing to comply with such order shall be liable to a penalty not exceeding twenty shillings for every day during which he fails to comply with such order.

Restriction upon dogs being at large if danger from mad dogs is apprehended.

3. The local authority may, if a mad dog or a dog suspected of being mad is found within their jurisdiction, make, and when made vary or revoke, an order placing such restrictions as they think expedient on all dogs not under the control of any person during such period as may be prescribed in such order throughout the whole of their jurisdiction, or such part thereof as may be prescribed in such order.

Any person who acts in contravention of any order made in pursuance of this section shall be liable to a penalty not exceeding twenty shillings.

Due notice of such order shall be published at the expense of the local rate.

The provisions in this Act contained as to the detention and sale or destruction of dogs found straying on the highway shall apply to dogs found at large in contravention of any order made in pursuance of this section.

Penalty, how to be recovered.

4. In England and Ireland any penalty under this Act may be recovered in manner provided by the Summary Jurisdiction Act, and in Scotland all such penalties shall be prosecuted and recovered before a court of summary jurisdiction, under the provisions of the Summary Jurisdiction Act, 1864.

## ORDER OF COUNCIL.

## SCAB IN SHEEP.

THE following ORDER, relative to scab in sheep, has recently been issued by the Lords of the Council:—

1. This Order shall take effect from and immediately after the 9th day of August, 1871; and words in this Order have the same meaning as in the Act of 1869.

2. A local authority may, from time to time, with the view of preventing the spreading of sheep-scab, make regulations for the following purposes, or any of them:—

For prohibiting any person from having in his possession or under his charge a sheep affected with sheep-scab, without treating that sheep, or causing it to be treated, with some dressing or dipping or other remedy for sheep-scab;

For prohibiting or regulating the movement out of any field, stable, cowshed, or other premises in which sheep-scab has been found to exist, of any sheep that has been in contact with, or in the same field, stable, cowshed, or other premises with any sheep affected with sheep-scab;

For cleansing or disinfecting sheds and places used by sheep affected with sheep-scab;

and may, from time to time, revoke any such regulation.

3. Provided that the Privy Council, if satisfied on inquiry, with respect to any regulation made under this Order, that the same is of too restrictive a character, or otherwise objectionable, may direct the revocation thereof, and thereupon, as from the time specified in that behalf by the Privy Council, the same shall cease to operate.

(Signed) EDMUND HARRISON.

## ARMY APPOINTMENTS.

WAR OFFICE, PALL MALL, *Aug. 1st.*

ROYAL ARTILLERY.—To be Veterinary Surgeons.—Acting Veterinary Surgeon Charles John Grey; Acting Veterinary Surgeon James Augustus Woods; Acting Veterinary Surgeon Robert Francis Frost; Acting Veterinary Surgeon William Pallin; Acting Veterinary Surgeon John William Evans.

## VETERINARY DEPARTMENT.

Veterinary Surgeon, first class, Francis Frederick Collins, from 6th Dragoon Guards, to be Staff Veterinary Surgeon, *vice* Thomas Hurford, who retires upon half-pay; Veterinary Surgeon, first class,

Tom Parinder Gudin, from 2nd Dragoon Guards, to be Staff Veterinary Surgeon, *vice* R. J. G. Hurford, who retires upon half-pay; Veterinary Surgeon Adam E. Clarke, Royal Artillery, to be Veterinary Surgeon, first class, *vice* T. W. Mayer, retired upon half-pay; Veterinary Surgeon Thomas James Lang, Royal Artillery, to be Veterinary Surgeon, first class, *vice* F. F. Collins, promoted; Veterinary Surgeon George A. Oliphant, Royal Artillery, to be Veterinary Surgeon, first class, *vice* T. P. Gudin, promoted; Veterinary Surgeon C. G. H. Reilly, 7th Dragoon Guards, to be Veterinary Surgeon, first class; Veterinary Surgeon William Hall, 1st Dragoons, to be Veterinary Surgeon, first class; Veterinary Surgeon William B. Walters, Royal Artillery, to be Veterinary Surgeon, first class.

William Frederick Blanchard, gent., to be Acting Veterinary Surgeon, *vice* Grey, promoted; Alexander Johnston, gent., to be Acting Veterinary Surgeon, *vice* Woods, promoted; George Digby Whitfield, gent., to be Acting Veterinary Surgeon, *vice* Frost, promoted; Charles Clayton, gent., to be Acting Veterinary Surgeon, *vice* Pallin, promoted.

WAR OFFICE; *Aug. 8th.*

SIXTH DRAGOONS.—First class Veterinary Surgeon William B. Walters, from the Royal Artillery, to be Veterinary Surgeon, *vice* first class Veterinary Surgeon George Longman, transferred to the Veterinary Department for duty with the Cavalry Depôt.

#### VETERINARY DEPARTMENT.

Veterinary Surgeon, first class, George Longman, from 6th Dragoons, to be Veterinary Surgeon.

## ROYAL AGRICULTURAL SOCIETY.

### ERROR IN THE PUBLISHED LIST OF THE AWARDS AT WOLVERHAMPTON.

At the meeting of the Council of the Royal Agricultural Society, on Wednesday, Aug. 2nd, Lord Kesteven "reported that an error had been made by the judges in Class 92 (Shropshire rams above a year old), the numbers given in by them not agreeing with those to which they had fixed their cards; but as the error was merely clerical, the General Wolverhampton Committee recommended that the cheque be drawn in favour of Mr. T. Mansell, who was awarded the 1st prize in that class. The report was adopted."

In common with several of our contemporaries the mistake, which occurred in the list of the awards, was further disseminated through our pages in consequence of our reliance on the accuracy of the official report. Our readers will please to correct the error.

THE  
VETERINARIAN.

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No. 526.

OCTOBER, 1871.

Fourth Series.  
No. 202.

Communications and Cases.

OBSERVATIONS ON THE ANATOMY AND  
PHYSIOLOGY OF THE HORSE'S FOOT.

By GEORGE FLEMING, M.R.C.V.S., Royal Engineers.

*Physiology of the Horse's Foot.*

(Continued from p. 648.)

THAT the horn of the wall is carried along the grooves of the living laminae might not only be readily inferred from reasoning and analogy, but it is also easily put to the proof of experiment. If, from the hoof of a living animal, we remove a portion of the wall about its middle, and as deep as the surface of the podophyllae, leaving only a narrow strip of horn attached transversely to each side of the chasm, while above and below it is entirely isolated (fig. 20), we shall find that in time, during the growth of the crust, this band maintains its transverse direction unaltered; whereas, had the other portions of the wall continued to move downwards independently of the laminae, and through the impulsion produced by the addition of new matter at the coronet alone, it must have become incurvated from its connection with the body of the wall by its extremities, which would be carried downwards, the middle meantime remaining in the same position.

A still more convincing experiment is the following:—Instead of allowing the band of horn to remain attached to the mass of the wall by its two ends, cut these off, leaving the middle of the piece entirely separated on every side from the crust, and retained only by its attachment to the living laminae

beneath, and which are exposed around it (fig. 21); then let a notch be made in the edge of the wall at a point corresponding to the upper or lower border of the isolated piece. In

FIG. 20.

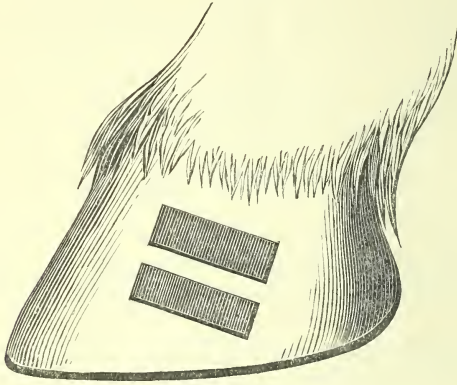
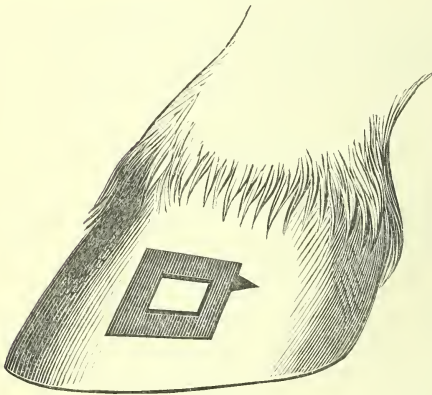


FIG. 21.



the course of a month or two it will be observed that the relative position of the latter to the former is unaltered, and that it has moved downwards at the same rate as the wall itself, though, to all appearance, it has had no connection with it. This demonstrates the fact that the horn—the remains of the horny laminæ which could not be entirely removed from the bottom of the pedal grooves—has continued to be

pushed downwards by that incessantly thrown out from the coronary zone, and that the Malpighian layer of cells is also carried in the same direction, until, reaching the sole, it assists in forming the white line described as uniting that portion of the hoof to the wall.

Such, then, is the simple and definite part played by the podophyllæ in health, as revealed by observation and experimentation. In extraordinary circumstances, however, whether arising from disease or accident, their *rôle* is certainly not of this passive character.

We have just now alluded to the fact, that when these leaves are denuded of their protection—the wall—they are quickly covered by a quantity of epidermic matter thrown out from their surface, which effectually shields them from harm, though it is far from possessing the ordinary characteristics of the horn which has been removed, and may be said to be of a provisional character. In such a case the podophyllæ have brought into play the faculty which they, in ordinary physiological conditions, had held in reserve, and suddenly, under the irritation induced by the denudation, commence to secrete as much horn as may serve to repair the breach, and preserve them at least for the time being. This reserve faculty, of course, is once more held in abeyance when no further injury is done to the podophyllæ, and they have returned to their usual normal condition. In certain diseases of the foot, when this latent keratogenesis of the vascular laminæ is brought into activity, the most serious consequences ensue. Congestion or subacute inflammation of these leaves, if not properly controlled or suppressed, brings into operation their secretory power, just as it was manifested when they were experimentally or accidentally laid bare. But now we have the rigid and resisting wall covering them, and the new horn thrown out from their surface being continually added to the keraphyllæ, these become enlarged, and lead to displacement of the pedal bone and deformity of the hoof, particularly towards its anterior portion. This supplementary and, as we might term it, accidental horn, instead of being useful as a protection to the sensitive parts, as in the instance wherein the wall has been removed, becomes a source of real injury, and constitutes one of the very gravest complications with which the veterinary surgeon has to contend. Only too frequently, under certain conditions, the secretory action thus set up is continued more or less energetically during the lifetime of the animal, and, like the coronary cushion, the vascular leaves become a permanent source of concressible horn, which is added to the hoof leaves as soon as it is exuded; thus dimi-

nishing the capacity of the hoof, and inducing irremediable pathological alterations. But we will have more to say of this reserve keratogenetic faculty in general shortly.

The horny sole is produced from the membrane covering the corresponding portion of the pedal bone. This also is a fact demonstrable by daily observation. When by accident, design, or disease, this portion of the hoof becomes removed or detached from the living surface, which is covered by myriads of villi, like the coronary cushion, new horny matter is generated from it, which after a time acquires sufficient thickness and firmness to protect the sensitive parts from external injury, and to sustain pressure on the ground. On examination, it is found that this new sole is composed of fibres arranged in a vertical manner, as in that which had been removed, and though at first these fibres are not quite straight, but follow a more or less undulating course, and while the whole corneous mass is more or less discoloured from the injury to the membrane which secreted it, yet in a few months the fibres generally become perfectly rectilinear, and the horn wears its normal tint.

In this way, then, the formation of the wall, white line, bars, frog, and sole takes place simultaneously on the derm covering the horse's foot, and their fusion with each other at their point of junction, while the epidermic material is yet in a plastic and agglutinative condition being ensured, we have produced the important case or horny box called the hoof. It only remains for us now to consider the part played by the villi in the production, formation, and characteristic features of the horn texture with which they appear to be so intimately related—a subject which has engaged the attention of Professors Delafond, Chauveau, Bouley, Gourdon, and other continental veterinarians of note, who have not come to a perfectly unanimous conclusion on some of the points discussed.

We have seen that the whole of the hoof, with the exception of the laminæ, is nothing more or less than a fibrous epiderm of varying thickness and consistency in particular situations; and that this fibrous character, if not dependent upon, is at any rate coincident with, the presence of the myriads of villi projecting from the living surface contained within the dense envelope, each villus being received into the upper extremity of a horn tube or fibre. But some veterinary authors have been of opinion that these villi are the real and sole agents in the production of the hoof, excepting, of course, the laminæ; others have asserted that such is not their office, and that they are merely instruments

of touch ; while others, again, have imagined that they serve merely as moulds for the horny material constituting the wall, sole, periople, and frog. Observation and experiment have apparently furnished proofs in favour of each particular view, and the question would even now appear to be a vexed one as to which is the correct statement, or whether they are not all more or less to be substantiated by a renewed and impartial examination.

We will not at present enter into the supposed tactile function of the villi, but inquire what share they take in the secretion and peculiar arrangement of the horn composing the hoof. In investigating the histological structure of this part, it was remarked that the cells of which it is constituted were arranged in two orders: a vertical, forming the walls of each tube or fibre, and a horizontal, occupying the space between the fibres. Each fibre or tube, for a certain portion of its length, was also observed to be occupied by a villus, whose structure was stated to consist of a beautifully fine tuft of blood-vessels enclosed in a delicate membrane—the common envelope of the keratogenous surface—and which, when withdrawn from the horny case, was usually covered with layers of epidermic cells either fully formed, or in process of development ; while the lower part of the tube was filled by an accumulation of epidermic cells arranged in no definite manner, but rather packed irregularly together by the simple force of concussion.

This disposition of the cells, together with the structure of the villus, might be considered to afford sufficient evidence as to the manner in which the fibrous portion of the hoof is formed, and the *rôle* assigned to the villi in its production.

The villi and the intervillous space being alike covered by the horn-producing membrane, it is but reasonable to suppose that both possess and exercise the same keratogenetic faculty ; and that they do so is amply demonstrated by clinical or experimental observation. This leads us to consider the villi as chiefly concerned in the production of the fibres, while the space between them secretes the horizontal cells that unite these fibres, and bind them into a solid mass.

Whether each villus has the same formative power throughout its entire length is another question ; but there can be no doubt whatever that the cavity of the tube it forms is wider, and has thinner walls at its commencement than at a short distance below, and that the increased thickness and diminished capacity is due to the continual addition made to its interior by the generating surface of its contained villus. The presence of newly formed cells for a certain extent in the

interior of each tube is proved by the facility with which this portion can be stained with carmine, and also by their adhering to the retracted villus.

It will, therefore, be seen that the villi serve a most important purpose in the elaboration of the hoof by giving it its fibrous and tubular texture, as wherever they are present there the horn is so constituted. But, besides being intimately concerned in the generation of the fibres, they also act as moulds on which these receive their characteristic shape; and another very important purpose they serve is, no doubt, the maintenance of the suppleness of the horn to the degree necessary for the proper exercise of its functions, by pouring out into its canals a sufficient supply of moisture and oily matter. For it must be noted that it is only in the hoofs of the horse and other unguled creatures that horn tubes are found. Hoofs require a certain amount of suppleness and toughness, as well as solidity, to enable them to resist the strain of locomotion—qualities but little needed in horny growths on other parts of the body; and the tubular construction of the fibres, while it does not impair the resisting power of the hoof, tends to lighten its mass very considerably.

It may, then, be briefly stated that the villi of the horse's foot are essential instruments in the secretion and formation of the fibrous portion of the hoof, and endow that envelope with the qualities of solidity, elasticity, and lightness, to a degree eminently characteristic and serviceable.

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## PANICS AMONG HORSES.

By G. FLEMING, M.R.C.V.S., Royal Engineers.

It would appear that, though we are a horse-loving and a horse-rearing nation, and though we justly claim to know more about the noble quadruped than any other people, yet we do not understand him so thoroughly as to give him credit for some eccentricities which sometimes stand out in very salient relief from his otherwise amiable and sensible demeanour, and which might not unfrequently entitle him to be looked upon as an unreasonable and dangerous creature. One of these eccentricities is his liability to become panic-stricken, and when in that state to act like a mad animal; and it is our forgetfulness or ignorance of this fact that has

recently caused our newspaper editors and correspondents to commit a series of blunders, and unjustly lay the blame of a not very uncommon accident to a gallant regiment in nowise guilty of the slightest inattention to equine management.

The horse, like other gregarious and herbivorous animals, is, when under the influence of terror, particularly liable to transmit his fear to those of his species in contact with him, and the accumulated dread thus engendered sometimes leads to serious consequences. But in this the horse is in no respect different, so far as we can see, from his more intellectual and highly organised master—man. We all know what a panic is in our own species. Let an alarm of fire be raised in a crowded theatre or meeting-room, or cause a cry of danger to be given out even in a church during divine service, and what do we see? Men who, in other circumstances, would be perfectly calm and collected, and not likely to do anything rash without due inquiry, rush madly to escape from the danger without the least attempt to discover whether it is real or imaginary, and so far forget their nobler nature as to leave behind, or trample under foot, helpless women and children.

At the commencement of this month, when it was decided that a very large force, composed of all branches of the British army, was to be assembled at Aldershot, for the purpose of manœuvring on a more extensive and instructive manner than heretofore, an unusually great muster of horses took place, and among these the steeds of the 1st Life Guards.

Shortly after these animals had been picketed, one or two officers' chargers were frightened by some unusual noise; their fear, manifested in the usual way, was immediately transmitted to the troopers, and all at once a regular panic was established, in nowise different from that observed on other occasions. In spite of all that could be done, the fastenings (very improper and imperfect, it must be admitted, they were) were broken or torn up, and the troopers were dashing everywhere, in all the madness and fury inspired by the most exaggerated terror and dismay, committing all the damage and performing all the indescribable feats peculiar to their frenzied condition. Notwithstanding the dangers to which they exposed themselves during their mad course across miles of country, and over or against all kinds of serious obstacles, only a comparatively small number of horses were destroyed—some six; but had the occurrence taken place at night instead of during the day, during war instead of peace, there is no saying where the disasters might have termi-

nated. Had the panic occurred during the night, when our troops were in presence of an enemy, the tumult might have been mistaken for a sudden attack, and the sound of the horses' hoofs galloping over the ground believed to be a charge of the enemy's cavalry; sentries would have fired upon the advancing mass, and a whole army might have been thrown into confusion, regiment firing into regiment, and unutterable destruction wrought before the mistake or its cause were discovered.

Some of the public papers were particularly severe and unjust towards the regiment in which this accident occurred, attributing it to carelessness on the part of officers and men, and exaggerating the attendant circumstances to a most ludicrous degree. Had more been known of the horse's nature, or of the history of horse panics, it is possible this injustice would not have been perpetrated, nor the exaggeration attempted; nor would the consequent disgrace heaped upon the troops engaged have now to be explained away.

As we have said, horses are particularly liable to panics, especially when collected in large numbers, as in troops and regiments, and at fairs; and no matter how securely they may be fixed or guarded, serious results generally follow. One nervous animal will excite a commotion among a thousand; fear with them is instantaneously contagious, and they make the most desperate efforts to fly, regardless of the damage they may inflict on themselves or others. Usually, when under the influence of some trifling degree of inquietude, horses have the tendency to assemble in a body, but when subjected to a panic they start away in every direction, regardless of their gregarious instincts.

A panic of this description was observed during the Peninsular war in a regiment of cavalry; in India they have not been infrequent; in this country also, when horses have been encamped in numbers, or collected in lots, as at markets, a fit of unreasonable fury has sometimes seized them, and, strangest of all, more than once without any assignable cause. M. Decroix gives three very striking examples, which may be interesting to the readers of the *Veterinarian*, especially those of the army.

During the expedition against the Beni-Ratèn, Kabyla, in 1857, a large number of requisitioned horses and mules, driven by Arabs, were employed to carry the provisions and material for the campaign. The labour imposed upon these animals was very heavy, owing to the absence of roads and the difficult nature of the country; all were more or less injured from their equipment, and footsore in con-

sequence of being unshod. On the 10th of June, about eleven o'clock at night, when everything was perfectly still and all seemed plunged in sleep, an extraordinary and frightful tumult suddenly broke out, which threw the whole camp into a state of alarm. Cries of Arabs, screaming of horses, and a heavy rumbling sound like the echo of a rising storm, were heard gradually approaching the place where M. Decroix was located with his regiment. In an instant the bivouac was invaded by a multitude of scared horses, mules, and asses tearing along. These were but a portion of the animals, the remainder, numbering from 1800 to 2000, being dispersed over the plain. Many of these ran immense distances, and were not found until next day; some were not even brought in until several days afterwards. Strange to say, the animals collected had another panic, though not so serious, and many again escaped. It appears that in the first panic all the animals were instantaneously affected with terror, broke all their fastenings, overthrew every one who attempted to oppose their flight, trod under foot those lying asleep on the ground, and injured several severely. The French thought that a wild beast, a lion or hyæna, had caused the alarm, while the Arabs maintained that it was owing to having encamped on the spot where a Marabout had been buried, and whose ashes were in this way profaned.

At mid-day, the following day, there was another slight commotion, but it was easily controlled by the Arabs. No wild creature was seen.

The second example occurred in 1859, in Italy, among the horses of the 10th Chasseurs. They had just encamped, when all at once the horses of one squadron, then those of a second, then a third, took fright, broke away from their fastenings, threw down and wounded the men, and fled wildly over all kinds of obstacles as if they had been carried on the wings of the wind; they scattered in every direction, and ran for miles, and as they were saddled and bridled the troops they passed in their headlong career imagined there had been an engagement, and that the riders had been killed. The horses of the remaining squadrons, as well as those of the band, happened to be in the hands of their riders, who were able to hold them. There was here again no cause for panic; the horses were hungry and the grass was plentiful, so that there was every inducement for the animals to remain quiet.

The third instance was observed among the horses of the 9th Cuirassiers, at Gallipoli, in 1854. On the 16th of July, at eleven o'clock in the evening, when every one except the

guards was at rest, all the horses were suddenly seized with great fear, tore away from the picket lines, and rushed in every direction, scattering the saddlery, upsetting the tents, piled arms and everything they met with in their progress. Many of them traversed miles, and a mule was not found until the 3rd of November following, at a distance of eight days' journey from Gallipoli. Only one mule remained on the lines. The accidents were numerous and serious. The next day, at the same hour, there was another stampede, but only fifteen horses broke away.

The panic among the horses of the 1st Life Guards bore a great resemblance to these examples, and the occurrence and its consequences could in no way be ascribed to any oversight or neglect on the part of those in whose charge the horses were. The way in which the horses were fastened to the ground was certainly unreasonable and unhorsemanlike, but this was not the fault of the regiment; and we much question whether any ordinary attachments would have retained the high-spirited creatures when once they were completely under the panic spell. The lesson should certainly not be lost upon army veterinary surgeons when the horses in their care commence to be picketed; as precautions should then be taken to prevent or limit the extent of these stampedes by every possible means.

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#### REPLY OF MR. J. W. HILL, M.R.C.V.S., WOLVERHAMPTON, TO MR. ANDREW SIMPSON.

WHEN I sent my case of tetanus for publication in your Journal for April last it was without expectation of being drawn into controversy upon it, otherwise, in the number of June following, I might have made it my business to dissect Mr. Andrew Simpson's record of twelve cases, and doubt not I should have found material whereupon to found an argument; but such was not my inclination, though evidently that of Mr. Simpson's. However, I may now, by your kind permission, be allowed to make one or two remarks upon what has emanated from that gentleman's pen.

First, then, I was much surprised to notice in reading his twelve cases, that in the introductory portion of the communication he states it is merely as a matter of duty he records the cases in question, and not with the intention of vaunting any pet system of treatment he might adopt; and then, in conclusion, he tells us, until something better be found,

hydrocyanic acid will be his sheet-anchor. The two statements, I think he must confess, are hardly compatible.

Mr. Simpson's twelve cases, as I read them, clearly advocate the use of hydrocyanic acid, and yet, strange to say, he states he does not know that the acid is even necessary; but he has never seen it do harm. Why on earth he should administer an unnecessary agent because it does the poor patient *no* harm, I for one cannot conceive; and then, a few lines afterwards, we are told, as I have previously remarked, that this said unnecessary and harmless acid will be his sheet-anchor.

Further, Mr. Simpson's observation, as to one case not possessing the value of twelve, is, I grant, true, though savouring somewhat of a boast, inasmuch as tetanic cases are not of every-day occurrence—Mr. Simpson's twelve, to wit, from March, 1869, downwards; but Mr. Simpson may rest assured that twelve cases and upwards, if they come under my care, will have the benefit of aconite, and a record of the effects will be kept.

In that gentleman's sketch of enteritis, as treated with aconite, he jumps to conclusions. I merely remarked upon the administration of the said drug in enteritic disease, and referred to its powerful effect upon the heart's action, not recommending the medicine as specific treatment for the malady; and yet those agents that will in the shortest space of time deaden pain or allay the nervous excitability accompanying some diseases are the agents which, in my opinion, every practitioner should use. Continually lowering the patient's pulse or stringing it up is not the way (so far as my knowledge is concerned) to effect a cure in tetanus or enteritis, though Mr. Simpson appears to think all that is necessary is to reduce the pulse to 40, and then all anxiety is removed, the other symptoms of the disease may be left to take care of themselves.

But I will not further trespass upon your valuable space, save only to say I felt that an answer was demanded from me; and it is in friendly spirit that I have penned these lines.

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## THE TREATMENT OF TETANUS AND ITS PROFITABLE DISCUSSION.

By ALEX. E. MACGILLIVRAY, Veterinary Surgeon, Banff.

IN the *Veterinarian* for September the discussion on tetanus and its treatment assumes a new phase. Previously the

writers on the subject mostly based their communications on their own practical experience; now, however, Mr. Andrew Simpson entirely diverges from this course, and takes to himself the pen critically sarcastic. He complains of my having handled his name and paper too freely; if so, I can only say it was far from wilfully done. He then proceeds to a long criticism of my communication, and, in so doing, so misrepresents and confuses my remarks, that I almost fail to recognise my own case.

Whatever Mr. Simpson's ideas may be on the subject, or however fondly he may cherish them, there are a few of the statements in my previous communication as to tetanus, which, however contradictory to his opinions, are not proved and supported by experience and records, both medical and veterinary; namely, that the treatment of this disease is very difficult and unsatisfactory; that idiopathic tetanus is far more amenable to treatment than traumatic tetanus; that intestinal worms are considered by the highest authorities a cause of idiopathic tetanus; and that as regards equine practice it is absolutely necessary in severe cases of this disease to have recourse to slings.

I am aware that there has never been any medicine successful, in even a fair moiety of cases, in reducing the frightful tonic spasms of tetanus. Aconite does it in some, hydrocyanic acid in other instances; but neither of the two gives us anything like the usual percentage of recoveries obtained in diseases analogous to tetanus. In fact, from all I have seen, heard, or read, it is the most intractable and fatal disease to be met with. No wonder, then, that Mr. Simpson's success with hydrocyanic acid took me somewhat by surprise, nine recovered out of twelve cases, two died, and one destroyed. This was rather more than 75 per cent.; and, considering this, Mr. Simpson (having a "strong faith in the philosophy of the results") tells us that hydrocyanic acid is his sheet-anchor; in another place he does not know if hydrocyanic acid be at all necessary; but finally he concludes it will be as well to give it, as in one case where he left off giving it the symptoms became worse. I saw a great deal of hydrocyanic acid used during my college practice, and the results, as already stated, were not such as to call for any great amount of faith being put in it; in fact, I have never used it in tetanus. Two years ago I brought through a traumatic case with repeated doses of opium, calomel, and aloes, in conjunction with the application of the sheepskin. Last year I had an idiopathic case which recovered without any internal treatment. Since my last communication I have adopted the

aconite and sheepskin in other two cases; one recovered, and the other (an aged horse) died on the fourteenth day, and twenty-four hours *after* a complete subsidence of all tetanic symptoms, from sheer exhaustion. I am compelled to confess, however, that with me, as with most other practitioners, by far the greater majority of cases have been fatal.

Again, as to whether traumatic or idiopathic tetanus is the least fatal and most easily managed; and as to the distinctive characteristics of the latter Mr. Simpson seems to have adopted very isolated and erroneous ideas as to both these questions. The distinctive terms *traumatic* and *idiopathic*, although very convenient, are to my mind rather more superfluous than necessary; for, to produce such frightful nervous disorder as that presented in this disease, there must somewhere be extensive *lesion* in the excito-motory nervous system, in which lies the root of the whole matter. But it is taken for granted that where the lesion is visible, such as bodily injury, the affection is traumatic; where invisible, such as intestinal worms or the *internal* effects of (or lesions produced by) extreme heats or colds, it is idiopathic. As to idiopathic tetanus being induced by intestinal worms, see Erichsen's 'Science and Art of Surgery,' 1857. In real traumatic tetanus the injured or diseased afferent nerve, in connection with the external lesion, conveys or transmits to or produces in the spinal cord some peculiar irritation constituting the disease; and the spinal cord in its turn becomes the medium of conveying, by the efferent nerves, the disease to the muscular system, causing the usual spastic rigidity, &c. In idiopathic tetanus we fail to discover any diseased or injured afferent nerve, the disease originating in the centre of the excito-motory system. In *traumatic*, therefore, we have not only to cope with the spasmodic state of the muscular system, but also with the injured, and, perhaps, what is worse, diseased afferent nerve. One cannot but see that it is the diseased state of the afferent nerve which is the great rock ahead in all severe cases of traumatic tetanus; for, allowing the possibility of allaying the spasms in such a case, have we not still the exciting cause remaining, and carrying its usual peculiar irritation to the great centre of the disease, *i. e.* the spinal cord? I am inclined to think that if it were possible, in every traumatic *recovered* case, to make a dissection along the course of the afferent nerve which carried the irritation from the external lesion, we should find that the nerve had merely been *injured*, and never *diseased*. There is an immense difference between injury and disease in every tissue, but surely much more so in that fraught with so much

importance as nerve-tissue. There are, no doubt, fatal cases in which no disease is discernible in the afferent nerve, nor even in the spinal cord; but this is no proof that ever a recovery took place where the nerve was diseased; on the contrary, one might argue that, if we have fatal cases without disease of nerve, how can we expect recovery with disease?

During my first session at college I had the benefit of witnessing a thorough *post-mortem* examination, made by the late Professor Strangeways, of the carcass of a horse that died from idiopathic tetanus; the spinal cord and brain, with their appendages, were, after immense trouble, carefully laid bare from end to end, and a most beautiful sight they presented. The abnormal appearance observable in this case was extensive *venous* congestion along the whole course of the spinal cord, with effusion. I remember Professor Strangeways referring to the case in one of his lectures, and I have jotted down in one of my college note-books "Lock-jaw caused by venous congestion of spinal cord and coverings." The disease was induced by exposure to cold, and was treated with hydrocyanic acid. Great numbers of intestinal worms were found in this case, and I consider it here worthy of note that many eminent pathologists consider these parasites a predisposing cause of tetanus, as they are almost invariably found in *post-mortem* examinations of tetanic subjects. There cannot, I think, be the least doubt that certain constitutions carry with them an inherent predisposing something which, on the slightest provocation of the requisite description, brings on all the usual tetanic symptoms; this is the only way of accounting for the immense numbers of recoveries from severe accidents without any untoward symptoms, while, on the other hand, tetanus will supervene from, perhaps, a very trifling injury in a subject with this inherent predisposer, such as intestinal worms. This is a matter worthy of extensive inquiry.

In protracted cases of tetanus the chief thing to be dreaded by veterinary practitioners is weakness; a severe and continued attack makes such a drain on the most robust system that, even after the spasmodic symptoms have disappeared, fatal collapse from sheer weakness is but too common a finale in this disease. The poor animal loses balance, goes down, and never rises. In the *Veterinarian* for September, Mr. Robertson, Stonehaven, mentions two such cases where the patients, after being in a fair way of recovery, went down and rose no more. The only remedy for this is to sling the patient. Mr. Andrew Simpson apparently ignores the use of slings under

such circumstances, and does not think slings were at all necessary in the case referred to in my communication. I firmly believe that if I had not slung my patient she would at this moment have been among the things that once were. Why, about three weeks after being slung, the farm overseer slipped the slings from under the mare, and she made a stagger and fell on him, dislocated his thumb and sprained his wrist, and required all the men from the two neighbouring farms to lift and re-sling her! So much for Mr. Simpson's judgment on a case which he never saw. No one who has once seen the benefit reaped by tetanic patients from slings will ever again forego their use in such cases; and I am well aware that the majority of the veterinary profession are of this opinion.

After all spasmodic symptoms have disappeared, and our patients have taken to feeding in almost their usual way, the food which they consume often does not seem to do them any good, for they become leaner and weaker. Believing that such a state of things is owing to the sympathetic system of nerves having become affected and weakened during the severity of the spasmodic attack, and that, consequently, the digestive-assimilative powers have become weakened and unable to perform their functions, I would prescribe a course of *arsenic*, as being most suitable for the restoration of the deranged and weakened nervous and assimilative powers. In the case referred to above the arsenic was very successful, and I have also derived much benefit from it in chronic rheumatism, disorders of the air-passages, &c.

In conclusion, on looking over the *Veterinarian* for the last few years, I find so many eminent practitioners recommending the use of hydrocyanic acid in tetanus, that I will give it a fair trial on the first opportunity. I observe, however, that the doses spoken of are far from resembling those which I was in the way of seeing administered—a fact which may have had a good deal to do in influencing me against its use.

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## THE PRINCIPLES OF BOTANY.

By Professor JAMES BUCKMAN, F.G.S., F.L.S., &c. &c.

(Continued from p. 656.)

THE LILIAL ALLIANCE, which now claims our attention, contains an assemblage of plants of the highest possible interest, for both as striking and ornamental objects as well as active

medicinal agents lilies and the plants allied to them have claimed from remote antiquity, and ever will claim, no small share of attention.

The Great Teacher bids us "consider the lilies of the field, how they grow, they toil not, neither do they spin, and yet I say unto you that even Solomon in all his glory was not adorned like one of these." (St. Matthew, chap. vi, 28, 29.) With us it is usually supposed that the lily of the valley was here alluded to; but there is reason to think that the eastern scarlet lily (*Lilium chalcidonicum*), a very showy and striking species, was the one referred to; but such is the beauty of most of the lily tribe that nearly any of them might be employed to point the same lesson. As an Alliance Professor Lindley says of the LILIALES, "These are the centre of the division of endogens, with complete flowers free from the ovary. They are known from the xyrids by their sepals and petals, being all equally coloured; from the juncals by their tender highly-developed flowers.

"Their undoubted accordance with dictyogens, in many essential particulars enables them to extend their frontier to that of the vast mass of exogens; and their wood, which does certainly in *Yucca* and *Dracæna* arrange itself in circles, confirms the tendency of the Lilials towards a junction with the same class."—'Veg. Kingdom.'

Their NATURAL ORDERS are as under :

1. Giliaceæ—*Giliads*.
2. Liliaceæ—*Lilyworts*. Anthers turned inwards.
3. Melanthaceæ—*Melanths*. Anthers turned outwards.
4. Pontederaceæ—*Pontederads*.

Of these the two central orders claim our especial attention, and, as regards the first, on account of its perspicuity and simplicity, we transcribe the following from Pereira's 'Materia Medica.'

#### LILIACEÆ, *Lindl.*—LILYWORTS.

*Characters*.—*Calyx* and *corolla* both alike, coloured, regular, occasionally cohering in a tube. *Stamens* 6, inserted into the sepals and petals; *anthers* opening inwards. *Ovary* superior, 3-celled, many seeded; *style* 1; stigma simple or 3-lobed. Fruit succulent, or dry and capsular, 3-celled. *Seeds* packed one upon another in one or two rows; *embryo* with the same direction as the seed, in the axis of fleshy *albumen* or uncertain in direction and position, occasionally

very minute. Herbaceous plants, shrubs or trees, with bulbs or tubers, or rhizomes, or fibrous roots. *Leaves* narrow, with parallel veins, membranous, not articulated with the stem; either sessile or with a narrow leafy petiole.

This, a large order, is widely distributed, few parts of the world being without many conspicuous representatives.

Bentham tabulates as many as seventeen native genera; but many of these are by different authors referred to other orders, and amongst them *Paris* and *Colchicum*. Such wild natives as the tulip fritillary, lily of the valley, Solomon's seal, squill, garlics, and others, sufficiently testify to the interest of our native species, whilst the lilies, tulips, hyacinths, aloes, and *Yuccas* of the garden and conservatory, show forth their gorgeous hues and graceful forms in a most attractive manner. Well, then, may Professor Lindley rapturously remark with regard to them:—"The beautiful creations which constitute the order of lilies would seem to be well known to all the world; for what have been so long admired and universally cultivated as they?" There are few gardens in which their bright colours, interesting forms, and sometimes delicious perfume, do not please and gladden us at different periods of the year, and fewer still in which some useful esculents of the order are not to be met with.

The tendency of cultivated forms to run into varieties, as in the case of the tulip and others, has given rise to an extraordinary industry in Holland, where hundreds of people are employed in cultivating these "bulbs," and time was when fabulous prices were demanded for a single bulb. The growth of bulbs has now settled down into a fixed commerce, and travellers take their orders as regularly as would the representative of a London or Birmingham house for any manufactured article.

Addison, in the 'Tatler,' tells us of a tulip grower, that "he valued the bed of flowers which lay before us, and was not above twenty yards in length, and two in breadth, more than he would the best hundred acres of land in England; and added that it would have been worth twice the money it was, if a foolish cook-maid of his had not almost ruined him last winter, by mistaking a handful of tulip roots for a heap of onions, and by that means, said he, made me a dish of porridge that cost me above a thousand pounds sterling. He then showed me what he thought the finest of his tulips, which I found received their value from their rarity and oddness, and put me in mind of your great fortunes, which are not always the greatest beauties."

But the order under review has both dietetic and medicinal qualities of no mean kind, some of which we must now briefly describe.

*Economic and Medicinal Uses of Liliaceæ.*—Onions, leeks, chives, and garlic will at once appeal to us by their appetising odour and condimental flavour, for an early notice.

Mr. George Lindley, in his 'Guide to the Orchard and Kitchen Garden,' published in 1831, mentioned as many as sixteen sorts of garden onion—*Allium cepa*. These are now about doubled; and as an evidence of the great value of this bulb, besides the vast quantities grown in our gardens, many thousands of pounds worth are imported into this country from Spain and Portugal. Portugal onions, indeed, being no uncommon or unacceptable present to the good housewife. At Cheltenham one of the autumn fairs is distinguished as the Onion Fair, and the piles of strings or *races* of onions which meet one at every turn testify to the popularity of this bulb as an esculent, for it is for cooking purposes they are used.

Leeks and garlic are of the same class; the latter, however, as we shall presently see, is sufficiently strong to have got it a repute as a horse and cattle medicine; so powerful, indeed, that its use in cooking requires to be regulated with a light hand to suit our English tastes, foreigners being reputed not so particular in this matter.

The leek is still a favorite with our Welsh cousins, though the enforced eating thereof is still as unpalatable everywhere now as in times gone by when, at the instance of Gower and Fluellin, "Antient Pistol" was made to eat the leek because he mocked at it.

*Pistol.*—Hence! I am qualmish at the smell of *leek*.

*Gower.*—I peseech you heartily, scurvy knave, at my desires, and my requests, and my petitions, to eat, look you, this *leek*.

*Pistol.*—Not for Cadwallader and all his goats.

*Fluellin.*—There is one goat for you (*strikes him*). Will you be so goot, scald knave, as eat it?

*Pistol.*—Base Trojan, thou shalt die.

*Fluellin.*—I desire you live in the meantime and eat your victuals; come, there is sauce for it (*strikes him*). If you can mock a *leek*, you can eat it.—*Shakespeare*.

It has been a subject of controversy whether this wearing of the leek on St. David's day originated in the fields of Cressy, as it seems more probable that it was known to the Druids, by whom it is indeed said to have been worshipped; and it is said that the origin of the term scallions, sometimes applied to leeks, was from its worship at Ascalon; and we have our-

selves extracted onions from between the legs of an ancient mummied Egyptian.

Mention may here be made of asparagus, which, though now a most important and extensively cultivated spring vegetable, both here and on the Continent, was at one time used more as a dietetic medicine. It no doubt has active principles, but these are much modified by blanching and cultivation.

The consideration of asparagus and Solomon's seal, employed in the same way, leads us to notice the medicinal properties of the order. That each genus contains plants of greater or less activity is pretty well known, but it is to the aloë that we must look for the most useful medicines, both in human and veterinarian practice.

The well-known effects of the extract of different species of these beautiful plants is so daily witnessed in both schools that it need not surprise the reader if we do no more than advert to them.

The whole garlic tribe has also been employed in veterinary practice; but we fear that for the most part the recommendation thereunto has depended more upon the pungency of its odour than upon anything else. Much as it has been used, and popular as it still is in rustic practice, garlic finds no place in the 'Veterinary Pharmacopœia.' Nevertheless, garlic balls are still in repute for cough in horses; and scarce a country druggist, in some parts of England, but has his own famous recipe for them.

Rennie's 'Supplement to the Pharmacopœia,' so much used as a counter directory, gives the following:

"Garlic Balls. Pound a quantity of garlic cloves till they form a paste, which form into balls of ʒj to ʒij each with liquorice powder."

But the form we have ever found most popular has been the admixture of Stockholm tar with the above.

The uses of onions and garlic in cattle plague, and the confidence with which they were extolled, would form a curious chapter in the history of that fell disease.

## Pathological Contributions.

### CATTLE PLAGUE.

INTELLIGENCE from France respecting the progress of the plague is not in any important particulars more satisfactory

than during the previous month. According to the official returns, the disease has raged in forty departments of the east, north, west, and centre of France. In eighteen departments the repressive measures have been so far successful that the disease is considered to be extinguished. It is increasing in Havre, and remains stationary or is decreasing in the departments of the Ardennes, Aube, Calvados, Maine et Loire, l'Orne, Pas de Calais, Seine Inferieure, Somme, Voges, l'Aisne, Doubs, l'Eure, la Marne, Haute Marne, la Meurthe, la Meuse, l'Oise, la Haute Saône, la Sarthe, Seine et Marne, Jura, and la Mayeuse. Meanwhile we hear nothing of those stringent measures being applied to the eradication of the plague that are always effectual in the hands of the Prussian authorities. When the proposition to treat cattle plague in France by means of phenic acid was discussed in our pages we prognosticated disastrous results, and our prediction has been verified by the event.

In Russia cattle plague has destroyed many animals in the villages surrounding Taganrog, and the districts in the neighbourhood of Stâvropol and on the Criban have suffered severely.

Poland remained free from the disease for some time, but we learn from Warsaw that an outbreak occurred in the early part of September in a great many localities in the governments of Petrikau and Lublin. Nothing is said of the cause of the disease, but we gather that it appeared simultaneously in several places.

The Prussian authorities in Silesia have placed an unusually strong *cordon* on the frontier.

Lower Austria is reputed free of cattle plague, but the disease exists at Hernals, Ottaking, Währing, and Neuleidhenfelds in Hernals, and also in two places in the district of Sechshaus.

Information from Turkey is to the effect that no cattle plague exists in the principalities.

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### PLEURO-PNEUMONIA.

COMPARED with last year the return of cases of pleuro-pneumonia show an increase of the number of attacks, but not to any serious extent. In the dairies in London and other large towns, the cases are numerous, as in our experience they always, at least for many years past, have been; but throughout the country the malady prevails to so slight an extent that it only requires combined and con-

sistent action on the part of the local authorities to stamp it out. As far as we know, the total number of animals at present affected does not exceed three hundred; this time last year the number of diseased animals was reported to be a little over two hundred. The total number of counties returned as infected is forty-four, giving an average of some half dozen cases to each county.

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### FOOT-AND-MOUTH DISEASE.

THIS affection continues to advance with extraordinary rapidity. In the return of cases for the week ending September 9th, the number of attacks reached nearly thirty-nine thousand, while in the corresponding week of last year they were less than seventeen thousand.

The number of infected counties has increased from fifty-nine, as stated in our last report, to seventy-six, and the centres of infection number between nine and ten thousand. Under these circumstances, and with the present system of carrying out the provisions of the Contagious Diseases (Animals) Act, it will be remarkable if the disease ceases while any susceptible subjects remain to be attacked.

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### PARASITIC LUNG DISEASE OF LAMBS.

FOR a few weeks past a great fatality has prevailed among the lambs in many parts of the country, more especially in the counties of Worcester, Gloucester, and Shropshire.

In some instances the deaths have reached full 50 per cent., and in very few has it been less than 20 to 30. Throughout its progress the disease has been accompanied with great wasting, the animals ultimately becoming so emaciated as to be little better than living skeletons; a "hacking cough" has also been a prominent symptom from the beginning of the disease, while dysenteric purging has immediately preceded death. These symptoms, and others unnecessary to particularise in a short notice of this kind, have had their origin in the existence of worms (*Strongylus bronchialis*) within the windpipe, bronchial tubes, and air-passages of the lungs. Structural disease of the lungs has resulted from the irritation induced by the presence of the parasites, and the deposit of their ova within the minute air-tubes and cells, and especially from the young worms, when hatched, locating themselves in the so-called parenchymatous tissue of the lungs. All young animals are at times liable to attack of the *Strongylus bronchi-*

*alis*, but it is among calves and lambs in particular that the more serious consequences follow. Microscopical investigations have made us familiar with the nature of the disease induced in the lungs, and also taught us much of the natural history of the lung-worm. They have not, however, cleared away all the difficulties which beset the subject; and so much of the natural history of the worm as belongs to its existence out of the body of its host, and the way in which it finds its entrance into the air-passages, remains to be satisfactorily explained. This part of the subject is of the greatest importance, because it points to the means that should be employed to prevent the pneumonic disease. Within the body many parasites are, to a great extent, unassailable, or, at any rate, we cannot effect either their expulsion or death before they have laid the foundation for disease, which will go on despite the best-directed means of cure. To some extent this is the case with the parasites in question, and hence the inutility of treatment in many cases, especially those which have been neglected in their early stage. Our present knowledge of the natural history of the lung-worm warrants the conclusion that the embryos are parasitic to many of the grasses, particularly those making up natural pastures. Lambs kept rigidly from these and from old layers which have been fed previously with sheep, are found to escape an attack, even in districts and in years when others differently managed fall a sacrifice to the disease. The principles of cure consist in causing an expulsion of the parent worms—those which accumulate in the wind-pipe and large bronchial tubes—and destroying the embryos as they escape from the ova, which are present in vast numbers in the air-cells of the lungs; and also in arresting the pathological changes by strengthening the constitution of the animals by a free use of tonics, generous diet, and protection from all vicissitudes of weather. *Ol. turpentine*, with tinct. of *assafoetida*, conjoined with glycerine, will often effect the first object; and sulphate of iron, powdered gentian, bark, ginger, and allied agents, the second, so far as therapeutic treatment is concerned.

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#### THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

“RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of August, 1871, have been found to be affected with any Contagious or Infectious

Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	NUMBER OF ANIMALS AFFECTED.					DISPOSAL.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered at place of landing.
Coruña	Plymouth	Foot-and-mouth	34	...	...	...	34	34
"	Falmouth	"	12	...	...	...	12	12
Oporto	London	"	1	...	...	...	1	1
Hamburg	Grimsby	Sheep-Scab	...	1	...	...	1	1
Total Foot-and-mouth .			47	...	...	...	47	47
,, Sheep-scab . .			...	1	...	...	1	1
Total . .			47	1	...	...	48	48

"ALEXANDER WILLIAMS,

" Privy Council Office,  
" Veterinary Department, 14th September, 1871."

Secretary.

### Facts and Observations.

**RABIES IN CATTLE.**—Rabies still prevails in the northern counties, and among other cases which have recently been reported in the public papers is one of four cows having become rabid which had been bitten by a dog belonging to the owner of the cows. It appears that some time ago this dog was bitten by one which was rabid, and although strongly advised by his neighbours to at once destroy the animal, the owner would not consent to do so. The case occurred at Elston Bottoms, a few miles east of Preston, in a district in which the disease has been very prevalent for some time past.

**IMPORTATIONS OF ICELAND PONIES.**—Considerable importations of Iceland ponies has taken place into Granton, near Edinburgh; and during the past few months as many as a thousand are said to have been landed at that port. The animals are small, and well adapted for carrying children, being remarkably docile. Their value for other purposes is limited; but their hardiness well fits them to supply the place of the donkey or the mule.

USE OF THE CONDURANGO BARK IN CANCER.—According to the *British Medical Journal* the use of the Condurango bark in cases of cancer has been attended with no beneficial result. So much had been said of the therapeutic properties of the bark in cancerous diseases that the Government, through the College of Physicians, furnished a supply of it for trial to St. Bartholomew's and the Middlesex Hospitals. Neither constitutionally nor locally does it seem to have any special effect.

FUNGOID DISEASE OF ESCULENT VEGETABLES.—Parasitic fungoid disease would seem to be on the increase among our esculent vegetables. According to the *Globe* a most serious disease of the kind has attacked the asparagus, more fatal in its results than that which affects the vine or the potato. Both the stems and the roots are the seat of the development of microscopic fungi, and the smell which accompanies the destruction of the plant, through their agency, is described as being equally offensive as that belonging to rotten potatoes. One gentleman in the West of England, to whom the *Globe* is indebted for its knowledge of the subject, has had twenty acres of asparagus destroyed by the disease. Both the progress of the affection, and the indications of its attack are very similar to those of the potato disease.

STATISTICAL RETURN OF LIVE STOCK IN GREAT BRITAIN  
ON JUNE 25.

	Cattle.	Sheep.	Pigs.
1869	5,313,473	29,538,141	1,930,452
1870	5,403,317	28,397,589	2,171,138
1871	5,339,332	27,132,898	2,499,889
	Increase (+)	Decrease (-)	
1871 over 1870	- 63,985 or 1.2 per cent.	- 1,264,691 or 4.5 per cent.	+ 328,751 or 15.1 per cent.
1871 over 1869	+ 25,859 or 0.5 per cent.	- 2,405,243 or 8.1 per cent.	+ 569,437 or 29.5 per cent.

Statistical Department, Sept. 15, 1871.

## THE VETERINARIAN, OCTOBER 1, 1871.

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Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

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## THE SPREAD OF FOOT-AND-MOUTH DISEASE.

Foot-and-mouth disease is still on the increase in many parts of Great Britain as well as Ireland, and appears likely to attain dimensions which it has seldom reached since its first incursion. The infected counties in England and Scotland now number 76, while the centres of the malady have risen during the past month from 2444 to 9796. The mortality ordinarily resulting from the disease is small; but, nevertheless, the loss which the country sustains from the diminished value and wasted condition of the animals, the lessened amount of milk, butter, and cheese, together with the serious interruption to the cattle trade caused by these continuous outbreaks, is in the aggregate very large. The main cause of the greater part of these evils is clearly traceable to the very imperfect manner the law is administered. In many districts the provisions of the *Contagious Diseases (Animals) Act* are woefully misapplied, in others they are almost totally neglected, while in not a few they are strained to a point which make them so vexatious as to lead to every kind of evasion.

The statements put forth by many of the local papers are eminently calculated to mislead both cattle owners and the public in general. Among other incorrect statements with regard to the importation of store stock, we find one in the *Norfolk News*. Speaking of the foot-and-mouth disease the writer says that, "with the present regulations for the importation of store stock by which foreign cattle from all countries, save France and Russia, may pass inland after twelve hours' quarantine, it is no use taking any great or vigorous precautions against this or, indeed, any other cattle disease."

Now the facts are the very opposite, for while a total prohibition exists with regard to France, the cattle coming from Germany as a whole, the dominions of the empire of Russia, the Austrian-Hungarian empire, the dominions of

the Sultan, the dominions of the King of the Hellenes, the dominions of the King of Italy, and also Belgium, can only be landed at parts of ports specially defined by Order of Council, and must be slaughtered within ten days of landing. Store cattle can, therefore, only come to us from Spain, Portugal, Holland, Denmark, Sweden, and Norway. Practically, Holland and Denmark are the only countries from which any number of store cattle are received; the cattle imported from Portugal and Spain being fat animals, and those coming from Sweden and Norway so few as to be of little account. Further, the risk of introducing foot-and-mouth disease from any unscheduled country is reduced to a minimum, for should it be found that any one animal is the subject of the malady, the entire cargo has to be slaughtered at the place of landing, the skins disinfected, and the diseased parts destroyed. None but healthy foreign cattle can, therefore, pass inland; and it singularly happens, as has been already intimated, that we lack proof of any case of the disease being due directly to imported foreign cattle. Ireland, undoubtedly, has sent us many cargoes of diseased animals during the last two months, and little doubt can be entertained that the present augmentation of cases is in part due to this circumstance. We may remark, however, that stringent measures of suppression are being adopted in that country the beneficial effects of which are making themselves apparent.

With regard to precautionary measures on this side the Irish channel, they are not such as can be approved. It is true that mere convictions for not giving notice of the existence of the disease and for moving animals suffering from it have recently taken place; but what is really wanted is a better system of inspection throughout the entire country, and a uniformity of action by the several local authorities.

That portion of the press which does not harp on the single string of infection by foreign cattle is not slow to perceive the true state of the case.

A few weeks ago the *Mark Lane Express*, referring to several outbreaks of foot-and-mouth disease which had been traced to home-bred stock, or to animals brought over from Ireland, remarked pertinently enough, "had as many

outbreaks in as short a period as here cited been traced to foreign stock instead of to Irish beasts, the most would have been made of such information ; whereas suggestive and important as this evidence must be considered, it commands little or no attention."

The *Daily News* on the same subject observes:—"If owners of beasts who know they have taken them from herds that have been exposed to infection send them to our fairs and markets, these latter will themselves become centres for the spread of disease. The remedy, we believe, will be found in improving the authorised system of inspection and in a more strict application of the law. At present it cannot be said that the inspection now existing is by any means satisfactory, even where it is most needed. It is difficult to believe that men are in earnest in the suppression of disease when they leave its detection to the police, who may no doubt be trusted to enforce the law when the case is clear, but cannot be expected to be skilled in the diagnosis of maladies. The interests affected by this disease are important enough to be placed in the hands of men educated to the work. But magistrates must also perform their part with fidelity. It is not fair to the conscientious cattle owners who willingly sacrifice their own interests for the general good to let them see their efforts and vigilance rendered nugatory by the thoughtlessness or cupidity of a neighbour ; and some magistrates have lately showed a leniency in dealing with such cases, which is a want of mercy to the public. The Legislature has wisely left the chief power to deal with this evil in the hands of the local authorities, in order that the public may have the advantage of their knowledge of the interests of their localities, and the country looks to their action in the first instance for a remedy for the present evil. We believe the powers conferred by law are adequate to every requirement, and that if they are only regularly and universally applied our abundant supplies of food for animals may be turned to account, the enormous loss in milk, butter, cheese, and milk now going on may be stopped, and an important branch of our agricultural system be restored to prosperity."

The *Preston Chronicle* draws attention to the matter in

the following sensible observations:—"The foot-and-mouth disease," it says, "has reappeared in many districts surrounding Preston; and between 1000 and 2000 head of cattle are reported to be suffering from it. This is serious; and we are inclined to ask a question we have more than once put before in reference to the disease,—whether it is wise to leave the important part of the business to police officers? They are the legally appointed inspectors in all districts; but, as a rule, they know nothing about cattle, certainly not sufficient to justify them in giving any practical or scientific opinion about their condition; and what we recommend is, that whilst in the first instance cases of suspected disease should be reported to them, the real business of inspection should be in the hands of the veterinary surgeons of the various districts, just as it was when the cattle plague was raging."

In a letter which we extract from the *Newcastle Daily Post* the following passage occurs:—"A certain section in this country are continually crying down the importation of foreign stock from abroad, and whenever disease appears among our own herds set it down as the *début* of the foreigner. This is utter folly and prejudice; whatever may have been the origin of murrain and pleuro-pneumonia, they have now been so long known in this country that we may fairly call them indigenous to it. Why, in the valleys of the Wansbecks and Pout, where one of them is now raging, a foreign animal has never been imported—has never, indeed, come within twenty miles."

These statements and all the evidence contained in them are worthy of some notice, but they excite no attention from those who have adopted the facile expedient of explaining all the outbreaks of infectious disease by referring them to the free movement of cattle from unscheduled countries. It is quite time that this unnecessary and useless cry should cease, no good is gained by its utterance; no doubt it is to some extent comforting to the feelings of those who like to adopt the injured individual tone, and mutter improprieties of speech against the Government which lets loose foreign cattle and sheep to spread destruction among our flocks and herds, we believe that is the correct phrase, but

in all seriousness is not the ceaseless charge becoming feeble? and would not a few facts, we mean statements of actual occurrences, with dates, names, and address, and all essential particulars, furnish a pleasing variety and possibly tend to good results? Circumstances alter cases so much that it is really necessary sometimes to go a little into details; for instance, a short time ago we had to make an inquiry respecting an outbreak of pleuro-pneumonia among Dutch cattle. The first thing we found out was, that the animals had been in this country for some months; and the next thing was, that one of them was suffering from ordinary inflammation of the lungs, which is in all medical nomenclature called pleuro-pneumonia. We merely allude to this case in illustration of the value which is to be attached to general statements which emanate from persons who in plain phrase do not know anything of the subject on which they discourse so eloquently.

As to the causes which have led to the extraordinary spread of foot-and-mouth disease we need not say much. In the first place the disease is highly infectious, and its period of incubation is short. Next, nothing is done to prevent the extension of the malady. We are, of course, aware that a number of policemen are employed by the local authorities to obtain returns of the number of cases, and we also know that they gain the information from the farmer or the farmer's men, tabulate it, and send it to the central office. We do not doubt that the duty is well done, and we are personally indebted to the force for much valuable statistical information.

Also we have seen some activity displayed lately in prosecuting offenders against the law which prohibits the movement or exposure in public places of diseased animals; here, again, we console ourselves with the reflection that justice is vindicated, and the guilty persons punished, after they have done the mischief. Of course, it would be unreasonable to punish them beforehand; but does any one imagine that these proceedings, quite necessary as they are, have any influence in repressing the spread of an infectious disease among animals? There is no mystery in the matter; the disease is propagated in obedience to the laws

which regulate the progress of infectious maladies in general. On the part of the profession we disclaim all responsibility in the matter, there are enough veterinary surgeons in the country to cope with the affection if their aid had been sought. If the whole country had been mapped out into districts and each one placed under the charge of a competent professional man, we have no doubt that good results would have been achieved ere this. The police would render very efficient aid in carrying on the instructions of the veterinary surgeons; but for all sanitary purposes their present action is considerably worse than useless.

### Reviews.

Quid sit pulchrum, quid turpe, quid utile, quid non.—HOR.

*The Physiology and Pathology of Mind in the Lower Animals.* By W. LAUDER LINDSAY, M.D., F.R.S.E., Physician to the Murray Royal Institution (for the Insane), Perth.

DR. LINDSAY commences his paper with a compliment to the members of the veterinary profession, contained in the following passage:

“*Introduction.*—In studying, during the last two or three years, the subject of the mental phenomena exhibited by the lower animals in health and disease, in the wild state and in domestication, I have been much struck with the amount and kind of prejudice on the one hand, and ignorance on the other, that characterise not only the popular belief—but also the opinions of many of our most eminent authorities in natural history, human and veterinary medicine, metaphysical and psychological science—concerning the existence of *instinct in animals as contradistinguished from reason in man.* More particularly have I been amazed at the prejudice and ignorance existing in quarters where I should least have expected it, *e.g.*, among those whose lives are spent in intimate association with the domesticated animals, *viz. veterinarians.*”

After this we are not surprised to be told that—

“Indeed, as respects many mental attributes, or general mental development, many animals are infinitely *superior* to many men; or conversely, many men are infinitely inferior to many animals.”

The object of the pamphlet, as far as we can gather it, seems to be to prove that what is called mind in man exists also in other animals. At page 9 Dr. Lindsay writes :

“It is utterly unscientific, and in all senses incorrect and absurd, to refer to *instinct* in other animals what we attribute to *mind* in man. Instinct is not something different from, or opposed to, mind ; but is an essential constituent of the latter. Instinct and reason (or intelligence) are merely different degrees of development, or different modes of manifestation, of the same faculty, or class of phenomena. They pass into each other by gradations so imperceptible, that it is impossible to draw any rigid line of demarcation, to differentiate or define by any distinctive character. Both instinct and reason occur in man and other animals, though in different degrees or differently manifested. It is frequently most difficult to distinguish what is *innate* (or congenital) from what is *acquired*—the fruit of intuition from the result of experience. What is an *acquired* aptitude or quality in parents frequently becomes an *instinct* in successive generations of offspring. *Habit* modifies, or impresses itself upon, organisation in the parent, whereby an instinct is created in the offspring.

“So far as present data enable us to judge, we are warranted in concluding that mental operations or phenomena in the lower animals are the *same in kind* as those of man ; in other words, that there is, mentally or psychically, *no essential or fundamental distinction* between man and other animals. This is shown equally by the *pathology* and *physiology* of mind in animals—by their mental phenomena both in disease and health. It may be said that there is *unity of mental type with variety of development* throughout the animal series.”

These sentences, it will be seen, contain a number of assertions, and throughout the paper the same style prevails. We confess that we do not quite see how the mere statement that mind and instinct are the same disposes of the point in dispute ; we have no particular objection to the conclusion if it can be fairly established, but Dr. Lindsay's paper leaves the whole question very much where it was.

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*Some of the Principles concerned in the Breeding of Stock.*

A Paper read by Mr. FINLAY DUN, at a Meeting of the Midland Farmers' Club.

THERE is a great deal in this pamphlet which is worth the notice of the profession. Mr. Dun has entered “*con*

*amore*” into his subject, and passed in review all the important points connected with the breeding of stock. We have only space to quote the following

“SUMMARY:—In bringing to a close these somewhat desultory observations, I would remark, by way of *résumé*, that although much of late years has been done in the way of improving the breeds of the domesticated animals, much yet remains to be done. No one who has studied the cultivation of plants, and who has observed how roses, geraniums, or the now fashionable foliage plants have been trained to excellence—no one who has watched during the past ten years the steadily-increasing perfection and marvellous variety amongst the poultry and pigeons of our best shows—can doubt that the ordinary horses, cattle, and sheep of this country are still far short of perfection. Not 10 per cent. of the 200 to 300 colts and fillies entered for the Derby, Oaks, or Leger are ever good enough to come to the post. Greatly more than half the steeds bred at considerable expense for the hunting field, at five years old prove leggy, weedy, unsound, or otherwise unfit to carry thirteen stone across country. Amongst other descriptions of horses, the plain-looking, unsound, and unserviceable unfortunately almost everywhere outnumber the symmetrical, the sound, and the serviceable. With the majority of herds and flocks throughout the country similar shortcomings are discoverable. How few animals, even in our largest fairs or markets, exhibit the shape, style, and quality which satisfy a really good judge; or to take another standard, how few produce the highest money return for care and capital invested. Such shortcomings in the art of breeding may be in part overcome by diffusing, as has been attempted in this paper, sounder views of the science and principles of breeding.

“In order to obtain sound, healthy, vigorous, and remunerative stock, whether horses, cattle, sheep, or swine, the best and healthiest parents must be selected. All imperfections and faults of form, and all habits, vices, and diseases that are natural and inborn, and even some that are acquired are, as I have endeavoured to prove, distinctly hereditary, and must be sedulously avoided.

“To ensure the certain transmission of the qualities which it is desirable to retain and perpetuate—to prevent the disappointment of animals breeding back to anything objectionable—pains must be taken to ascertain that the parents themselves have been descended for several generations from well-selected and good sorts. In the case of the male, whose sphere of influence amongst the domesticated animals is so

much more extended than that of the female, the possession of such a distinct descent or pedigree is especially essential.

“The careful breeder will ever be on the watch for desirable characters, which, by the law of variation, crop up among his animals, and, by care and selection, may be moulded to useful purposes.

“The parents when paired must be healthy and vigorous, neither too old nor too young. They may be of the same strain of blood or of the same family, but they must not be too nearly related. A single ‘nick in,’ as breeders of fowls term it—a single union, that is, between blood relations, may occasionally be admissible to fix any very desirable qualities possessed by the parents; but such close alliances cannot be often repeated without reducing the size, vigour, and usefulness of the stock. Alike in the vegetable and animal kingdoms, nature distinctly indicates that races shall not be perpetuated by parents too closely related to each other. As we change our seed wheat, potatoes, and flowers, so also, and for like reasons, must we change occasionally our bulls, rams, and boars.

“Whilst both parents between them mould the future offspring, it is satisfactorily established that the male particularly confers external form, impressing his good and bad points, especially on the organs of locomotion—the bones and the muscles. The female, on the other hand, gives especially the internal organs, with the habits, dispositions, and diseases, which thence result. The importance of using only well-descended sires is thus rationally explained. Most great men are said to have had remarkable mothers, and so according to this law it should be, for the organisation of the brain, like the temper, constitution, and other such qualities of the internal organs, descends more especially from the mother.

“Other laws possibly, however, occasionally intervene to modify the results of this law. Thus there is good reason for believing that the most vigorous, active, and best bred parent usually exercises rather more than its own share on the development of the progeny, and is more prominently reproduced than its weaker and worse-bred partner.

“Between the two parents there ought to be a certain amount of likeness. Very uncertain results follow the union of a very large horse and a pony; a cart horse and a thoroughbred mare; a greyhound and a bull-dog. These unions were obviously never intended, and when very dissimilar animals are mated, such an unnatural and artificial union is seldom happy or successful.

“Another occasional cause of disappointment in the breed-

ing of stock is the impression which is left on the female by the previous, and perhaps still more notably, by the first male with which she has been paired.

“Even amongst the domesticated animals, especially at periods of unusual excitement, the influence of the imagination of the parents, particularly of the female, produces very notable results upon the progeny.”

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### Extracts from British and Foreign Journals.

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#### INCREASE IN THE VALUE OF HORSES.

WE reproduce the following pertinent remarks relative to the increased value of horses and the present aspect of the dealers' trade. The extract is from a leading article in the *Sheffield and Rotherham Independent*. The writer is evidently practically acquainted with several causes which are in operation to lead to the results on which he comments.

“The continued rise in the market value of all kinds of horses is somewhat remarkable. Horses of a certain class which within our recollection might be bought for from £18 to £22 each, are now eagerly purchased at from £30 to £34. The heavy breed of horses, such as are used for carting and dray purposes, have gone up greatly in price; and whereas a few years ago such animals were to be had at moderate figures, a powerful cart horse now of good quality, five or six years old, sound and steady in his work, meets with a ready sale at from £50 to £65. The value of hunters is almost out of calculation, so much depends on the character an animal has earned, and which, when good, raises the price to several hundred pounds or more. Young and partly untried horses of this class, four and five years old, with power and hunting-like style, fetch as much as £150. Carriage and match horses with what the dealer calls “bloom and fashion,” sell for almost fabulous prices, and the country round is searched through by dealers or their agents, and valuable horses rarely reach a fair without already being the property of these men. Thus it is that private buyers even at fairs have almost invariably to buy from the dealer, and perhaps on the whole this is the better plan. If a good looking horse in a fair escape being bought by the dealer, who is generally a good judge, it is more than probable the animal is not worth the consideration of others; this applies more particularly to the better class of horses.

“France is at the present time draining our markets of second-rate horses, and this not only makes such very dear, but the prices of nearly all other kinds have advanced in consequence. It is not, we think, likely that there will be a return at any time to the prices of some years back. The continued prosperity of the country has so greatly increased the demand for horses, and although it may seem strange, the breeder of them is not induced even by this yearly increase in the demand, to meet it by an increased supply. The fact is that the percentage of good, sound, valuable horses, which can be brought to market at four years old—they are rarely kept in the hands of the breeder now until they are five—is very small, and the many risks which the breeder has to encounter amongst his young horses so often lead to direct loss and disappointment, that there is no need to wonder he is contented to provide less in number and to demand greater prices, when he is able to present ‘bloom and fashion’ to the dealer.”

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#### FOOD OF THE PEOPLE.

IT is much to be desired that what may be called the philosophy of eating and drinking should be better understood and more fully acted up to. Though eating and drinking are acts which, under penalty of death, nobody may evade, yet how few of us perform these important tasks under a proper appreciation of the exact object we set to ourselves in doing so. Curtly stated, we eat to make blood; we drink to quench thirst and to promote digestion. We feed our vital furnaces for the same reason that an engineer feeds the furnace of his steam-engine—to keep up the fire; but a foolish and utterly reprehensible sensuousness thwarts the indications of nature, until the consideration of what is best for blood formation and thirst assuaging, is dominated by the care that such and such a meat, and such and such a drink, shall be agreeable to taste and smell. Lord Macaulay has somewhere remarked that the cooking economy of a people is determined in the first instance, and then regulated, by the nature of its fuel and the mode of consuming it. As regards ourselves (English) the truth of that dictum is fully borne out. Roasting, boiling, broiling, and frying, are operations that accord with our Cyclopean system of fuel *non*-economy, and a few changes having been rung on the national primitive four, the culinary resources of a typical English cook are at an end. Now, as poor Soyer long ago remarked, nothing, in the

abstract, admits of being said against roasting, boiling, broiling and frying. The best, or typical results of these national operations are undeniably good; but then, in order to achieve such typical results, not only must the raw staple be the best, but other conditions, mostly climatic, must lend their aid. An English roast or boiled joint never presents itself at the grade of typical best unless it has been hung a considerable time, and this is, in certain states of atmospheres and temperatures, impossible. A rational and philosophical system of cooking should rise above needing the aid of such casualties of nature. Given animal fibre exempt from disease, and containing the necessary amount of carbon, hydrogen, oxygen, and nitrogen, as made known by analysis, it should be within the competence of a rational cuisine to present it to the stomach in an easily digestible blood-and-flesh-forming condition. The great defect of our national cookery is, that only what are known as prime cuts lend themselves with any degree of success to the spit, or boiling kettle, the gridiron, or frying-pan. Hence it follows that these prime cuts, being used almost exclusively by the rich, who eat regardless of expense, are only accessible to the poor at a cost which seriously tax their weekly earnings. If the poor would look at the case sensibly—if they would study the culinary art, giving special attention to the value of small fire heat and gentle stewing, they might often live in much luxury instead of going forth ill fed and hungry; but, as a class, they are prejudiced against the innovation, and prejudices—especially of eating, drinking, and avoiding—are not set aside of a sudden. Moreover—perhaps happily—the incidence of a new meat supply from South America and Australia is calculated to lessen the pressure already felt of the home dearth of animal food.

If flesh be rapidly sun-dried it may be kept an indefinite time in a dry atmosphere without destruction. In South America vast quantities are so prepared, and sold under the name of *charqui*. African slaves may eat it, relish it, and—more to the purpose—digest it, but English free men—with the mild alternative of cats' meat to elect—cannot be expected to do so. *Charqui* has been imported, tried, and pronounced abominable. Probably it got injured by storage in ships' holds; but, anyway, it was a failure. The experiment has been tried of importing the flesh ice-packed, but without good results. Of better promise was Professor Gamgee's system of sulphurous acid preservation, but still, only a promise. Mr. Tallerman tried the experiment of smothering Australian flesh in melted tallow, and thus importing it with-

out access of air. Well, Tallerman's Australian meat *can* be eaten by food adventurers sufficiently strong-minded and heroic. Meantime, the system of canister preservation holds its ground, and with reason. These provisions are excellent in their way, but burdened with two grave and irreparable defects; the first being the cost of tin plate enhancing the price of contents; the second the defect of overcooking, an unavoidable necessity, for if the provisions be not overcooked, they putrify and will not keep. Knowing this fact, however, a rational cook can do much to obviate the defect. Perhaps the most satisfactory way of dealing with these canister-preserved meats in summer time is to eat them cold with condiments; but if warmed up, only sufficient heat should be applied to warm them through. Nominally canister-meat preservers send joints roast as well as boiled, but call them by what name we will, boiling at a very high temperature constitutes an integral part of the preservatory operation. The process is simple as it is ingenious, the joint to be preserved being lodged in a canister just big enough to hold it, surrounded by water. The cover is soldered down, and a small steam hole pierced through it. The canister is next submitted to a very high temperature in a bath of chloride of calcium, and after a time, whilst steam rushes violently through the aperture, the latter is adroitly soldered, thus making all air-tight. To conduct this operation properly it is necessary to continue application of heat for a few moments after soldering the aperture. These are moments of great danger, for steam pressure accumulating, the whole canister may explode,—has indeed been known to explode with fatal results, a man having some years ago lost his life while superintending the finish of a turkey. Many sections of the London middle-classes have taken very readily to these canister provisions for economy. They are patronised by many of the rich for their good hash, *entrée*, and soup-making qualities; but, hitherto, the London lower orders are prejudiced against them. Not so the working classes of Lancashire, who consume those meats in ever-increasing quantities.—*The Echo*.

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ON THE DESIRABILITY OF VETERINARY CONTRACTS ON  
THE CLUB-DOCTOR SYSTEM.

A Letter addressed to COLONEL LUTTRELL by R. NEVILLE-  
GRENVILLE, M.P.

“MY DEAR LUTTRELL,

“It has often struck me that our numerous Agricultural

Societies might do more to promote the end which they have in view. Some are flagging, and calling for increased support, some are flourishing and popular, all contribute to agreeable social gatherings and those pleasant interchanges of amenities with which a county member should be the last to find fault; but might not a portion of their funds be, in many instances, expended in more useful objects? Of some of the prizes it may be remarked, 'Ah! well-a-day! their date has fled.' For instance, twenty years ago a prize for mangolds or swedes stimulated, perhaps introduced, the culture of roots, then an exceptional, in some places an unknown, crop. Now it only causes a race between squire A. and farmer B., and perhaps Mr. C., agent for some patent phospho-nitro-guano-make-grow manure. Of course the neighbours are interested,—so they would in a trotting match between their respective cobs,—but agriculture is as little benefited by the one as by the other. Of fat-stock prizes and prizes for breeding animals something of the same sort may be said, if an inferior animal which happens to be in the yard is decorated with the blue ribbon when a superior one is disporting himself the other side of the hedge, or within a mile of the ground. However, the premiums offered for skill and length of service to agricultural labourers are excellent. They cause intense happiness to the recipients, and, carefully as they are for the most part adjudged, are no little stimulus to the many who take an interest in them.

"One question I have asked myself and others—Might not these local societies be the means of introducing and supporting first-rate veterinary surgeons? In some districts that much-needed practitioner does not exist, in others he is badly supported, or merits no support at all. I would suggest that the local society should elect an efficient professional man, give him a retaining fee, and that all its members who would in addition prepay him an annual sum (to be fixed according to the acreage or quantity of stock kept) should have a right to his services whenever required, on the club-doctor principle.

"Every year stock is increasing in quantity and becoming more valuable. I need only point to the recent sales in proof of it. High and artificial feeding in the animal, as well as in the human subject, induces disease; when taken in time a cure is generally easy; if neglected, the reverse, and great loss in consequence, whether by the death of the patient or the length of time it takes to recover his condition. Most large owners of stock or their herdsmen understand something of the diseases of cattle, and in common cases are as

good doctors as can be found; but a serious case arises, they try their hands on it, fail; at last send for the 'vet.' too late to give him or the beast a fair chance, grumble at his bill, however hard-earned, and grudge paying it nine months after the animal is defunct. Had there been a 'club-doctor' the expense, the grudge, and perhaps the bullock, would have been saved. Of course a 'vet.' could of himself start and organise such a club without the assistance of the local society, but I cannot help thinking that the co-operation of the latter would prove more satisfactory to all the parties concerned.

"Yours truly,

"RALPH NEVILLE-GRENVILLE.

"To Colonel LUTTRELL."

"Since writing the above I have read an interesting paper on Veterinary Contracts, to which a premium of £5 was awarded by the 'Highland and Agricultural Society,' and to which I would refer any one requiring information on this subject. The writer is acquainted with contracts made in accordance with the total acreage of the farm, in some instances at 1s., in some at 6d. per acre. The Somerton petty sessional division contains upwards of 55,000 acres. If only the occupiers of half of it would agree to contract at the lowest of these sums, the veterinary surgeon would at the beginning of the year receive nearly £700, and 6d. per acre seems a small sum for any one to pay for so great an advantage.—R. N.-G."

*Journal of the Bath and West of England Society.*

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## CATTLE DISEASE, AND THE HIGH PRICE OF BUTCHERS' MEAT.

*To the Editor of the 'Newcastle Daily Post.'*

SIR,—The high price of butchers' meat makes us naturally anxious about the health of our flocks and herds, and the increase or decrease of flesh commodities for the people. Since the subsidence of rinderpest in 1865—6, we have been exceptionally free from diseases of all kinds; yet the prices of meat have ruled higher for the last four years than ever was known over a like period at any previous era. This has been owing to the barren, dry state of the earth in this country, and the heavy embargoes laid upon the bulk of foreign stock brought from abroad, rather than to any prolonged decimation caused by the rinderpest. It is therefore much to be deplored, now that the earth is teeming with plenty of food for

cattle and sheep, and the only great consideration seems to be where are we to obtain store animals for making into fat ones; that we should be visited with a plague among our herds in the shape of foot-and-mouth disease and pleuro-pneumonia, if not as fatal as rinderpest, is at any rate extremely detrimental to the flesh productions of the land. There are some districts in this country where four out of every six farms are suffering from murrain. This has not been caused, as many people suppose, and some assert, who ought to know better, by unhealthy animals brought from foreign countries, but by the insufficiency of the inspection among our own breeds. I have not seen one single foreign animal at the quarantine yard, where I am pretty frequently, or in the cattle market, where I am nearly always on Tuesdays, affected with disease; but I have seen several English ones, both on fairs and markets, which have had unmistakable signs of foot-and-mouth disease. A certain section in this country are continually crying down the importation of stock from abroad, and whenever disease appears among our own herds set it down to the debit of the foreigner. This is utter folly and prejudice. Whatever may have been the origin of murrain and pleuro-pneumonia, they have now been so long known in this country that we may fairly call them indigenous to it. Why, in the valleys of the Wansbeck and the Pont, where one of them is now raging with all its virulence, a foreign animal has never been imported—has never indeed come within twenty miles. Such I believe to be the case all over England and Scotland wherever the disease is. Why, then, should we lay the blame on foreign importation? The restriction upon cargoes coming here are severe and manifold enough for our safety; and perhaps for the information of the uninitiated, I may recapitulate a few of them. They are as follows: All cattle except from well-ascertained uninfected countries are slaughtered at the point of landing. Those from non-infected countries are inspected when shipped and unshipped, perform quarantine for twelve hours in separate places assigned for each country, and then are sold in a market. The inspector can retain them as long as he likes if not satisfied. No vessel that has carried cattle from what is considered an infected country can carry from a non-infected one for the period of three months, under a penalty of several hundreds of pounds. The countries which are considered free do not admit home stock of any description into them, not even from England. The fault that we are now suffering from disease lies, I think, with the management of our home breeds; not because the restrictions upon the movements of

them are not severe enough, but simply because the people who have to put them into operation know nothing about their business. How can a policeman, in whose hands *rests all the power*, know how to proceed in all cases? No doubt policemen are sensible men enough, but they have not been taught to diagnose diseases which they are expected to detect and watch. Certainly then it is as great a folly to entrust the discovery of disease to them as it would be to leave the discovery of cholera in the human family to non-medical men. What, let us inquire, may be the remedy for the present disastrous state of things? Our herds are unhealthy. The herds of Ireland are unhealthy, from which we receive the main part of our supplies. They are brought over here in hundreds, and are driven from field to field, and from market to market. Is there no power to stop this? Can the magistrates of the county not have the servants of the Executive educated to their work; and can they not supplement them until they are educated with men who know disease when they see it? Can they not institute a surveillance which would preclude the possibility of cattle coming to market from infected places? I am as averse to a system of espionage or bondage as any one; but when matters are desperate, we must put up with desperate remedies, and if something is not done speedily, a great deal of the summer grass will be wasted, and cattle from the autumn fairs will carry disease and loss into almost every corner of the land. Thus, instead of having butcher's meat low next year, it is quite possible it may be as high as it is this.

Yours, &c.,

GEORGE HEDLEY.

*Westmoreland Terrace, August 19th.*

## Analysis of Continental Journals.

By G. FLEMING, M.R.C.V.S., Royal Engineers.

### STUDY ON *TINEA FAVOSA* IN THE DOMESTICATED ANIMALS.

By M. F. SAINT-CYR, Professor at the Lyons Veterinary School.

(IN a recent number of the *Veterinarian*, that for August, we mentioned in our Analysis of Continental Journals, that Professor Saint-Cyr, of the Lyons Veterinary School, had been awarded a thousand francs by the French Academy of Sciences, as an inducement to continue his researches on *Tinea favosa* in the domesticated animals, and we also alluded

to the paper detailing his original investigations as one of such particular interest to the comparative pathologist as to warrant us in giving a translation of it in this journal. This we now have much pleasure in doing, adding also, as a supplement to the principal memoir, which appeared in the *Recueil* for 1869, the later observations of this distinguished veterinary teacher, which were subsequently published in the *Lyons Journal de Médecine Vétérinaire*.

The disease which has been the subject of his special study is that vulgarly known in human pathology as *scald-head*, and technically as '*Favus*,' or '*Tinea favosa*,' with its accidental varieties *Porrigio larvalis*, *Porrigio lupinosa*, and *Porrigio scutulata*. It depends upon the presence of a cryptogamic fungus named the *Achorion Schönleini*, after Schönlein, who first suggested that the *yellow favus* crusts in the two latter varieties of the malady were due to a vegetable production. The primary seat of the parasite, according to Aitken, is in the depth of the hair follicle, outside the layer of the epithelium which covers the root of the hair, and which forms the 'inner root sheath' of Kölliker. By using a concentrated solution of *liquor potassæ*, to make the parts transparent, the fungus may be observed with the microscope in the follicle round the hair at the place where it passes through the epidermis. A second form of the disease in man is that in which the plant is found in depressions on the surface of the skin, forming the yellow honeycomb-like masses which gave the specific name *favus* to the disease, and which, from their frequent buckler-like shape, suggested the term '*scutulata*.' A cuticular elevation is seen, beneath which is a small *favus*. When the cuticle is raised a drop of pus sometimes issues; hence the error of those who have considered this disease always pustular. Generally, however, there is no pus or liquid of any kind; the plant grows, and the cuticle over it (supposing it has not been forcibly detached) finally separates, leaving the *favus* exposed to the air. A third form of the disease is that in which the fungus attacks the nails, and occurs, for the most part, in those who have been long affected with the *favus* of the hair follicles, the fungus taking root and germinating beneath the nail. After the spores have commenced to germinate between the superficial and deep epidermic layers, the nail becomes thickened over the affected part, and its colour becomes gradually more and more yellow, owing to the *favus* matter shining through it. As the fungus increases in growth, it gradually presses on the nail, rendering its longitudinal striæ very evident, and ultimately leading to the formation of fissures in it. As the

pressure on the nail increases, its substance gets thinner and thinner, till perforation occurs; and then a favus cup makes its appearance externally, but, according to Anderson, more or less deformed.

It is important to notice that at first there is, at the point where the favus is about to form, only an increased secretion of epidermis; and sometimes the under surface of the favus is coated by cuticle, which separates it from the compressed and attenuated derma. As it increases in size, and becomes more prominent, the epidermic covering is ruptured. Each favus crust is also enveloped in a capsule of amorphous structure, within which is enclosed the true favus matter.

The favus consists of the *mycelium*, the *spores*, and the *receptacles* of the *Achorion*, together with a finely granular amorphous layer, which forms the external coat of the favus, and is the representative of the amorphous "stroma" which often accompanies the mycelium of *fungi*. In the favus another and distinct fungus can sometimes be found, namely, the *Puccinia favi*, which is easily recognised; it has one extremity (the body) rounded, and composed of two cells of unequal size, a superior and an inferior; the other extremity is prolonged into a jointed stem or trunk.

When a little of the favus matter is broken up and examined microscopically, after being acted upon by solution of potash, it is seen to consist of numerous little oval or rounded bodies, the sporules of the fungus having a diameter of about the  $\frac{1}{3000}$ th part of an inch.

A number of cells united end to end form simple or jointed and branching tubes, developed from the sporules. Little granules or nuclei may be seen in the interior of the spores. The tubes vary in diameter, and hairs in the vicinity of the favus crusts are impregnated with the fungus.

The disease had been communicated by inoculation from man to man, and from mice to cats, and thence to many, before Saint-Cyr's observations were published (Aitken, Bazin, Draper, Fox, Anderson).

Several years ago we had occasion to investigate the malady in a hutch of rabbits where it caused great havoc, and its transmission from one to another of these animals was clearly traced. The cat is a frequent subject of the disease, and it would even appear that it manifests itself in an epizootic form in that animal. Our 'History of Animal Plagues' contains notices of what would appear to be outbreaks of this malady, and especially the extraordinary one that occurred in 1796.

We have ventured to offer these preliminary remarks

merely to show what an interesting subject Professor Saint-Cyr has undertaken to investigate, and we will now proceed to give his observations in his own words.)

The question that I submit to the judgment of the medical public appears to me to possess a real importance, not only with regard to comparative pathology, but also in relation to public hygiene. In fact, if, as I believe I am in a position to demonstrate, animals are liable to be attacked by *Tinea favosa* (*teigne faveuse*), principally those which are usually in contact with mankind, and if the disease that I have thus designated be identical in its nature with the *Tinea favosa* of man, and also if it is produced in every case by the same cryptogamic parasite, then it is very evident that the diseased animals may be, in certain cases, the propagating agents of one of the most obstinate and disgusting maladies that can manifest itself during the period of infancy. In this respect the study of tinea in animals, as I have just said, possesses an unmistakable interest.

*History.*—There is to be found in an essay little known, and written by a former pupil at the Antiquaille of Lyons, a hospital specially endowed for the treatment of venereal and cutaneous maladies, the following notice, which I transcribe textually :

“Animals themselves appear to be susceptible of the attacks of the favus by contagion. I have seen, in a ward allotted to children affected with the disease, two cats with which the little patients were accustomed to play, contract the favus, which was in all respects similar to that they were for the most part suffering from. These *favi* were cup-shaped, dry, rounded, and of a citron colour; some were very small, almost rudimentary; others, on the contrary, and more particularly between the phalanges of the paw of one of these cats, were the size of a large pea; lastly, the hairs were destroyed around the spots to the extent of some millimètres.”\*

On the other hand, we read in M. Bazin’s work on parasitic affections : †

“All the authorities who have written on the *Tinea favosa* appear only to have observed this disease in the human species; and no person, so far as I can learn, speaks of the transmission of the favus of animals to man.”

Nevertheless, in the course of last winter, a young and very distinguished physician of New York, Mr. Draper,

\* *Essai sur le Favus*.—“Thèse pour le Doctorat en Médecine, présentée et soutenue le 12 Mai, 1847,” par J. C. Jacquetant. Paris, 1847.

† *Leçons Théoriques et Cliniques sur les Affections Cutanées Parasitaires*, professées par M. le Docteur Bazin, rédigées et publiées par M. A. Poequet. Paris, 1858, p. 118.

assured me that, in his country at least, the favus was not rare in animals, and that he had occasion to see it more than once in rats. He had carefully noted a very remarkable observation, and I requested him to transmit these notes to me on his return to New York. The following is a summary of this observation, which Mr. Draper had also kindly sent with some fragments of crusts taken at the time from the diseased animals:

“In the course of the year 1854, several members of the same family, among whom was a young physician, remarked that a number of mice caught in a trap were affected with a singular disease. On the head and fore limbs were yellowish crusts, of a deep shade, generally circular in shape, and more or less elevated above the healthy textures. In addition, a manifest depression was observed in the centre of each of these crusts, as is noticed in *Porriigo favosa*; on the parts where the crusts had been shed there were ulcers, which appeared to have entirely destroyed the skin. These diseased creatures were given to a cat, which some time afterwards showed above the eye a crust similar to that on the mice. Subsequently, two young children of the house who had been playing with the cat were successively, at an interval of fifteen days, affected with the same disease; the yellow circular crusts were seen on several parts of the body—the shoulder, hip, and thigh. The doctor who was called in gave it the redoubtable name of *Porriigo favosa*. Nevertheless, applications of acetate of copper and hyposulphite of soda were sufficient to make a complete cure of the little patients.”

The crusts sent with the notes had been taken by Mr. Draper from the head of a mouse; and this gentleman, who had gained a knowledge of the use of the microscope at M. Robin's school, wrote to me after examining it, as follows:—“I am under the impression that it is the same favus I have examined before.” M. Bazin, in his turn, having examined the fragments sent, found the *Achorion* in all its most marked features. The cryptogam had not become altered by time.

This is all the information I have found with regard to the tinea of animals, and it will be seen what my personal researches have added to the subject. These researches go back to 1864. On the 27th of August in that year, an ironmonger in this town presented to the clinic of our school a young cat which had on its abdomen, near the umbilicus, two scabby patches, regularly circular, of a bright brimstone colour, about the size of a 20-centimes piece, the borders of

which were a little raised and the centre sensibly depressed like a cup. Struck with the singular aspect of this lesion, which I had never seen until then, I admitted the cat to the hospital, in order to be able to study the disease more easily, and I showed it to several physicians of the town, especially to Dr. Rollet, ex-surgeon of the Antiquaille, who, after an attentive examination, had no hesitation in diagnosing the *Tinea favosa*.

Once my attention was roused to the subject, I was not long in meeting with new cases of this affection. These occurred on the 18th October, 1864, the 12th May, 1865, the 25th January, 1866, and the 8th July, 1866, on young cats; and lastly, on the 11th July, 1867, for the first time on a young dog. I have therefore had, as will be seen, sufficiently frequent opportunities of clinically studying this malady; and, besides, I have resorted to frequent inoculations in order to study experimentally this hitherto so little known disease, and to determine its relations with the *Tinea favosa* of children.

These researches, at the same time clinical and experimental, form the basis of this memoir.

*Characters of the Disease.*—The disease in question may manifest itself on any part of the body; the experiments which I shall allude to hereafter prove this. Nevertheless, in the cat there is a region which it attacks by preference: this is the extremity of the feet, the base of the claws. It is there I have always met with it in this species of animal, with the exception of the first case, in which, as I have already said, the crusts were situated near the umbilicus; and another observed quite recently, which will be alluded to in detail in the course of our description.

In the unique case of accidental *Tinea favosa* that I have observed up to the present time in the dog, the disease was on the head—at the cranium and the base of the ears.

When it is of some duration—as is always the case in those instances in which our advice is sought—it is characterised by one or more masses of irregular crusts, more or less fissured, of a somewhat pitchy consistency, offering, when broken, a fine granular structure, and having a bright yellow colour like sulphur. In the cat these crusts generally occupy a very limited space, especially when they are seated, as they constantly are, at the base of the claws; they covered a wide surface on the head of the dog already spoken of.

They affect a remarkable disposition; their contour, sometimes very circular, at other times more or less notched, forms a slight prominence that rises a little above the

surrounding skin; their centre is, on the contrary, depressed to a greater or less degree, a conformation that gives the crust the aspect of a cup. These capsules or *favi* are more or less numerous, and more or less extensive. In my first cat they were only two in number, but well defined, very regular, and they were not long in attaining the dimensions of a 50-centimes piece. With my dog they were extremely multiple, covering nearly the whole of the right portion of the cranium corresponding to the occipital [region, and a large surface of the ear of the same side; but they were much smaller, and in general did not exceed from one to two millimètres in diameter.

This cup-shaped disposition is much less marked when the favus is seated at the base of the claw; there it is most frequently only seen as an irregular heap of yellow, pitchy, split-up crusts, which the microscope, however, shows to be composed of the same elements as the others.

At the free surface of these crusts there are often found dry bristly hairs that appear to pass through the entire thickness of the favous plate, and which are pulled out with the slightest amount of traction. At a later period these hairs fall off, unrooted by the progress of the disease, but not broken or sharply cut away close to the crusts as in *herpes tonsurans*.

If the crusts are carefully raised, the skin beneath them is found to be thin and depressed, and looking as if atrophied by compression, though smooth, not ulcerated, and completely dry, or yielding a slight serous exudation; sometimes pale and anæmic, more frequently red, irritated, and sufficiently transparent to show some very fine vascular ramuscles.

Around the margin of the crust the skin is sensibly inflamed, red, thickened, and rises into a somewhat salient prominence.

Examined with the aid of the microscope, these crusts are found to be exclusively formed by the elements of an elementary cryptogam—spores, mycelium, and sporophorous tubes—that offers the most complete identity with that figured and described by MM. Fiebert, Bazin, and Ch. Robin as characteristic of the *Achorion Schönleinii*.\* These elements abound in an incredible profusion, and nothing is easier than to study them.

The following is an abridged description of these diverse elements, such as I have frequently observed:

The *spores* are small, spherical, very refringent bodies, of

\* Ch. Robin.—'Histoire Naturelle des Végétaux Parasites,' 1853, p. 441, *et seq.*

variable size, sometimes perfectly spherical, at other times oval, and whose dimensions, although uniform, may nevertheless vary to a certain extent. According to some measurements that I attempted to make, I believed I had fixed them between 0·03 mm. and 0·06 mm. mean diameter. These are the elements which form the principal mass of the favous scabs. There are also to be found in variable, but always less considerable quantity, *oval* sporules, *articulated* end to end, forming a kind of chaplet, and straight short tubes filled, some with spores in process of development, others with fine and very brilliant granulations.

After the free spores, the most abundant element is that named the *mycelium*, constituted by a mass of long tubes, usually flexuous, sometimes simple, sometimes, though more rarely, once or twice ramified, interlaced, and as if felted, and imprisoning in the meshes formed by their matting together a variable number of spores.

This element, according to M. Robin, and as I have been frequently able to verify, is more particularly, and indeed almost exclusively, found at the surface of the favus in contact with the animal's skin.

I have frequently examined the elements of the favus of animals, comparatively, with those of man, and could not perceive the slightest difference.

The affection I am about to describe is accompanied, in the dog, by a lively pruritis, a symptom scarcely noticeable in the cat; otherwise, it does not appear to exercise any prejudicial effect on the general health. The animals that are attacked eat, drink, play, and preserve their liveliness as if they were in perfect condition.

Such is the disease as observed clinically. I have said above that I have made a certain number of experiments in order to assure myself of its contagiousness. This is the place to describe these experiments, a summary of which will complete the symptomalogue history of the affection.

(*To be continued.*)

## THE MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE nineteenth meeting of this Association was held at the Hen and Chickens Hotel, Birmingham, on Thursday, the 17th of August, 1871. The president, F. Blakeway, Esq., of Stour-

bridge, in the chair. There were present:—Messrs. Hayes, Liverpool; Cartwright, Wolverhampton; Harber, Kidderminster; Cooper, Lichfield; Price, jun., Birmingham; Taylor, sen., Manchester; Taylor, jun., Manchester; G. Morgan, Liverpool; J. Field, R.H.A., Green, Dudley; Roberts, Oswestry; Litt, Shrewsbury; Martin, Chesterfield; Perrins, Worcester; Ison, Atherstone; Bailey, sen., Leicester; Broad, Bath; Greaves, Manchester; Hill, Wolverhampton; Proctor, Coventry; Stanley, jun., Birmingham; Rostron, R.H.A., and Professor Gamgee, Queen's Hospital, Birmingham.

Letters were read from Messrs. Carless, Stafford; Pyatt, Nottingham; King, Melbourne; and Reynolds, Mansfield, expressing their regret at not being able to attend. A letter was received from Mr. Barry, the Honorary Secretary to the Association, expressing his determination to resign that office.

The minutes of the last meeting at Lichfield were read and confirmed.

The Treasurer's accounts, which were adjourned from last meeting, were proposed to be passed, by *Mr. Cartwright*, and seconded by *Mr. Markham*.—(Carried).

*Mr. Proctor* proposed, and *Mr. E. Price, jun.*, seconded, "That Mr. J. Clayworth, of Birmingham, be elected a member of the Association."—Carried.

*Mr. Cartwright* proposed, and *Mr. E. Price* seconded, "That Mr. T. Rickaby, of Bewdley, be elected a member of the Association."—Carried.

*Mr. Blakeway*, the President, then delivered the annual Address. He reviewed the prospects of the Society, the financial position of which was very satisfactory; and stated that many valuable essays had been read, and much interest manifested at the meetings, which cultivated a good feeling and produced an improvement in the social standing of its members.

*Mr. Greaves*, of Manchester, then read an elaborate and exhaustive "Essay on Enzootic and Epizootic Diseases in the Horse," pointing out the many leading characteristics of the various forms of influenza, farcy, glanders, &c., at the same time being unable to explain why influenza should at one season attack the head and eyes, and at another the chest. An interesting discussion followed, in which all present joined.

A vote of thanks was proposed by *Mr. Greaves*, and seconded by *Mr. Bailey*, to Mr. Blakeway, the President, for the instructive and interesting address delivered by him. A vote of thanks was also proposed to Mr. Greaves for his valuable Essay.

The next meeting of the Association will be held at Derby, November 28th, when Mr. Carless, of Stafford, has kindly con-

sented to bring forward a paper for discussion. The meeting then terminated.

A. B. PROCTOR,  
*Secretary pro tem.*

## WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

THE West of Scotland Veterinary Medical Society held its second quarterly meeting for the year 1871, in the Athole Arms Hotel, Dundas Street, Glasgow, on Wednesday, 9th August, 1871, at 230 p.m.

Vice-president Sharp, in absence of the President, occupied the chair.

Present:—Messrs. Anderson, Prentice, Glasgow; Daniel M'Lean, Royal Artillery; Professor Fordie, Glasgow Veterinary College; Pollock, Gouttridge; Peter Johnston, Limerick; Kur, Dalry, Dalrymple, Campsie, Robb, Puckhead, and the Secretary.

After the minutes of the previous meeting had been read and confirmed, *Mr. Weir* proposed, and *Mr. Prentice* seconded, "That Mr. David Pollock, Glasgow, be a member of the Society."

The *Secretary* then read his paper on Anasarca Diseases, which gave rise to a lively and lengthened discussion.

JAMES ANDERSON,  
*Hon. Secretary.*

## LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE twenty-ninth quarterly meeting of the above Association was held in the Medical Hall, Hope Street, at 6 o'clock, on Friday the 11th inst.

Present:—The President, J. Storrar, Esq., Chester, in the chair; Messrs. Wilson, C. Speakman, G. Heyes, Harwood, G. Morgan, Ackroyd, B. S. Reynolds, Peter Ellis, Jos. Leather, Kenny, Elam, Robinson, Liverpool; Peter Taylor, W. A. Taylor, T. Greaves, Falkener, Watson, Manchester; Woods, Wigan; Whittle (President Lancashire Veterinary Medical Association) Worsley; D. Rowlands, Llanrhaick-yr-Mochant; Barnes, Malpas, Dobie, Birkenhead; N. A. Cartwright, Whitchurch; Wilson, Broughton near Preston; and the Secretary.

Tea was discussed, and the chair taken immediately after 6 o'clock.

Letters of apology were read from Messrs. T. Taylor, T. Whally, Manchester; W. Lewis, Crewe; and John Carless, Stafford.

Committees were formed for the revision of the existing rules of the Association and for other private business.

*The Secretary* gave notice that at next meeting he will propose for membership of this Association Mr. D. Rowlands.

After other business of a private nature had been disposed of, a long discussion ensued as to the high rate of smiths' wages in Liverpool compared with other large towns. Messrs. Greaves, P. Taylor, Harwood, Leather, Elam, Wilson, and P. Ellis, took part in the discussion, all agreeing that from a want of unity amongst the employers the matter was not ripe for change. All notices of motion were consequently withdrawn.

*Mr. Greaves* then read his essay on "The Proper Education of the Veterinary Student," which was listened to by a large and influential meeting with marked attention, and gave rise to a discussion in which all joined, and which lasted beyond the prescribed time; the entire opinion being that there exists an absolute necessity for, in addition to a sound elementary education sufficient to enable the candidate to pass an Oxford or Cambridge local examination, a more perfect course of practical study, to make the pupil thoroughly conversant with the rudiments of practice. It is unnecessary to make any further comments on *Mr. Greaves'* essay, as it will shortly be published in the pages of the *Veterinarian*.

A vote of thanks was moved to *Mr. Greaves* in a highly eulogistic speech by *Mr. W. A. Cartwright*, seconded by the *Secretary*, and carried.

Votes of thanks were also proposed, seconded, and carried to *Mr. Storrar* and *Mr. B. S. Reynolds*, for their able occupancy of the chair, the former gentleman having to retire early.

Members of the profession are particularly invited to attend the thirtieth quarterly meeting, which will be held in the usual place on Friday, November 10th, 1871. Tea will be provided at 5.30. Chair to be taken at 6 p. m. Papers on interesting subjects will be read by *Peter Ellis, Esq., Liverpool*; and — *Barnes, Esq., Malpas, Cheshire*.

W. C. LAWSON,  
*Hon. Secretary.*

## Veterinary Jurisprudence.

### NOTTINGHAM ASSIZES.

(Before Mr. JUSTICE HANNEN.)

NEWTON *v.* WARHURST AND ANOTHER.

THIS was a special jury case. Mr. Digby Seymour, Q.C., and Mr. Cave (instructed by Mr. A. Parsons) were for the plaintiff; and Mr. Wills and Mr. Bennett (instructed by Mr. Cranch) for the defendants.

*Mr. Seymour* said the plaintiff in the action was Mr. John Newton, the owner of an extensive farm at Colston Bassett, in this county, and the plaintiffs were coal and produce merchants at Nottingham and Derby, carrying on a large business in rice meal. The action was brought to recover compensation against the defendants for the loss of three horses, together with expenses attending thereon, such loss being attributed to the supply of adulterated and impure rice meal by the defendants. The question was therefore one of considerable importance, and attended with considerable interest to agriculturists. Proceeding to give an outline of the case, Mr. Seymour said the defendants' business in Nottingham was conducted either by themselves or an assistant, Mr. Pink, who represents them in their absence. When the plaintiff gave the order for the rice meal, which would form the subject of discussion, he had twelve horses, which were in perfect health. The horses were kept up and fed with chopped hay, beans, and rice meal. The orders were given in June and August. The first order was given to Mr. Pink in Nottingham Market, Mr. Newton telling him he wanted some rice meal for his horses. Mr. Pink said that they had some excellent rice meal pure and unadulterated. Acting on the faith of this representation, that it was pure and fit for food for horses, the three orders were given. The first order, consisting of twenty packs, was sent and placed in the plaintiff's granary, and it would be impossible to suggest that there was any method by which the rice meal was improperly dealt with. The plaintiff had the key of the room, and from time to time gave the rice meal out to his men. All the twelve animals partook of the meal but one—a brown mare, and although she was kept a day without food to give her an appetite, still she would not take the rice meal, and the consequence was that her health did not suffer. All the other horses, however, were more or less ill, and on the 6th December one died, another on the 15th, and another on the 5th January of the present year. A *post-mortem* examination was made of the horses, and it was found that there had been a lodgment of sand in the stomachs, which had not been carried away in the ordinary course of nature. He believed there was no less than four pounds of sand in the stomach of the first horse that died, nine pounds and a half in the second,

and ten pounds in the third. The cause of death was certainly this sand on the stomach. It might be suggested that the sand got there in grazing, but these horses were not turned out to graze. An analysis of the meal was made by Professor Tuson, of the Royal Veterinary College, and by Dr. Taylor, of Colston Bassett, and the jury would be told that 11 per cent. of the meal was impurity, and 5 per cent. sound. The plaintiff valued the three horses at £115, whilst there were losses on another horse not expected to live, and services procured in connection with the illness of the others. After some further observations Mr. Seymour proceeded to call evidence.

*Mr. Newton*, the plaintiff, examined by Mr. Cave, said—I am a farmer at Colston Bassett. The defendants are corn and cake merchants at Nottingham and Derby. Last year I had twelve horses, and for part of the year was in the habit of feeding them on rice meal. They had been kept in the stable and yard. On the 18th June I went to Nottingham. I saw Mr. Pink, the agent of Messrs. Warhurst, who sells meal in the market. He asked me whether I wanted any rice meal. I said, “I shall want some.” I also said, “Have you any good?” and he said, “I can recommend it.” I said, “Do you know it’s pure?” He said, “Yes, we buy the rice ourselves; I know it’s pure, and therefore I warrant it pure to you.” I said I would have ten packs of it, and eventually he sent it. On the 25th I bought another ton, and on the 6th of August a third. My horses have had rice meal for fifteen or twenty years. It has always agreed with them. The rice meal was put in the granary, the key of which I kept myself. It was delivered in bags stitched at both ends. At this time Burton had charge of my horses. When I bought the meal in June I had three or four bags which the defendant had supplied me with. I used that first, and it agreed with the horses. I used two or three packs every week, giving it out to Burton as he wanted it. It was given to the horses with chopped hay and straw, and sometimes beans, all mixed together. Burton and another man named Rippon mixed the food. Burton attended the horses up to the 24th November, when a man named Willimott took his place to the 3rd December, then Tyler had charge of them. I first noticed something the matter with the horses in the middle of September. We thought it was colic at first; they would not eat, and showed symptoms of pain in the bowels. I gave them some medicine which we always give for colic. I had this medicine from Mr. Marriott, and the result was that they were better for a few days.

Ultimately I called in Mr. Marriott to attend a chestnut horse, which died on the 10th December. At that time the other horses were affected, and showed the signs spoken of. The stomach and bowels of the horse were buried on the premises. Soon after a black horse was taken ill, and Mr. Marriott said that he was sure from the symptoms that there was something wrong with the food. After the black horse died they examined the digestive organs, and found a large quantity of sand in the bowels. It was washed clean and weighed. There were nine pounds and a half. I ultimately

brought the sand to Nottingham, and gave it to Mr. Dudgeon. When I found there was sand in the horse, I thought it must have come from the rice meal, and Mr. Marriott also thought so. The waggoner was told not to give any more. On the 6th January the grey mare died, and on a *post-mortem* examination ten pounds of sand were found in the stomach. On the 13th February the viscera of the chestnut horse were dug up and examined. The veterinary surgeons, Mr. Marriott and Mr. Pyatt, found sand in the stomach. The whole of the horses were more or less ill, except a mare I drive. She was offered some of this particular meal, but we could not get her to eat it. The brown mare was never ill at all. Another that I now have is just alive; I have found sand in the dung. I claim damages for this one. On the 28th January I took the sand and meal to Mr. Warhurst's stall in the Corn Exchange. I showed it to Mr. Pink and then took it to Mr. Dudgeon. I have seen one of the Messrs. Warhurst since. I told him when the first horse died that it must be owing to the meal, but he said it could not be, as the meal was pure. It was impossible for the horses to get sand in their stomachs from the land; they had not been out for two years. I tried the meal in some water, and washed sand out of it. That sand was of the same character as that which came from the horses. I value the three horses at £115. I estimate the depreciation in the value of the horse still ill at £30. For one month I was unable to use the three horses. I value the services of the horses at 3s. per day—that would be £12. Mr. Marriott had been employed, and I have had men to attend the horses.

Cross-examined by Mr. Wills—Had had rice meal of Mr. Warhurst before. In 1869 had some, but did not know how much. From March, 1868, to the time complained of, had been supplied with sixty-eight packs. Never complained before; the cattle had always thriven on it. Generally asked Mr. Warhurst whether he could warrant the meal to be pure. Was not aware that the defendants were merchants and not manufacturers. The three parcels were kept in packs as they came. They sent the second lot to Bingham instead of delivering it at Nottingham, but witness agreed to take it off their hands. When the third order was given, some farmers were talking to Mr. Warhurst. I said to Mr. Warhurst, "I want another ton of meal; I suppose you can guarantee it the same as the other." Mr. Warhurst said he could take me over their place where it was ground. The lots were not consumed in the order of their arrival. Had pigs and other cattle on the farm. Sometimes we gave them some rice meal, but generally barley meal. In November and December the cattle would have some rice meal. Had thirty or forty cattle in the yard, and rice meal would be given to one or two. The horses had two or three packs per week. They were fully on meal the latter end of September. The horses drank from a pump in the yard. There was a scarcity of water that summer; one pump failed. They sometimes went to the river (Smite) for water. It was a year when fodder and water were short. Water was not scarce in the fields. The horses went to

work in the fields at farm work ; none of them were ever turned out. It first struck witness that the illness was due to the rice meal when the black mare was taken ill. There was a residuum at the bottom of the water in which it was washed. My solicitor refused to allow Mr. Warhurst to have possession of the residuum.

Mr. Wills—And the consequence is that we have never had an opportunity of seeing it.

Witness—When Mr. Cranch applied for some of the residuum, I had used nearly all in experiments. I first instructed Mr. Parsons to write to Mr. Warhurst, but would not swear that he mentioned any sum. Mr. Parsons mentioned that the value of the horses was £75.

Mr. Wills read the letter of Mr. Parsons asking for £75 for the value of three horses, and £5 expenses.

By Mr. Seymour—When he mentioned £75 he expected to have the thing amicably settled. They were good horses, worth £35 each. The defendants saw the remaining meal at Mr. Dudgeon's.

As to the pump water, did you use it?—We brewed with it. Did you get sand in your beer?—No. (Laughter.) What proportion of meal would the cattle have?—Very little. Not a tenth part of it. As soon as you found the sandy deposit in the meal did you give it to the cattle?—All the rice meal from the defendants was then used.

*Mr. Keyworth*, of Colston Bassett, said he remembered being present at a conversation with one of the defendants in Nottingham Market, in August. Mr. Warhurst said he would take him (witness) over his mills. He said the meal was pure.

By Mr. Wills—He had had meal of the defendant, and had dealt with him off and on for years. He bought half a ton of meal of the defendant last year.

Re-examined—He gave some to Dr. Taylor for examination. He bought it on the 10th Dec. He had it examined in consequence of his own cattle being ill. At that time he knew plaintiff's horses were ill, but he did not know from what cause.

*Thomas Burton*, who had had the care of the horses, proved that about a month after the horses had been fed with the meal they showed symptoms of pain in the bowels. They were relieved a short time by medicine. Witness said that it was impossible for sand to get mixed with the cut stuff. He had tried the meal in a bucket of water, and saw the sand go to the bottom.

*Thomas Rippon* said he now lived at Cotgrave with Mr. Scothern, but he lived last year at Mr. Newton's. He used to assist Burton with the horses. On one occasion he fetched some water into which meal was put, and the sand from it settled to the bottom.

*William Willimott*, *James Tyler*, and *William Cartledge*, were also called, to prove the custody of the horses, and also to negative the idea of sand having been put in the meal.

*Mr. W. R. Marriott*, veterinary surgeon, Cotgrave, said that on the 7th December, he was called in to attend one of Mr. Newton's horses. He found the animal suffering from abdominal pain ; loss of

appetite, &c. The pulse was almost indistinct. At that time he thought the horse suffered exclusively from irritation of the bowels. He attended the other horses. The symptoms were the same. He was with Mr. Pyatt when a *post-mortem* examination was made of the second horse (the black one); ten pounds and a half of sand were found in the intestines. In the grey horse inflammation of the bowels existed, and nine pounds and a half of sand were found in the cæcum. The sand caused local irritation, which led on to inflammation. That was the cause of death. He did not examine the meal.

By Mr. Wills—He could not say how long the sand had been in the digestive organs. A small portion of it might pass away, especially if the horse was purged. The mucous membrane was free from chronic disease, excepting such as had been induced by a local irritant. He had no other cases of this kind last summer. Did not remember any other case, but had heard of other cases as a matter of science.

*Mr. G. H. Pyatt*, veterinary surgeon, said, that on the 13th February he examined the viscera of the chestnut horse. He found a large quantity of sand. The intestines were much thickened, and the internal coat diseased. He considered the presence of the sand and the consequent irritation to be the cause of death. He saw the rice meal which was sent to Mr. Dudgeon and there was sand in it. It was similar to what he had found in the horse's stomach.

By Mr. Wills—He had a sample of the sand at home. It was composed of small portions of stone.

Mr. Seymour requested the witness to fetch the specimen of sand he had got.

*Mr. Dudgeon*, late chemist in Nottingham, said Mr. Newton handed him some rice meal and sand, which he delivered to Professor Tuson. He had washed the meal, and found one twentieth of insoluble deposit. It consisted of earth, marine shells, and small particles of coal. He experimented on half an ounce of the material. [Witness produced a large bowl full of sand.] He gave the half ounce got from the horse's stomach to Professor Tuson. There might have been a grain of coal, fourteen grains of sand, and small particles of shell.

By Mr. Seymour—The sand he found in the meal was similar to that found in the horses.

*Professor Tuson*, of the Royal Veterinary College, said he received samples of the meal and sand from Mr. Dudgeon. The total amount of earthy matter in the meal was 10·9 per cent., 5·6 of which was soluble in acid;  $5\frac{1}{4}$  per cent. of the material was silica. The sand found in the horses was the same as that in the meal. There would be 2 per cent. of mineral matter in rice husks.

By Mr. Wills—Had been consulted on the rice meal question before. Rice meal consisted mainly of husks, and husks contained a certain amount of silica. Straw contained a considerable amount of silica. The sand in the horses' stomach could not have been produced from chopped straw. Had heard of sand being in horses' stomachs before, but this was the only case he had known of this

character. Had known instances of the same kind in sheep. He had some meal with him which had been untouched.

The professor made an experiment with some of the meal in a glass of water, with a view of showing how the sand separated itself. He further stated that he found fragments of chopped straw in the earthy matter taken from the horses.

*Dr. Taylor*, of Colston Bassett, was called to speak to having analysed certain portions of meal taken to him by Mr. Keyworth, but Mr. Wills objected that it had not been traced.

*Mr. Wills* said, in addressing the jury for the defendants, that it was an unfortunate circumstance for his clients, and for the administration of justice, that they had been deprived of the opportunity of making scientific experiments of their own by the conduct of the plaintiff. In February, 1871, his clients applied, through their solicitor, to Mr. Parsons, for a portion of the meal in which the sand was alleged to have been found, in order that they might have an analysis. No answer was made to the letter, and then an application was made to a judge in Chambers, but was not successful in consequence of an affidavit being made by the plaintiff that he had so small a portion left that he could not give any up. Professor Tuson, however, had showed how fallacious that was by exhibiting a spare quantity in a bag.

He then reminded the jury upon the evidence as to warranty, that his clients were men of tried position. It struck him as a remarkable circumstance that upon every occasion when the plaintiff bought his rice meal he said, "Mind, I must have a warranty with it." Was it a usual thing in purchasing an article which he had been in the habit of obtaining many years to say that he must have it warranted? As to the statement of the plaintiff that the defendant, Mr. Warhurst, or his clerk, said they had a mill of their own, it was well known that they were merely dealers. Mr. Wills then gave the jury a history of the defendants' case, stating that on the 18th of June, they wrote for forty bags of rice meal from Messrs. Irving and Co., who carried on extensive works in Liverpool. They had carried on business with this firm for years, and whatever might be the result of this case, there could be no personal blame attached to his clients, who had no more to do with the composition of the rice meal than any of the jury. He should call witnesses to prove that out of the same lot as Mr. Newton was supplied with, other persons used meal without any deleterious effects being produced upon their horses. This lot and another lot sent by the North Shore Company, of Liverpool, left the mills without being touched on the way, and it was impossible to contend that any admixture ever purposely took place. Now, this rice meal was composed of rice husks, and there might be grit in it from the mill stones, and other comparative refuse might get mixed with it. Rice meal was not a fine material, and could not be expected to be free from this kind of impurity. Anything like pure rice meal was unknown in the trade. He then commented upon the fact that the plaintiff, after originally sending in a claim of £75, had since increased it to £125,

and concluded by saying that his clients were free from all blame in the matter.

*Mr. H. Warhurst*, one of the defendants, said he had the management of the rice meal business. The firm had also a large coal business at Nottingham and Derby. In 1868 and 1869 he dealt with the plaintiff and no complaint was made. In 1870 he supplied four lots of rice meal. On the 22nd June he sold him ten packs out of a lot of forty. Mr. Pink took the order. He purchased the forty packs from Irving, Son, and Jones, of Liverpool. He sold ten to the plaintiff; twenty to Mrs. Scrimshaw; three to Mr. Bower; one to Mr. Burton; two to Mr. Amatt; three to Mr. Beecroft; and one to Mr. Watchorn. The second lot consisted of twenty packs, which he bought of the same firm. The second ten packs sold to the plaintiff, were sent to Bingham station direct; the other ten were sent to Mr. Bower, of Whatton. The third lot came from the North Shore Mills Company, Liverpool; a portion of the meal went to plaintiff, the rest to Mr. Mellons, of Basford, and Mr. Scott, of Ruddington. He had never received any complaints from any of his customers except Newton, and the same kind of rice meal was now being used. He never warranted any of the meal; no such question was asked. Newton purchased from us other things beside rice meal, such as Indian corn, and oil cake. There is no such thing known in the trade as pure rice meal. There must be impurities in it arising from the husks and from the process of manufacture. He did not manufacture this article, and never told plaintiff he had mills of his own. Believed Newton had said he should like to see it made, and witness might have said that if he liked he could take him to see it made. He applied for samples through his solicitor, but they were refused. The sediment would naturally go to the bottom of a bag; a sample from the bottom of a bag would not be a fair sample. He said to Mr. Newton when the horses were dead, "Now give me a sample of the meal and I will take it to Liverpool and show the millers." Plaintiff replied that he had not a particle of meal left. He (plaintiff) showed the sand to all the farmers in the Exchange.

By Mr. Seymour—He denied to Mr. Newton that the meal had killed the horses. He had sold 18,000 sacks the year before and had never heard any complaints, and the other parties who had some of the same lot had not been dissatisfied. When he bought the second lot plaintiff did not ask if it was as good as the other. Had dealt with Irvings for five years. He thought their articles were good; he had sold thousands of bags of rice meal for horses. The plaintiff did not say he wanted the meal for his horses; knew he wanted it for his stock. Had had a complaint from Mr. Burgess. Since these horses died every disease had been attributed to the rice meal. (Laughter.) Mr. Burgess had bought largely of him for four or five years. He said his cattle had done very well, but he had found grit in the meal. He asked me to take it back, and I did, and sold it elsewhere without complaint. Had never tested it. Mr. Burgess bought some in 1868 which he said was rather coarse.

He did not know Mr. Coleman, of Long Clawson. Did not know of any horse dying from Irving's rice meal. He had not sold any meal to Mr. Coleman. Did not know whether the meal sent to Mr. Burgess came from Irvings'. It would come either from there or the North Shore.

By Mr. Wills—Had had no complaint of Burgess before this though he had dealt largely with him. Every one now laid illness to the rice meal. Farmers know perfectly well what rice meal is made of, and can judge better than witness whether it suits their horses.

*Thomas C. Pink*, in the employ of defendants, said the plaintiff never asked him to warrant any of the meal, nor did he ever say it was pure. Never said they bought the rice themselves and ground it at their own mills. Was never asked to warrant rice meal.

By Mr. Seymour—Mr. Newton might have asked if they had any good meal. If he did, witness would have said "yes." They thought that Irvings' meal was good. Could not recollect any questions being asked as to its purity. There might be some conversation about the quality.

Re-examined—He never said that he would warrant it.

*Mr. Thomas R. Irving*, partner in the firm of Irving, Son, and Jones, Liverpool, rice merchants, said last year they had a contract to supply rice meal to defendants. The orders were sent off by railway; the forty packs were manufactured at their mills. There was no mixture of sand or grit in the meal they sent. The rice in husk is put through stones and other processes, which took the husk off and left it white. The husk goes into meal. In the process of manufacture sand would come from the stones. The meal is everything but the actual white rice. The white colour came from the grains which adhered to the husks. They dressed about 800 or 1000 packs of rice per week. Always feed their own horses on this meal, but in a fluid state. Never heard of any damage arising from the meal. They could sell twice the amount of meal they now did.

By Mr. Seymour—Their horses took the meal in water. He had no idea of the percentage of sand in the rice meal. He should be surprised at 5 per cent. The meal had to pass through a fine wire which pressed against the stones, and no coarse sand could pass through the wires.

By the Judge—Sand of the coarse kind produced as found in the horses could not pass through the wire.—(Another specimen was held up which the witness said was much finer.) The bulk of the sand produced could not pass through the wires, because it was full of small stones. The husks went into a machine to be dressed, and afterwards into bags.—[Mr. Pyatt's sample of sand being handed up, witness said it contained bits of straw.] The greater part of this sand could not go through their wires.

*Mr. McCannister*, foreman to Messrs. Irving and Co., gave evidence as to the manufacture of the meal; and that the several quantities sent to Messrs. Warhurst were all made alike. He did

not know the sand at New Brighton; it was an insinuation to ask whether they got the sand from New Brighton.

*Mr. Kemp*, the manager of the North Shore Mills, Liverpool, was called, and corroborated the evidence of *Mr. Irving*.

A foreman of the North Shore Company was called, and he said that the particles produced could not pass through the wires.

*Mr. Wills* asked to look at the sieve containing the sand, and said it contained husks of wheat, mouse dung, and what, the witness added, was part of a mouse's nest. It was also stated that the holes in the sieve produced were larger than those between the wires of the Liverpool machines.

*Francis Johnson*, manager to *Mrs. Scrimshaw*, Trent Bridge, Nottingham, said last summer they had twenty packs of rice-meal from the plaintiff, which they sold to customers, and never had any complaints.

*William Bower*, a farmer, at Whatton, said he bought thirteen packs last year of the defendants, and gave three to the pigs and ten to the horses. The horses would have had a stone a day and the pigs a quarter.

He found no sand.

*Mr. Seymour* contended that this was part of a different lot.

The defendant *Warhurst*, however, said that *Mr. Bower's* packs of meal arrived at Bingham the same day as *Mr. Newton's*. They belonged to the same lot. This was further proved by the station master at Bingham.

*Walter Buxton*, Carlton-hill, *Charles Beecroft*, farmer, and

*Thomas Mellors*, a butcher at Basford, spoke to giving rice meal to horses and pigs, and that they did uncommonly well,

*Mr. Henry Smith*, Cropwell Grove, deposed that he farmed 1500 to 1600 acres altogether. He had dealt with *Messrs. Warhurst* several years. He purchased 100 bags of rice meal a few weeks ago. He had thirty-five to forty horses, which he fed with meal. He allowed eight pounds and a half per day for the horses. His horses did well upon the meal.

By *Mr. Seymour*—Had lost three young pigs, but what was the cause of their death he did not know. It was eighteen months ago. They were fed on rice meal. His shepherd's name was *John Roberts*. Witness's attention was not called to sand being in the meal by his shepherd. He had no doubt that there was a certain small portion of sand in the meal.

*Mr. Brown*, a veterinary surgeon at Melton, said he had been in practice for forty-eight years. He had known horses to die from an accumulation of earthy matters in the large bowels. He had known cases to occur in dry summers since 1826. He thought the sand might be got through the water, and occasionally grazing. If horses were fed on wheat straw they were more likely to have bowel complaints than anything else.

*Mr. Seymour*—Should feeding on wheat straw with a few beans and good meal leave 10lbs. of sand in a horse's cæcum? No.

*Mr. Wills* then addressed the jury for the defendants, and con-

cluded his observations by stating that they were not likely to give a guarantee with the meal, because they knew that such a guarantee was not given in the trade. He submitted that it was a case of selling flour, and, therefore, no guarantee could be given.

*Mr. Seymour* followed with a powerful speech which commanded the attention of the court for a considerable time. In the course of his remarks, he said it was all very well to talk of other horses, which they did not know, doing well on this meal, but there was a circumstance to which he hoped they would attach some weight. The plaintiff had one animal of remarkable sagacity, and that mare, out of twelve, was the only one which was not ill. She had remained well because she would not take the food. It had been suggested that the animals might have picked up the sand through grazing in the fields, but these unfortunate horses did not graze. The theory of his learned friend, that the amount of silica found in the meal was caused by the horses eating wheat straw, was absolute nonsense, for it could not be said that nature had not adapted the system of the horse to dispose of such material. They had the most distinct proof by the medical witness that there was over  $5\frac{1}{4}$  per cent. of sand and 11 per cent. of other impurities in the meal supplied by the defendants. In conclusion, he remarked that the agricultural world were made the subject of so many extraordinary adulterations, whether in rice meal or linseed cake, that those who sold such things must be made responsible in some way or other.

*His Lordship*, in summing up, first commented upon the question of the warranty, and said there was a difference between a commendation of goods and an express warranty. He should ask them also to consider whether the plaintiff knew the rice meal was fit for food; on this point the evidence was of a singularly conflicting character. He considered the remarks of the learned counsel on the resistance offered to the defendants, in their effort to obtain a sample for examination as well founded, and he thought that the plaintiff was ill-advised in not affording that assistance. As to the condition of the rice meal that some sand might have been contained in it seemed to be generally agreed. It had been suggested that the stones used in the mill might have created it, but several witnesses said that only half a pound could be found in a pack, and this would not in any way account for the quantity found. He confessed that he was unable to point to any satisfactory conclusion as to where the quantity of sand came from. That it was put in purposely could not be maintained for a moment. Supposing it were not in the rice meal, how did it get into the horses' intestines. He thought that the evidence of *Mr. Bower* was of importance on this question, as he fed his horses out of the same lot. The suggestion that the sand was produced from the wheat straw might be dismissed. As to the horses getting the sand by grazing, that might be done on a sandy soil, where the grass was thin; but that was not the case here.

He expressed an opinion that no satisfactory explanation had been given of the variation in the amount of the claim, and it

was difficult to see how a man could claim £75 at first and £125 afterwards. He then requested the jury to answer the following questions:—1. Was there an express warranty? 2. Did the plaintiff buy the meal for the purpose of feeding his horses upon it, and did the defendant know he bought it for that purpose?

The jury retired, and after being locked up for some time they returned, when the foreman said they were not agreed. There were nine one way and two another, and one of the two said he should never alter.

*His Lordship*—Is there no probability of your agreeing?

*The Foreman*—None whatever.

*His Lordship*—It is a great pity so long a trial should end without a verdict. I think you will be able to agree in time.

*The Foreman*—One gentleman declares he won't be convinced.

*A Juryman*—If we answer the first question in favour of the defendant does it rule the others?

*His Lordship*—I require separate answers.

The jury again retired, and after another half-hour's consultation returned, and the Foreman said they were not agreed on the first question, as to an express warranty.

*His Lordship*—Is there no reasonable probability of your agreeing?

*A Juryman*—If I could satisfy my conscience to give a wrong answer, I would do so.

*His Lordship*—That being so, I have no alternative but to discharge you. Unless the parties come to some arrangement there will probably be further litigation.

The jury were then discharged.—*Abridged from the Nottingham Guardian.*

## IMPORTED CATTLE DISEASE.

THE case of the Home Cattle Defence Association against Messrs. Gebhardt and Olde, for driving foreign cattle which had been in contact with diseased cattle along a public thoroughfare, came on for hearing before the Essex magistrates sitting at Stratford on Wednesday. The association was represented by Mr. Nevill Jourdain, solicitor, who stated that on the 17th ult., 100 beasts from Vigo were landed at Plaistow Wharf, fifteen of which upon examination were found to be seriously affected with the foot-and-mouth disease, and were accordingly ordered to be slaughtered there. The remaining eighty-five, instead of being placed in railway trucks at the wharf, were driven along the road leading to the Essex marshes to the Victoria Docks, where they were forwarded by railway to the Metropolitan Cattle Market. Mr. Jourdain, at considerable length, reviewed the various Acts and Orders bearing upon the question, and was about to call witnesses in support of the alleged facts, when the solicitor representing the defendants consented to admit

them, but stated that the act was done with the full consent and approval of the Privy Council. Mr. Jourdain contended that that consent, even if formally given, was insufficient; the regulations recently issued at the Veterinary Department of the Privy Council (which he then put in) only authorising removal under the circumstances with the permission of Her Majesty's Commissioners of Customs. The Court asked for the production of this permission, which the gentleman who attended on behalf of the defendants said was unnecessary, as his clients had obtained permission direct from the Privy Council. Mr. Jourdain insisted upon the production of an Order in Council duly gazetted, in accordance with the provisions of the Act, before he could admit the validity of the authority under which the defendants had acted. The Court held that this was essential. The defendants' solicitor said that on a future occasion he should be prepared to prove that the authority of the Customs had been duly transferred to the Privy Council. Mr. Jourdain had no objection to an adjournment for that purpose, having no wish to snap a conviction or to press for the infliction of an extreme penalty. The presiding magistrate (Mr. Ford Barclay) observed that in the event of the non-production of the license of the Commissioners of Customs, or an Order in Council revoking their powers, the Court would have no alternative but to convict. Defendants' solicitor then contended that his clients were not "consignees," as stated in the information upon which the summons was granted, and that the road along which the cattle were driven was not "a public highway," as also stated. These technical objections having been discussed, it was eventually agreed by consent that the summons should be withdrawn without costs upon either side, the presiding magistrate remarking that it was a very proper case to be brought before the Court, but he thought that, under all the circumstances, the parties had arrived at a right conclusion. The prosecution, it is understood, will be immediately renewed.—*North British Agriculturist*.

### ARMY APPOINTMENTS.

WAR OFFICE.

LONDON GAZETTE, *Sept. 10th.*

VETERINARY DEPARTMENT.—Charles Whitney Gillard, gent., to be Acting Veterinary Surgeon, *vice* Evans, promoted.

### MISCELLANEA.

#### A CABMAN'S HORSE.

HE was a low-spered animal, one as had seen better days, as you might know by the way he hugged the left 'and sharp, as if it had bin a pole—showin' as he'd once run in pairs, p'raps alongside

o' some lovely creeter of a mare as died, and so broke his 'art, makin' him come down in the world, and take no pride in hisself. For though I did all man could do to make him look decent, he never would, not a bit of it. If I bore him up tight, to make him arch his neck, he only arched it wrong ways—pyntin' that nose of his at the sky, and goin' along like a camel as was in wants of water in a great desert. If I put a couple o' bits o' laylock on each side of his blinkers, to cheer him up a bit, he'd do nothin' but shake his head, mournful like, jest as if he was a-sayin': "This here's a wale of tears;" and then, ten to one if he didn't have a fit o' megrims—bad uns too. He'd got the roughest coat as ever a hoss had, one as never shined on'y when it was wet; while where his mane ought to have bin, was all a stubbly, scuffy ridge, like a worn-out brush. As for his tail—there, it worn't no wonder as he used to keep it tucked very close in between his legs, for that was the only redeeming pynt in his character; he was ashamed of that there tail. You never saw his old spavined hocks, nor his broken knees, nor his rough coat, nor nothin' else, when that tail was wisible; for it took up your whole attention, so as you couldn't see nothin' else. Thirty 'airs there was altogether in that there tail, for I counted 'em often, to see if any more was a-comin': but no; not a blessed 'air more would come, no matter how I coaxed 'em.—*Chambers's Journal.*

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#### LONDON CATS AND CATS'-MEAT.

"At a meeting of the vestry of St. George the Martyr, Southwark, on Wednesday, September 13th, a complaint of effluvia arising from Green Street, situate between Borough Road and Blackfriars Stations of the Chatham and Dover line, elicited a curious statistical statement from Mr. Shaw, one of the vestrymen. It appears that there is in the neighbourhood of Green Street a 'knacker's yard;' and Mr. Shaw, while stating that the effluvia did not arise from the horse-slaughtering premises, contended that horse-slaughtering establishments were highly necessary in London, inasmuch as 300 horses died weekly in the metropolis, in which there were no less than 700,000 cats to be fed. The statement of the feline population of London was received by the vestry with loud laughter."

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#### OBITUARY.

WE have to record the death of Mr. A. J. Rogers, M.R.C.V.S., Brompton, London, in the 57th year of his age. Mr. Rogers' diploma bears date Dec. 15th, 1836.

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#### ERRATA.

Mr. Andrew Simpson requests us to correct his paper in the September number as under:

Page 652, line 28, *for* "I may add," *read* "I only add, is this so?"

Page 652, line 31, *for* "the indication of the disease," *read* "the disease."



THE

# VETERINARIAN.

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## Communications and Cases.

### OPENING OF THE SESSION 1871-72 AT THE ROYAL VETERINARY COLLEGE. INTRODUCTORY ADDRESS BY DEPUTY-PROFESSOR PRITCHARD.

GENTLEMEN,—It has often been said that a task well commenced is half completed; the truth of this became very palpable to me when I set about penning this address, for I felt that my principal difficulty was to know what to write about. After a little consideration, however, I determined to avoid abstruse subjects, as much as possible to steer clear of veterinary politics, and in lieu thereof to endeavour to give a short, plain, and practical lecture, conveying such advice as I trust may enable each one of you to glean something that will assist you in overcoming those difficulties which may occur during your period of pupilage; and indirectly, perhaps, remove some impediments besetting that track which will conduct you possibly to distinction, at least to usefulness.

I am afraid there are some pupils who are inclined to treat lightly the inaugural meeting of the session—to look upon it as a matter of necessary formality, and to attend but carelessly to the remarks of the lecturer. To do so, in my opinion, is to make a great mistake, to let slip a good opportunity; rather than this, you should attach much importance to the opening address; you should view it as the preface of a book, for, depend upon it, it is certain to contain some matter which, if properly appropriated by you, will afterwards do you good service. Let me ask you, then, to give your careful attention to what I have to advance, so that you may reap and experience that benefit which may accrue.

Gentlemen, you are entering on the study of the profession of a veterinary surgeon. I heartily congratulate you; for although, perhaps, undervalued, the profession is none the less a noble one; it embraces a knowledge of animal life, of its health and disease, and in connection with this a study of the great principles and laws of natural phenomena. I know of no pursuit more exalted than the study of the wonderful and complex mechanism of the animal economy by which even life itself is manifested; and when to this is added the power of doing good and affording relief to animals, who have little power to plead for or to obtain relief for themselves. Dwell for a moment, and ask yourselves what calling bears comparison with such an occupation? What occupation in life is more calculated to supply such material for thought and reason to feed upon? What is more likely to ennoble the man, and raise him above his fellows?

If you are to master this profession, it is absolutely necessary that you should commence with a good scientific basis; you must, at least, be grounded in chemistry, anatomy, physiology, and pathology. You must not be content to have a mere smattering of these sciences, but must strive to gain a good thorough knowledge of each of them. And you will be able to attain this knowledge by attention to lectures, by reading, by dissection, by careful observation of health and disease in the infirmary, and during the examination of horses as to soundness, and by independent thought, observation, and reasoning.

Let me show you, in accordance with my views, how you should make the most of these means of learning. You will have an opportunity—indeed, you will be required—to attend daily to lectures upon each of the subjects of the curriculum. If you are desirous of deriving the greatest advantage from this mode of teaching, you will deem each subject of equal importance, and so secure for each an equal amount of care and attention. You will be an unfailing attendant, because, more frequently than otherwise, a subject occupies a series of lectures, and your absence from one will seriously interfere with your comprehension of the others. You will be a careful listener, so that no portion of the discourse escapes you, and in order that your inattention may not discompose the lecturer, or by its bad example prove injurious to those around you. You will also take notes of the subject matter of each lecture, to be enlarged upon subsequently by the aid of your memory, to impress it upon the mind, and for subsequent reference. When note-taking, do not attempt it too copiously, otherwise it will interfere with

your attention to the lecturer, and a corresponding loss must ensue.

Your teachers will, doubtless, from time to time, instead of a lecture, give you an examination upon some portion of matter upon which they have lectured. Never absent yourselves from these examinations. I am rather inclined to the opinion that an occasional examination, carefully conducted, rivals a lecture as a mode of teaching, and I think so because the expectancy of being questioned secures the closest attention to the subject under consideration of every pupil of the class, because the fact of being questioned upon a topic is calculated to make a more lasting impression of it upon the memory than a simple description, and because, knowing that at a future day any portion of a lecture may be made the subject of any one of these examinations, the student, fearing a chance of appearing ignorant before his fellows, works with more diligence. The absentees from these examinations, gentlemen, are soon known by your teachers, and they almost invariably prove to be the idlers of the class.

As another help have recourse to reading.

“ Books are strange things—although untongued and dumb,  
 Yet with eloquence they sway the world ;  
 And, powerless and impassive as they seem,  
 Move o’er th’ impressible minds and hearts of men,  
 Like fire across a prairie.—Mind sparks,  
 They star the else-dark firmament ; they spur  
 The thoughtless to reflection, raise the prone  
 With the strong leverage of intelligence ;  
 Furnish the empty-minded, chart the soul  
 Through her stern perilous voyage ; pedestal  
 The great and gifted, beckoning meaner men  
 To gaze upon their mightier works and ways.”

This and more may be said of books—I wish I could add of all books ; but experience teaches us that some are not worth the reading, and that others are even worse than this ; therefore would I advise you to possess yourselves of a select few only for the present, and let these be well recommended by your teachers. When sitting down to read, do not strive to get over a large quantity of matter ; if you do, what you read will not be remembered, because the attention becomes unsteady, unfixed, and then wanders away, while the eye still travels on over pages which may as well be so much blank paper ; your advantage will be far more complete if you read less and ponder over it. Never suppose you are mastering your subject by reading respecting it the thoughts

of others; however good and complete the book may be, it can only be a good guide for your own research, a useful model by which to shape the fashion of your own thoughts. Many students read too much and think too little; accept the *ipse dixit* of the author unquestioned, and allow what is set forth in the book to supersede their own reason and even observation; to do this is to resign the independence of your intellect, to openly expose yourself to the many chances of error, and to tempt an indolence which would have a baneful influence on the remainder of your life. Much of this is also true of lectures; the lecturer should be to you a pioneer; what a guide is to a traveller in a difficult mountain pass. Never forget that it is by your own independent labour, assisted by these auxiliaries, that you must improve your mind.

Dissection as a means of obtaining a knowledge of anatomy and physiology is absolutely necessary. You must educate the eye, make the mind comprehend the appearances presented by the different constituents of the animal body, if you are to learn anatomy; and it is only by dissection that this can be accomplished. Always be careful and neat in prosecuting dissection; if you do but little, do that little well; you will then gradually acquire a liking for it, and what perhaps at first may appear irksome to you, will gradually create an interest the indulgence of which will prove to be pleasurable.

I come now to speak of, as a means of learning your profession, careful observation of health and disease in the infirmary, and during the examination of horses as to soundness: in this respect you will have grand opportunities; the college possesses a large infirmary, nearly always filled with patients, and the horses for examination amount to thousands in the course of a year. These, I repeat, are no mean advantages; would that I could persuade you, one and all, to make the most of them. I speak thus because I know, and my colleagues all know, that the students, as a rule, do not possess themselves of that practical efficiency which they have ample opportunity here of gaining. We are often told by our professional brethren that our students are not practically taught, and some do not hesitate to attribute this to a want of system on our part! I stand here and tell you, gentlemen, that whether you gain practical knowledge here or not depends upon your own industry. Could I possess you now with a feeling of that responsibility you will experience the first twelvemonths after obtaining your diplomas and getting into business for yourselves, you would, during your pupilage, make as much progress in the practical part of the profession

as you probably will in the theoretical. Mark you, we can teach neither theory nor practice unless you aspire to learn ; and be assured there will be no excuse allowed if, when called upon, you are found wanting. Monitors, eight in number, are appointed for the session from the senior pupils, and clinical clerks, six in number, are selected weekly, also from the senior pupils ; and it is a part of the duties of these gentlemen to gain an understanding of all that is going on, so that they may be able to render explanation to any of you who may desire to know the nature and treatment of any case that may be in the infirmary.

The professor conducting examinations always feels a pleasure in informing the pupils around him of the soundness or causes of unsoundness in the horse under his inspection, and in soliciting their unbiassed opinion upon cases with a view of exercising, as it were, their capabilities. If you, notwithstanding our advice and solicitations, do not seize the golden opportunity, we cannot force it upon you, nor are we aware of any means of attaining the information which is necessary to make you what are commonly designated good practitioners, unless you determine to exercise a good amount of close observation, and reasoning upon what will come daily under your notice.

It is no lukewarm attention to these matters that will ensure success ; to become a judge of the seat of lameness, or to diagnose disease, requires all your diligence and plenty of practice. I may mention to you that during the last summer several students attended the College for the purpose of availing themselves of the opportunities occurring in the vacation. Some of these men have so applied themselves that they have become good judges of the action, age, and vision of horses, can fairly diagnose disease, and, I may add, may be trusted with the treatment of cases ; but there are others, who have had exactly similar opportunities, and who have been quite as regular in attendance, but who have learned comparatively nothing. How is this to be accounted for ? It is true that difference in capacity of mind may to an extent ; but I think we shall find that, in by far the majority of instances, it is to be attributed to carelessness ; there is a lack of that inward desire to progress which you *must* possess if you are to succeed. Let me, then, again appeal to you to seek earnestly to make yourselves efficient in this practical knowledge of health and disease ; recollect your ultimate success in life as veterinary surgeons depends to no slight extent upon it. Never allow a case, however trivial it may seem, to pass unheeded ; you may always gain

something from it, or at least may refresh your memory by endeavouring to teach those about you who may not, perchance, be so well informed as yourself.

Such are the means which will be held out to enable you to study effectively the profession you have chosen. It may be that to some of you the path described by me appears to possess but few charms to lure you on, and you are, perhaps, thinking your College life will be anything but a very pleasurable one. If you do as I have advised you this morning, you will find that your way will be paved with interest, and the farther you pursue it, the more gratifying will that pursuit become.

I would pointedly suggest to you that, while you are here studying your profession, you should endeavour to attain all else which is calculated to lead on to a successful career. You are arrived at a critical period of your life, and the habits which you now form will most probably remain with you to the end; if they be vicious habits I am sure they will; seek, therefore, to do all that raises the man, and shun that which is calculated to debase him. It is no mean attainment to be able to address an audience, and it is one which generally raises a person considerably in the estimation of the public. Although comparatively few possess this accomplishment, there are not many who cannot acquire it by careful practice. The veterinary Medical Association is a good school for exercise. I would advise you to attempt to train yourselves. Should you only moderately succeed, it will repay you for the little perseverance it will at first require.

While here let all your deportment indicate a considerate feeling for your fellow-labourers, and never lose sight of it in after life. Be peaceable, candid, and condescending; be kind, generous, and sympathising. Enter into the concerns of your friends with ardour, and always be obliging. A man is much to be pitied who wraps himself up in his own narrow interests, gazes with an evil eye and envious temper upon the successes of his fellows, or with an unnatural satisfaction gloats over the disappointment of those around him. 'Tis little he knows of the true happiness of life, for man should be attached to man by intercourse of good offices and kind affections. Select with prudence and propriety those with whom you choose to associate; but be not always with your companions; you must allot to yourself a due share of your time for retirement and reflection. Keep a careful watch over your amusements; life cannot go on without some measure of relaxation and entertainment; too intense application enfeebles nature's

powers, and soon wears them out; therefore take recreation, but keep it within bounds; enjoy life, but take care of your health; don't turn nights into days, for if the mind is to be healthy, and capable of doing the work you will require of it, the body must be healthy too, and I know of nothing more calculated to ruin health than a loss of rest.

Honour your Sabbath, for it is the choicest gift of Heaven; it is a day of rest, and mind and so keep it; there is no necessity to plod and toil on Sunday; you must use well the six days, and so earn the rest to be enjoyed of the seventh.

Gentlemen, as I said at the commencement of my remarks, you have a noble course in front of you if you only will that it shall be so, but recollect success entirely depends upon your own exertion and your own efforts; your teachers may labour ever so zealously, they may advise ever so wisely, but unless you co-operate it will be labour in vain. You should be thinking of repaying your parents for that watchful care and that expense which you have cost them; they have conducted you till you have reached an age at which you are capable of manly improvement; bear in mind their solicitude still continues, and they are anxiously watching how you will step these lower rounds of the ladder of life; you have already contracted a great debt of gratitude to them, and you cannot do better than to try earnestly to pay off a little—the whole you never can—of this debt by making the best possible use of those advantages which their goodness has afforded you.

In conclusion, I desire to tender the thanks of myself and colleagues to the many professional friends I see around me, for their presence here to-day. Gentlemen, you do us and our institution much honour; you encourage us to new efforts in the labour before us, and you set a grand and good example to the class.

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## OBSERVATIONS ON THE ANATOMY AND PHYSIOLOGY OF THE HORSE'S FOOT.

By GEORGE FLEMING, M.R.C.V.S., Royal Engineers.

*Physiology of the Horse's Foot.*

(Continued from p. 706.)

SUCH is the mode of formation of the hoof, and the part played by different portions of the foot in the generation of the material of which it is composed. But though these

different portions of the living surface perform definite functions in the elaboration and constitution of the hoof while the organ is in its usual healthy condition, and though these functions are carried on actively and continuously so long as these parts preserve their integrity, yet it must be remarked that the production of horny matter does not belong solely and exclusively to them. On the contrary, and owing to a wonderful provision of nature, this faculty is common to all parts of the foot, and can be brought into operation at any given point when some change, or some extraordinary necessity for it occurs. We have mentioned that though the vascular laminae do not, in health, take an active part in secreting horn material, yet disease or accident will cause them to assume a particularly energetic secretory function which oftentimes leads to undesirable results.

But the peculiar and striking susceptibility of the whole region to throw out this epidermic protection is made more particularly manifest after accidents, surgical operations, or experiments on the living portions of the foot.

The hoofs of horses, like the horny formations of other animals, may be, either through the effects of accident, or of local or general disease, removed in a slow or sudden manner from their adherence with the living tissues, leaving these exposed. This, even under the most favorable circumstances, is a serious occurrence, from the length of time necessary for a new and efficient hoof to be reproduced, and the care required to prevent the keratogenous membrane from becoming so injured or altered that its function may be modified or altogether destroyed. The latter result most frequently follows accidents in which the hoof has been violently torn from the living parts beneath, and these have been irreparably injured, either in the act of separation from the horn, or by subsequent bruising and laceration.

But provided they are not seriously involved, and care and patience are exercised for a certain period, the hoof will be reproduced, and, in some instances, almost as perfectly and in as efficient a condition as the previous one.\* Cases of

\* A good example of hoof reproduction, after an accident, is given by Mr. Cartledge, of Sheffield, in the *Veterinary Record* for 1845. In 1844, a mare, five years old, was at work on the railway at that town, drawing waggons filled with earth. In order that the waggon might be 'tipped' or emptied of its contents into a pit at the proper spot, the velocity had to be increased to a rapid pace for sixty or eighty yards, and it was after exerting all her force and speed to give the waggon the necessary momentum, and the mare was being suddenly removed from the path in order that the carriage might pass on, that her front foot—the right—became wedged in between the ends of two iron rails, sufficiently apart to admit it; the end of one rail was inserted between the sole and the toe of the shoe,

this description are not uncommon, and several are recorded in the annals of home and foreign veterinary science; while partial reproduction of the hoof enters into almost the daily experience of every veterinary surgeon. But when a hoof, or a portion of a hoof, has been reproduced, it usually exhibits alterations in quality and general outline, and in the arrangement of its component parts, which may always be ascribed to partial destruction or impairment of function of the formative membrane.

Reproduction takes place most favorably when the old hoof has been gradually removed by disease, as in laminitis; new horn has then been allowed to be formed to protect the living textures, while yet the old envelope in process of desquamation supports and shields it.\*

and the other at the top in front of the hoof. The mare, finding herself fixed, endeavoured to disengage herself, and in so doing got in front of the waggon, which, coming at a great pace, forced her down into the pit, leaving the hoof behind; this was so firmly wedged in between the rails that a large hammer was required to remove it, and then it was found that the shoe and hoof were bent in a peculiar manner, the inside heel being completely raised above the level of the frog; not one of the nails attaching the shoe had been disturbed. With some difficulty the mare was got to her stable, and on examination it was found that the vascular structures of the foot were very little injured, and that no serious damage had been inflicted on the more essential parts. The animal was slung and subjected to general treatment, and the foot, having been washed, was enveloped in tow saturated with tincture of myrrh. A fortnight afterwards the formation of horn was observed to have commenced at the coronet, and the laminae were also covered by a thin layer. In three weeks the formation of the new sole and frog was perceived to be going on; and by the middle of December, six months after the hoof had been torn off, the foot was entirely covered with horn, except in those places where the keratogenous membrane was damaged. In shape, the new hoof was more circular and vertical than the former one had been, though in time the mare performed her usual work as well as before.

\* In the *Field* for December 10th, 1870, there is an account of a case in which regeneration of all the hoofs took place after an attack of laminitis. In November, 1869, the horse had performed a long journey of sixty-five miles, and, in consequence, was attacked with inflammation of all the feet. Remedial measures were resorted to, general and local bleeding being practised; the shoes were taken off, and cold bran poultices constantly applied to the feet. For three weeks the animal suffered such agony that its life was despaired of; it was reduced to a skeleton, and covered with sores from continually lying. Under a tonic plan of treatment—including port wine and gruel—the animal rallied, and in two months from the attack commenced to move a little round his box, and at this time “the hoofs began to shell,” and gradually came off. In March, 1870, the horse was shod with thin shoes and turned into a field, and while there a considerable portion of the right hind hoof was detached along with the shoe. In April he was moved into a marsh, where he remained night and day until August, when he was put to work. During his stay in the marsh the owner visiting him on one occasion found the old hoof of the right fore foot gone, and “a perfect little colt's

It has also been observed that when the vascular laminae have been entirely destroyed and the surface of the pedal bone laid bare, and even injured, horn has been exuded on its surface. And, according to Professor Gourdon, we may remove the sole of the hoof, destroy the plantar cushion and plantar aponeurosis, and expose the pedal and navicular bones; but no sooner has the wound been partially covered with granulations than horny matter begins to show itself on the surface and forms a sufficient protection, gradually extending, as it does, from the circumference to the centre until the whole is completely covered. Even the total destruction of the coronary cushion does not prevent the regeneration of horn at the part which this body occupied.

The production of this horn might, with apparent reason, be attributed to the antecedent reconstitution of the keratogenous membrane; but observation demonstrates that it is not so: the subcorneous tissues, once destroyed, are not regenerated, or at least those which subsequently appear are so different to them that they scarcely bear any analogy. For instance, if, after the lamellated tissue of the os pedis has been removed, we examine that which has been developed in its stead, it will be found that there are no longer any of the characteristic leaves, and that the reticulated tissue beneath has also disappeared; all that is present is a thin indurated membrane intimately united to the surface of the bone, and covered with horny material that adheres very slightly to it, and is readily removed.

The villous portion of the plantar surface is restored in a similar manner, being replaced by a uniformly smooth membrane composed of a hardened tissue, and destitute of the villi which form so remarkable a feature on the surface of the original membrane; and the horn that exudes from it has not the usual aspect of that substance, but is thinner, softer, yellowish in colour, and so scanty in amount as to afford but a feeble protection to the living parts beneath. It is the same with the coronary cushion; when some part of this is destroyed, the section of wall secreted does not assume its regular form, and there always remains an apparent depression, while the living tissue is thin and hard, and in no respect like that which it has replaced.

Gourdon states that the villi which have been, with the coronary cushion, destroyed, are reconstituted again on the

foot existed in its place." At the commencement of December, 1870, he is described as having "four perfect new feet, is not shod with leather, goes better than he did before the attack of inflammation, and is hunted two days a week."

cicatrix, and, consequently, that the horn grown therefrom is fibrous and tubular. On a foot from which he had removed one of the quarters of the hoof and the corresponding portion of the cushion as high as the periople, he found that the new growth which constituted the false quarter showed tubes like those in the other parts of the wall formed by the uninjured cushion, though these tubular fibres had a more irregular direction than in the normal hoof, and were more unequal in diameter.

I must confess that my experience does not corroborate this statement of the able Professor of the Toulouse Veterinary School, for I have invariably observed that when any portion of the cushion is seriously injured the villi are not restored on the cicatrix. The wound has a strong tendency to contract, and this contraction brings the two borders nearly together; in this way the lesion is repaired without much adventitious tissue being introduced into the chasm between the divided edges of the cushion, and the non-villous space is consequently generally somewhat limited. Besides, it is almost, if not quite, impossible, in an operation like that mentioned by M. Gourdon, to dissect away completely that portion of the cushion which alone secretes the wall, with all its villi, and leave the perioplic ring intact. In all probability these vascular tufts were not totally excised, and to this circumstance, and also to the contraction of the wound, was due the tubular horn subsequently formed.

But that the hoof can be regenerated, or at least a mass of epidermic material produced which corresponds to it, and to a degree fulfils its office, without the concurrence of the keratogenous membrane, there appears to be ample proof. The new generative apparatus may be the bones, tendons, or other textures of the foot, and the vicarious function assumed by these would seem to be all the more active in proportion as the injury done to the special secretory membrane is extensive and serious.

A striking example of this reproductive and reparative faculty devolved upon tissues to which it is habitually foreign is quoted by M. Gourdon from the 'Recueil de Médecine Vétérinaire' for 1842, and shows to what an extent nature endeavours to compensate for the loss of important parts.

A horse, aged five years, was admitted to the Veterinary School of Alfort, affected with diseased lateral cartilages of one foot, which was deemed incurable. Amputation being determined upon, the entire organ was removed by making a deep incision around its upper circumference, through the coronary cushion, at the origin of the vascular laminæ,

dividing the extensor and flexor tendons and lateral ligaments, and penetrating the articulation of the foot. The pedal bone being detached, the lower extremity of the second phalanx, with its articular face, was removed by the saw, and the remaining portions of the lateral fibro-cartilages were excised by dissection, so that the face of the large wound was bordered by the intact coronary cushion, still covered by a thin layer of horn. With regular dressings the wound gradually became studded by granulations, the horn on the coronary cushion grew down, and at its inner border a continually increasing secondary zone of horny matter was developed, until in about a month it had attained a width of fifteen millimètres. While its breadth always increased towards the centre, it at the same time gained in thickness, and the growth from the coronet went on regularly. In about two months the wound was scarcely the size of a centime, and the horse was able to rest somewhat firmly on the plate of horn which had formed. Nine months afterwards, the growth from the coronet had assumed the shape of a complete cylinder fifteen centimètres in height, and five or six in diameter; it was not perpendicular to the ground, however, but curved forward and upward like a cow's horn, and in such a manner that the weight was thrown on the heel of the stump.

It must, therefore, be concluded that upon exceptional emergencies—as when they are suddenly denuded of their external covering—all the textures entering into the composition of the foot are endowed with the faculty of generating horn to an almost unlimited amount, no matter how diminished in superficies they may be, or how little of the organ remains. It would seem as if the blood sent to the foot contained a certain quantity of the horn-producing element which it must deposit there in some form or other, no matter if this extremity of the limb be ever so severely mutilated or curtailed.

But though the proper secreting membrane is not absolutely indispensable to the generation of horn, it must, nevertheless, be conceded that it is the essential agent in giving the hoof its normal shape and structure. To its peculiar constitution is due the circumstance that the epidermic cells, as they are developed, instead of accumulating in an irregular manner around the foot, are so ingeniously arranged as to form a comparatively light but dense and resisting insensitive case, which perfectly protects the vital tissues that compose this part of the limb, and yet leaves them all the liberty necessary for the exercise of their functions without impairing the stability of the organ as it rests upon the ground.

And though this membrane is the usual generator of the hoof, yet it must be looked upon as in reality more the regulator or constructor of that envelope than its creator—disposing the cellular elements thrown out from its surface in the form of fibres and leaves; whence the imperative necessity, says Professor Gourdon, that in all the operations performed on the foot, the various constituent parts of this apparatus should be preserved as scrupulously as possible, its integrity being the primary condition of a sound and well-formed hoof.

Having discussed the formation of the hoof, and the share taken by the living structures of the foot in that process, we have now to speak of its growth.

Much pertaining to this division of the subject has, however, been already incidentally touched upon, and if it were not for the important relation it bears to the art of farriery and the general management of the organ, but little more would require to be added. But these reasons are so weighty, and yet are so apt to be overlooked, that it is considered necessary and desirable that the question of growth should be examined at some length, in order that we may arrive at definite conclusions as to the manner in which it is carried on, and the rules that ought to guide us in controlling it, so as to maintain foot and limb in a proper state of relationship to each other and to the ground.

*(To be continued.)*

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## PANICS AMONG HORSES.

By G. FLEMING, M.R.C.V.S., Royal Engineers.

I AM induced to offer some further remarks on this interesting subject, in continuation of those which appeared in last month's *Veterinarian*, in consequence of an account of a panic on a large scale having occurred at St. Petersburg among the horses of a cavalry regiment, about the same time as that of the 1st Life Guards at Aldershot. This account, and other noteworthy remarks which will be alluded to, is from the pen of Colonel Money, and appeared in one of a series of excellent letters on the "Campaign of St. Petersburg," published in the *Times* for October 2nd. The letter was dated from St. Petersburg, September 20th, 1871. The colonel's description is so graphic and instructive that I make no apology for giving it in his own words. He writes:

“While the troops are resting, I may mention that on the second night of the campaign an unlucky accident occurred. It partly occurred, too, in consequence of tired troops taking their rest before their proper time. A regiment of the Empress’s Cuirassiers of the Guard, 900 strong (think of that for one cavalry regiment), had arrived at their cantonments, had dismounted and taken off their saddles, and had sat down holding their horses by the head, or letting them stand alone, till the carts with the picketing ropes for each squadron came up. Many of these soldiers fell asleep. Russian cavalry horses are picketed in the simplest way, which I will explain directly. The horses are also very docile, though fed to the highest degree, and very well groomed. They have, notwithstanding (when unriden), a lamb-like placidity which is beautiful to see. On this occasion, however, it was otherwise. A neighbouring regiment, which had arrived long before and had dined, indulged in some boisterous mirth, whereupon the squadron of horses nearest to them became alarmed, broke away, was followed by the next squadron, and, a panic seizing them all, in one instant the whole 900 fled in wild disorder and in the utmost terror over the open country.

“Two things were very remarkable in this stampede. In the first place, exactly as all wild horses do in the Steppes, and from which Steppes many of these had come, and exactly as camels do before they start in the desert, they unanimously selected one large powerful horse as their leader, and, with a look at him, and a snort at him, which they meant and he understood as ‘*après vous,*’ they actually waited till he dashed to the front, and then followed in wild confusion. When I tell you that some of the horses were not recovered till they had gone 120 miles into Finland, you may imagine what the panic was. The second remarkable thing is the way that some of them were stopped. In one solid mass they dashed on for miles, and then came directly at right angles on a river. In front of them was a bridge, but on the other side of the bridge was a *tête du pont* and a small picket of cavalry. The horse which led would not face the bridge, seeing the cavalry at the other end, but turned on one side, dashed into the stream, and the whole 900 horses swam the river together. As they emerged and flew wildly on, the commander of the picket bethought him of a *ruse*, and ordered a bugler to sound the ‘*appel.*’ This is always blown when the horses are going to be fed. Out it came, the bugle note loud and clear, and all the old horses pricked their ears, wavered, stopped, paused, turned round, and trotted back. This

severed the mass. The rest were broken up; 300 ran into a large enclosure in a farm, but some of the more young and adventurous madcaps did not stop or were not caught till they had run above 100 miles. Some were staked, and some were lamed, and some were obliged to be shot, but the casualties in all were very few."

The colonel then alludes to the method of securing the horses while in the field, and it will be seen by the older army veterinary surgeons that it does not differ much, if anything, from that followed by our own troops some ten years ago. He says:

"This question of picketing deserves to be considered. Russian cavalry horses are picketed by the head alone. They have no heel ropes. Two vertical stakes are driven into the ground, a rope is stretched between them, and to that rope the horses are picketed with other ropes (not with chains) in batches of thirty between each pair of stakes. Two or three of these batches facing two or three similar batches (the horses facing each other) form the front and rear rank of a squadron. This picketing is found quite sufficient. The horses never break away. The heel ropes are never used; they are not wanted, for the horses never kick; a kicking horse would not be kept in a regiment."\*

Some sensible remarks follow on the kindly and familiar manner in which horses are treated by the Russian soldiers—treatment which, no doubt, has everything to do with their remarkably good behaviour on the picket lines. My experience of the treatment to which the British troop horse is subject is very different to that here indicated. As a rule, our soldiers are not kind to their horses, but, on the contrary, only too frequently treat them with altogether unnecessary harshness and cruelty. It is but seldom that one observes any real attachment between man and horse, or any great

\* We learn from the *Times* correspondent, present in Hungary during the recent manœuvres there, that the Honved, or Hungarian hussar horses, have, the fore legs coupled together; to this coupling there is a short rope fastened to the ground by a peg, so that even if the latter be drawn the horse cannot get away with any great degree of speed. This coupling of the fore legs is the usual method adopted in the pastures; it does not strain the legs or distress the horse in lying down or getting up, while it secures him most effectually.

Whatever way of attaching army horses in the field is adopted, it should be one to which the animals are accustomed in their stables. To tie horses by their heads while kept in stables for eleven months in the year, and then suddenly to picket them out in the open, where they have every inducement to be restless and seek their liberty, only secured through the medium of a narrow strap and a short chain by one of the front pasterns, is surely as unreasonable as it is injudicious.

amount of solicitude evinced by the former for the latter. The excessive use of the spur and bit when the soldier is in the saddle, and the churlish bullying treatment it receives in the stable, not only makes the troop horse peevish and fidgetty, and always inclined to kick its fellow-horse, but prematurely wears it out. We fear that our countrymen, as a rule, are not particularly happy in eliciting the best traits of the horse's character, and that we are only too ready to imagine that whipping, spurring, or tugging with an unmerciful hand at a horse's mouth constitutes the *acme* of equestrianism. We have but to look at the treatment the cab horses in any of our large towns receive, or watch a cavalry regiment in or out of barracks, for proof of this.

Colonel Money justly observes :

“I doubt if the English horse soldier is intimate enough with his horse. The idea here is that, with his master on his back, the horse cannot have too much life or spirit in him, and that he should know this, and does know this ; but that with his master by his side the horse should be like a dog or pet lamb to him. This is so with the Arab and his horse. The Arab horse is part of the family—comes into the tent like a dog, lies down among the children, is run over and trod upon by everybody, is unconscious of danger, and therefore unequal to vice. A Russian horse soldier is ordered to bring his horse to the same state, and Count Protasoff (the commanding officer of the white and gold cuirassiers of the Emperor) told me he was not satisfied with his regiment until he could put any 100 horses in a row and make a cuirassier fearlessly crawl under them from end to end. The horse I rode during the manœuvres was a charming animal. His name was Huzzar. His paces were perfect, and his docility was wonderful. Whenever a very big gun went off close to us, he used to give a little thrill, but it seemed more a thrill of delight than anything else, as if he thought it was about time to charge, or wondered that I did not at least do something. Anybody could have done anything with him. I think it speaks volumes for the Russian soldier's training of his horse that such a thing as a kick is unknown among them.”

From the soured temper of our horses, chiefly through the opposite kind of treatment to which they are subjected, the chief casualties are injuries from kicks ; these are generally numerous enough in barracks, but on the picket lines they are greatly multiplied, and fractured limbs are by no means unusual.

But kindness to animals, and horses in particular, forms a

marked and pleasing trait in the character of the Russians, which nearly every traveller in Russia has commented upon. For instance, Erman ('Travels in Siberia,' vol. i, p. 314), speaking of the carriage drivers or "yamshchiks" in that country, remarks:

"Travelling on the road seems to them rather pleasure than business, and partly with ever-varying apposite addresses to the horses separately, always in rhyme, partly with songs of considerable length, they accompanied the alternate bounding of the rattling carriage. Words serve the Russian yamshchik instead of the whip, which in travelling is never used. A mare he calls "good woman (*sudaruma*);" a tired horse he addresses as *starik*, or "old fellow;" collectively they are called "little doves (*golubki*)," and then, one after another, they are separately accosted with every endearing epithet. They are exhorted to be "wide awake," not to flag on the road, which constantly grows shorter, but to bound without delay from hill to hill."

And again, when on the way to Beresov, the same distinguished traveller writes:

"It is remarkable that in a country where the love of horses is so predominant, the use of the cracking whip of Western Europe is quite unknown. I never remember to have seen it, or to have heard it named, in Russia."

I have merely referred to the Russian love for horses, and their kind and sensible treatment of them, as an incidental circumstance in the matter of animal panics; but the subject is nevertheless one of importance to the army veterinary surgeon, who has a direct interest in the promotion of humane and kindly management of the horses of his regiment; it is also one in which the country should feel interested, if on the score of economy alone.

In our last month's paper we alluded only to panics among horses, but it must not be inferred from this that they are not observed in other animals. The bovine species is no less liable to this peculiar psychological phenomenon, and M. Decroix, at a meeting of the *Société Centrale de Médecine Vétérinaire*, held on the 25th August, 1870, refers to the following instances, though he states that in France there are panics nearly every year among the cattle collected at the fairs.

The *Moniteur Universel*, for the 22nd March, 1868, says:

"The cattle assembled at fairs are sometimes seized with inexplicable panics which cause them to fly in every direction, and give rise to formidable accidents. Two events of this

kind, which occasioned veritable catastrophes—the second especially—have just occurred, the one at Saint-Yan (Sàone-et-Loire), the other at Marcilly (Loire), at an interval of a few days. This is the account of the first: “A very large number of cattle,” says the *Journal de Sàone-et-Loire*, “were collected on the market-place of Saint-Yan, on the 14th of this month. All at once a startling commotion took place in the middle of the market; the cattle, as if struck suddenly with vertigo, reared up in all directions, overturning in their frantic course more than fifty people. The brigadier of the *gendarmérie*, Humbert, and the gendarme Garric, of Paray-le-Monial, on duty at the fair, were also overturned, but they were able to get up and assist the wounded, twelve of whom were injured in a very grave manner.

“Thanks to the devotion of the authorities of Saint-Yan, the gendarmes, two surgeons, and some other persons, the disorder was suppressed, and immediate attention bestowed on the disabled individuals. A very strange circumstance connected with this occurrence was elicited. It appears that on the previous evening a rumour got abroad at Gènelard that evil-disposed persons were to give certain cattle drugs which would make them furious, and profiting by the disorder they would occasion, they could exercise their wicked propensities; and indeed a watch was being maintained to thwart this supposed intention at the very moment when the occurrence took place. But no important conclusion can be drawn from this, and the primary cause of these redoubtable cattle panics is still a mystery.

“The second of these events took place last Tuesday at the market of Marcilly, near Roanne. According to the account an eye-witness furnished to the *Courrier de Lyon*, a veritable catastrophe, as will be seen, was the consequence of this vertigo of panic, which precipitated nearly two hundred distracted and furious cattle among the crowd of people. It is said that fifteen persons were killed and thirty injured; but it is to be hoped that the numbers have been much exaggerated by fear, and that more exact reports than these first rumours appear to be will reduce the consequences of this strange and painful event to less terrible proportions.”

Some of the ancient writers have also recorded similar occurrences, and sometimes they attributed them to strange causes. Perhaps one of the most formidable to be found in antique history is that which occurred in the time of St. Augustin. The Pagans complained bitterly of the neglect into which the worship of the gods of their fathers had fallen, and blamed Christianity as the cause of the misfortunes

which had visited their country since its introduction. To refute this accusation, Augustin made a retrospective review of the numberless calamities which had spread desolation among the Romans before Christianity had attempted to supersede idolatry, and among these he included a panic which attacked the generality of the domestic animals of Italy. In the 'City of God' (book iii, chap. 23) this event is thus referred to:

“ Before even the Latin confederation rose against Rome, all the animals subjected to the necessities and the power of man—dogs, horses, asses, oxen, and other creatures submitted to domesticity—became all at once fierce, broke their fastenings, fled from their dwellings, and ran about at large. They became furious at the approach of other animals or of their owners, whose domination they ignored. To pursue in order to secure them was to expose oneself to great peril, or even to death.”

When the psychological characteristics of animals become a matter for study, this strange tendency to be affected with panic will certainly demand notice. In the mean time we can only refer to it as a phenomenon worthy the attention of the medical philosopher and naturalist.

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## THE PRINCIPLES OF BOTANY.

By Professor JAMES BUCKMAN, F.G.S., F.L.S., &c. &c.

(Continued from p. 719.)

THE MELANTHACEÆ.—*Melanths* form a natural order which, though not abounding in species, yet, from the activity of its members, may be considered as highly important, having amongst them the two genera *Colchicum* and *Veratria*, both of which contain species possessing medicinal and other qualities which must ever render their study one of interest to the practitioner of either school, not only for their medicinal effects, but for the evil influence exerted on pastures by the *Colchicum*. *Colchicum* is sometimes called meadow saffron or meadow *crocus*, and from its similarity to the latter genus it may not unfrequently be confounded with it; we therefore give a description in parallel columns, first remarking that the genus *Colchicum* has been named from

Colchis, a country of Asia, a country, according to Dr. Syme, "said to be full of poisons, and this among the rest."

*Characters of Colchicum.*

Perianth coloured, funnel-shaped, with a very long slender tube and a 6-partite limb, withering.

*Stamens* 6, inserted on the tube of the perianth; anthers affixed by the back, versatile. *Styles* 3, filiform, very long, stigmas slender. Capsule fusiform, 3-lobed septically, 3-valved. Seeds numerous, sub-globose; testa brown, rugose.

Herbs with oblique-based *corms*, contained in brown or dark brown coats. Flowers in most of the species appearing in autumn after the leaves have decayed. The leaves produced at the close of winter, and capsule coming above ground in the following spring. Flowers lilac or pink, varying to white, resembling in form those of a crocus.

Rootstock, an oblique based corm, rarely a "bulb." (Endlicher.)

In *Crocus* the bud rises from the centre of the corm.

*Characters of Crocus.*

Perianth regular petaloid; tube very long, straight, and extended much beyond the ovary; limb, 6-partite; segments all nearly similar, incurved or recurved.

*Stamens* 3, inserted on the base of the external segments of the perianth; filaments filiform; anthers affixed by the base. Ovary adhering to the base of the perianth tube, ovoid, bluntly trigonous, white; style very long, filiform; stigmas 3, wedge-shaped, fleshy, denticulate or cut at the apex. Capsule of the consistence of parchment, fusiform, trigonous, loculicidal, 3-valved. Seeds few, globose, with a somewhat fleshy testa.

Herbs with equal-based *corms*, covered by an envelope of parallel or interlacing fibres, or more rarely splitting into transverse rings. Leaves all radical-linear, often revolute, channelled above, keeled beneath, with a white stripe on the upper side. Flowers large, showy, enclosed in a convolute membranous spathe; the ovary remaining underground till after the time of flowering.—*Sowerby's English Botany*, New Edition.

We have been thus particular in quoting a somewhat technical description of these two genera, because in plants so much alike in external aspect, and yet so dissimilar in qualities, it seemed important to distinguish them with accuracy.

*Colchicum autumnale* is a native plant, sometimes called the "autumn crocus," from its similarity, both in colour and external form, to that plant, and in some counties "naked ladies," from their coming up without leaves.

It is very local in its habitats, but is generally in large quantities where it occurs. It is fond of moist rich meadows, especially between woods, where there is a tolerable admixture of lime in the soil.

The plant is so medicinally active in all its parts—flowers, foliage, seeds, and corm—and at all seasons of the year, that we cannot resist quoting Dr. Pereira's description of it:

"The *cormus*, commonly called the *bulb* or *root* (*radix col-*

*chici*), when gathered at the proper season, is about the size of a chestnut, and somewhat resembles, in external appearance, the bulb of the common tulip (*Tulipa Gesneriana*), which, as well as other liliaceous bulbs, are distinguished from the cormus of *Colchicum* by being composed of laminæ or scales, whereas the cormus of *Colchicum* is solid.\* It is rounded on one side, flattened on the other, where is perceived the fibrous germ of a new cormus, which, if allowed to grow, shoots up and bears the flower, while the old cormus wastes. It is covered by two coats—an inner reddish-yellow one, and an external brown one. Internally the cormus is white, fleshy, solid, contains a milky juice, is very feculent, and has an acrid bitter taste. Before drying the cormus it should be cut transversely in thin slices, the dry coats being previously removed (Ph. Lond. 1836). The slices are to be quickly dried in a dark airy place, with a heat not exceeding 170° F. (Battley, *Lond. Med. Reports*, xiv, 429). The late Dr. A. T. Thomson recommended the slices to be dried on clean white paper, *without artificial heat*, but the time required for this is an objection to its practice. The dried slices (*radix siccata*) should be about the eighth or tenth of an inch thick, rounded, oval, with one notch only on one part of their circumference (not fiddle-shaped), inodorous, of a grayish-white colour, and an amylaceous appearance.

“The seeds (*semina*) are about the size of those of black mustard, odourless, and have a bitter acrid taste. Their colour is brown, varying from pale to dark or blackish. They somewhat resemble several of the cruciferous seeds (black mustard, turnip, and rape), but are larger than these; moreover, the latter, being more oily, are more readily crushed. I have known *Colchicum* seeds mistaken for grains of paradise.”

As the corm is the part more generally used, much discussion has arisen as to the time at which it should be gathered. The cormi are generally taken out of the earth when they have arrived at their highest development, which is throughout the month of July. We have gathered large quantities at that time in the Cotteswold Hill district, where it abounds, and cannot help thinking that it is then at its bitterest; and as the contained bitter extractive is a test of potency, we have no doubt that the month of July is preferable to any other period for the collection of *Colchicum*

\* Some years ago a load of tulip bulbs was delivered at Apothecaries' Hall, London, for *colchicum cormi*. The late Mr. Anderson, gardener to the Apothecaries' Botanic Gardens, for many years cultivated some of these tulips, in commemoration of the attempted fraud.

corms ; at the same time we are aware that the celebrated Dr. Christison recommended the corms to be gathered in the withered state (about April), an opinion which he considered confirmed by Stoltze's analyses ; but as this appears to us to lead to an opposite conclusion, we give it below, merely remarking that the "*bitter extractive*" in the October corms is quoted separately, whilst in the March ones it is placed together with the sweet extractive ; but even should there be a difference, we consider it best to direct its collection at one period for the sake of uniformity.

*Stoltze's Analyses of Colchicum Corms.*

	Cormi gathered in March.		Ditto in October.
Volatile acrid matter . . .	Trace	.....	Rather more.
Soft resin . . . . .	0·04	.....	0·06
Crystallizable sugar . . .	0·41	.....	1·12
Sweet extractive, with some } bitter extractive . . . }	5·91	{ Uncrystallizable sugar { Bitter extractive . . .	2·72 2·17
Difficultly soluble extractive	1·30	.....	0·52
Gum, like tragacanth . . .	0·81	.....	1·65
Starch . . . . .	7·46	.....	10·12
Lignin . . . . .	2·32	.....	1·61
Extractive soluble in potash	0·61	.....	0·52
Water . . . . .	81·04	.....	80·31
	99·90		100·80

Colchicum has been for ages well known as a medicinal plant. The ancient Greeks seem to have employed it as such ; but for its introduction into modern practice, according to Pereira, we are chiefly indebted to Störk, of Vienna, in 1763. Dr. Christison considers its action to be that of a powerful sedative, and "hence," he says, "may probably be ascribed its well-known power of arresting gout ;" but as it is also diuretic and purgative, some part of its curative effects may be due to its action in these respects. That it has obtained great celebrity may be gathered from the fact that it is the principal ingredient in the much-vaunted French remedy for gout so well known as the *eau médicinale*, which, according to Rennie, is composed of "two parts of the expressed juice of the flowers of the Colchicum autumnale, and one part of brandy." This recipe confirms the opinion as to the potency of the flowers of the plant

which, indeed, their flavour, as well as the known injuries these sometimes inflict upon stock would have led us to conclude.

The active principle of the plant seems to reside in an alkaloid, to which the name of *Colchicin* or *Colchicina* has been given; this is without odour, but intensely bitter to the taste, and hence it is, doubtless, true that the activity of different parts of the plant depends upon their bitterness.

That Colchicin is a powerful poison may be gathered from the facts mentioned by Pereira, that "one tenth of a grain dissolved in weak spirit killed a young cat in about twelve hours. The symptoms were salivation, diarrhœa, vomiting, a staggering gait, cries, convulsions, and death. The stomach and intestines were violently inflamed, and contained extravasated blood throughout their whole course" ('*Materia Medica*').

Professor Tuson gives forms in his '*Veterinary Pharmacopœia*' for a tincture of both the corms and seeds of *Colchicum*, and under the head of "*Colchici Cormis*" we find the following :

"ACTIONS AND USES.—In excessive doses, irritant poison; in medicinal doses, cathartic, emetic, and sedative; it also increases the secreting action of the skin, kidneys, and particularly that of the intestinal mucous membrane. Occasionally prescribed on account of its sedative and diuretic qualities, in small and frequently repeated doses, in rheumatism and rheumatic influenza, also in deep seated or constitutional ophthalmia."

That the Colchicin is a poisonous weed in pastures, we have long known, as in Gloucestershire, where it abounds, scarcely a year passes without the local press containing some sensational article on "*Cattle poisoned by meadow saffron.*"

We give the particulars of one of the more recent cases which have come before us, from the *Hereford Times*.

#### "MEADOW SAFFRON OR COLCHICUM.

"*To the Editor of the Hereford Times.*

"SIR,—Owing to the shortness of keep this year I have heard of several farmers losing cattle from eating the blossoms of saffron. I would advise all persons that have that poisonous herb growing on their land to have all the blossoms pulled up and destroyed. The expense of so doing is trifling compared to the loss of a beast.

"Unfortunately I was a great sufferer from saffron years back, but I took the precaution to have it all drawn by hand

every spring previously to the seed being ripened, and by so doing I have now got rid of it.

“The blossoms are more fatal to cattle than the leaves and seeds of it in the spring. Calves have eaten the blossoms, drunk water after it, and death has taken place in less than an hour.

“The best means to be adopted after cattle have eaten this deadly poison is to give from half a pint to a pint of linseed oil to each beast according to age, and half that quantity every six hours for two or three doses afterwards. Avoid all drastic purgatives, such as salts, and which are too often given. If this treatment is adhered to, it will not fail to effect a cure.

“ ‘SUFFERER.’ ”

“Sept., 1868.”

It is stated that cattle browse in meadows containing the colchicum leaves without injury, but we must say that, as a rule, both cattle and horses refuse to eat it; hence its increase, as the seeds are everywhere thus allowed to ripen.

Hand-picking every spring, as recommended by “Sufferer,” is the best method of destroying it, as then the leaves are young; and if the branches of these be picked out the seed is destroyed, and new corms cannot be completed if the plant be thus early destroyed. This can be done at a trifling cost compared with the loss of an animal, to say nothing of the fact that such dangerous meadows can hardly be fully utilised unless the danger be removed.

VERATRUM ALBUM—*White hellebore*—is another powerful plant of the order Melanthacæ, and it is commonly called “Sneezewort,” from the errhine qualities of the corm. Like the colchicum, the plant is a powerful poison of the same class, being acrid and intensely bitter on the tongue, and, as stated by Professor Tuson, “in excessive doses, an irritant poison; in medicinal doses, nauseant, emetic, sedative, purgative, and anthelmintic.” He further leads us to suppose that it is not much used, as he says, “Given *sometimes* to the horse as a sedative, and as an excitant to promote absorption in œdematous enlargement of the legs.”

It is, however, extensively used by the cow-leech and common farrier to kill parasites in the coats of various animals, as also for some skin diseases, some of which resulting from insect irritation, it would seem, are soon cured by the poison to the pest, hence it forms an ingredient in the “*Unguentum Sulphuris compositum*,” which is, no doubt, a cure, *i. e.* poison, for the itch insect.

It is not a native of Britain, but occurs in Southern Europe, and as it is not so extensively used as colchicum, with which it possesses so many properties in common, we may, perhaps, be thankful that our meadows are not infested by *both* these highly poisonous plants.

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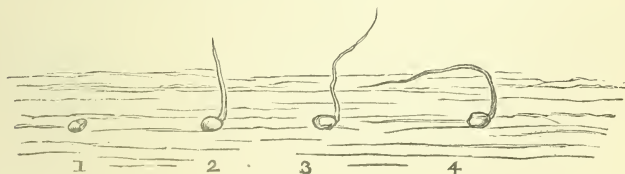
## CLOVER-DODDER, AND ITS SUPPOSED MEDICINAL PROPERTIES.

By the Same.

THE plant bearing clusters of white blossoms and entwined around the stems of clover and some sainfoin, is the Clover Dodder, *Cuscuta Trifolii*. It is a foreign form of a very delicate species of flowering plants belonging to the elegant natural order, *Convolvulaceæ*, to which belong also the bind-weeds, jalaps, &c.

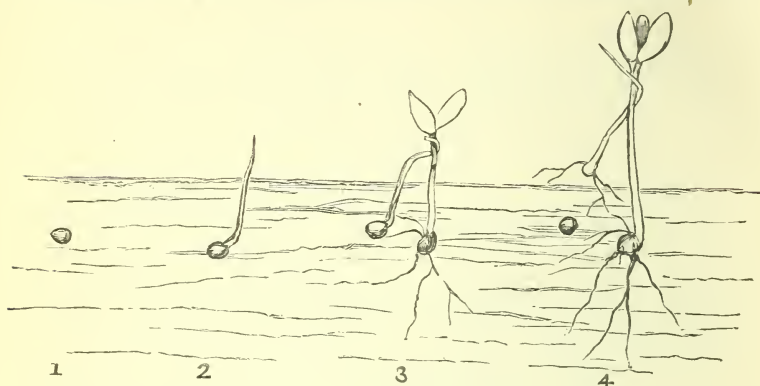
It is found increasingly abundant in our clover crops, where it occurs in rounded patches of sickly-looking twining fibres which are studded over with bunches of delicately formed flowers, succeeded by dark brown seeds a little larger than those of chickweed. I have been thus particular in these facts because farmers entertain the notion that dodder is produced other than from seed, and though they cannot express their meaning plainly they believe that it is developed spontaneously and is, as they say, "natural to the crop, or natural to the soil."

On sowing some of the dodder seeds by themselves it will soon be seen that they send up a delicate germinal-thread which early withers and dies; but if sown with some clover seed this thread quickly gets attached to the clover, and its parasitic nature then begins somewhat on the plan shown in the following diagram, but slightly magnified.



1. Dodder seed.
2. Ditto, germinated.
3. Germinal thread, on the look-out as it were for a foster-parent.
4. Germinal thread withering, in consequence of not finding a foster-parent.

No sooner is the foster-parent clasped than the parasite sends out a ring of aërial rootlets which penetrate the tissue of the former, and from that time it is a true parasite which soon branches out its long wiry arms in every direction, clasping new plants and increasing the area of its operations.



1. Dodder seed.
2. Ditto germinated.
3. Dodder commencing to clasp a clover plant.
4. Dodder lifted out of the soil by the growth of the clover plant, to which it is becoming parasitic.

Formerly the presence of this pest denoted foreign seed, as dodder seed seldom ripened in this country. This year it has increased to a much greater extent than usual, as the summers of 1868-9 and 1870 were very hot. The illustrations depicted above are from actual experiments made with dodder seed ripened on my own farm, a chance, however, which I had previously been many years on the look-out for without success. I think the best way to get rid of the parasite is to put a handful of straw over the circular patches and set it on fire; but I should still be thankful if some kind friend would let it ripen its seed, and send me some of it.

As regards the effects of dodder on animals, it may be well to remark that the species affecting flax, *C. epilinum*, sometimes occurs in such quantity as to make it a matter of importance to find out its specific qualities; thus, some few years ago, Professor Voelcker had the greater portion of *seven* sacks of flax dodder sent for analysis.

Of course organic analysis would not decide the question; but we may conclude from dodder being so near an ally of the jalaps that its seed may possibly possess more or less the purgative properties of the family, an opinion in which we are confirmed by a peculiar jalap-like flavour of the seeds themselves.

This flavour, however, is even more apparent in the entire plant both of flax and clover dodder, which doubtless accounts for the fact that sheep and cattle uniformly refuse it in its growing state.

While, therefore, dodder kills the clover, upon the juices of which it lives, and converts as it were what was before nutritious into a nauseous medicinal plant, it affords no compensation for the evil. A plant, then, so mischievous and so unsightly as this is in the clover may well merit the name given it by the Gloucestershire peasant, of "devil's-guts," which, though not elegant, is highly expressive of the detestation in which it is held.

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### RABIES IN THE DOG—A PROBABLE OUTBREAK IN A KENNEL OF HOUNDS.

By F. EARL, M.R.C.V.S., Shifnal.

OF late rabies has attracted a considerable amount of attention, and in some of the northern counties in particular, in consequence of its great prevalence, and the serious results which have followed its appearance. It is this fact which has induced me to send you an account of what I fear is an outbreak of so-called dumb madness among some hounds in my district.

The disease shows itself in two forms; in one the hound will be quite conscious, will answer to its name, and fawn upon those it is accustomed to, but will be very quarrelsome and continually fighting with other hounds. This was the case with the first hound (a young one, just in from walk), which was attacked in the kennel. The animal got worse and worse, and unfortunately bit one or two of the attendants during its illness, and had to be destroyed on the third or fourth day after it was attacked. A fortnight after this case another hound was attacked, but the symptoms varied greatly from the other. In this case a total paralysis of the muscles of the lower jaw existed, and the mouth was so open as to allow of one seeing a considerable distance down the animal's throat. The fauces and surrounding parts were noticed to be highly congested. This hound died in five days, but appeared to be quite sensible and harmless up to the last, even allowing the huntsman to pat and caress it.

A *post-mortem* examination was made of the first hound which died, and an opinion given that the animal had sunk

from "phrenitis following upon distemper." The second hound was also examined after death by a professional gentleman, who was of opinion that death was caused by "the diseased condition of the throat."

Unfortunately for these theories, fresh hounds have since been attacked, at intervals of a fortnight or so, for the last three months. Some of them have had paralysis of the lower jaw, and others not; but *all* that have been attacked have either died or had to be destroyed. I saw a bitch this morning, October 6th, that was taken ill yesterday; the mouth was wide open, the muscles of the lower jaw being completely paralysed; the eyes had a wild appearance, and were drawn back in the orbits; the breathing was normal, and she did not appear to be suffering from any acute pain. She was quite conscious, and answered to her name when called by the huntsman to the door of the box she was confined in. Some broth was fetched while I was present; but, as she could not lap it, her attendants would persist in giving her three or four horns full. She had much difficulty in swallowing, and soon became more excited. I did not venture to approach her for the purpose of studying more closely her symptoms. The huntsman gave it as his opinion that she would bite a stranger, and added that he was sure she would be dead in four or five days.

Treatment of the cases has been adopted by the huntsman, who has among other things administered to the animals what he calls a double dose of castor oil, viz., a pint, and abstracted blood to an extent as to cause complete exhaustion. Finding, however, that his treatment has not arrested the disease, and having heard that Mr. McBride, the huntsman of the Quorn, had cured a couple of hounds presenting similar symptoms, he has written to him for his recipe, which he is going to try, despite all my warning. This remedy, I am told, consists of 15 grs. of calomel, given in a pill, and the application of a blister to the throat. I recollect, when at College, hearing Professor Spooner state that a case of hydrophobia in man was said to have been cured by a surgeon of the name of Pope by the exhibition of large doses of calomel, repeated at short intervals. This may probably have given rise to the curative action of the drug in cases simulating rabies in the dog, for I regret to say that another opinion is entertained by the huntsman and other persons in this particular case.

## ARE HARES AND RABBITS THE SUBJECTS OF THE VESICULAR EPIZOOTIC—MOUTH AND FOOT DISEASE?

By ALEX. E. MACGILLIVRAY, Veterinary Surgeon, Banff.

So much has already been written in reference to this disease, and the subject has become so threadbare, that any further communication on it may seem somewhat superfluous. Be this as it may, however, I am inclined to think that what I am about to report will be new, if not interesting, to most readers of the *Veterinarian*.

Some seven or eight years ago a report went abroad in these northern parts that hares, rabbits, deer, and other animals commonly called game were, during their migrations from field to field and farm to farm, the means of spreading both this disease and pleuro-pneumonia; and not only so, but the fabricators of these reports *would* have it that the animals here mentioned were also the subjects of these diseases!

I have now before me an essay, of some sixteen octavo pages, on 'The Disease called Murrain,' published by an experienced veterinary surgeon in 1865. The writer of this essay tells us that he has "credible testimony that game—roes, hares, rabbits, &c.—are often the means of conveying infectious diseases such as pleuro-pneumonia, murrain, &c., from one stock to another. It is also said these animals are themselves the subjects of these affections." Further, the same writer goes on to say that "these animals being gramivorous—and in relation to their habits and aliment the same as cattle, sheep, &c.—he does not see any reason why they should be exempted from attacks of the same contagious diseases." Quite recently these stories about hares, rabbits, and dogs conveying contagious matter, *on* their bodies and *in* their systems, have been revived and become exceedingly rife, but with what veracity or foundation we shall see.

On the 20th of September last a farmer in this district called on me to say that, a day or two previously, his brother had given chase to a hare in a field on my informant's farm, and, having somewhat unexpectedly overtaken and secured the hare, he found that "poor pussy" was in the last stages of "foot and mouth disease!" the mouth, he said, one mass of blisters, and the four feet blistered and swollen out of all shape!

Considering the rumours afloat, and also the want of any reliable information on this subject, I asked him to send me

the hare in order that I might judge for myself as to the truth of this and other stories of a like nature which have of late figured rather largely in our public prints. Next day, instead of the whole hare, only a hind leg came to hand, the other three legs and head having been kept back, as they had been so much eaten or destroyed in the interim by some vermin as to be rendered useless for any investigation.

The foot of the leg sent was immensely enlarged, dark-coloured, and minus the usual hairy covering or fur from the end of the metatarsals to the root of the claws; but surrounding the insertion of each claw there still remained a small ruff of hair. The swollen foot, however, was quite firm, with the exception of some bulging and fluctuating points here and there, similar to the pointing of small abscesses. These were said to be the blisters or vesicles of the "foot and mouth" disease. A very cursory examination showed that they bore very little likeness to the vesicles of the aphthous epizootic; and I shall here endeavour to show that difference there was much, while resemblance there was none.

The vesicles in foot and mouth disease present at first a whitish appearance, and as the disease approaches its height they mostly assume a reddish-yellow or rusty colour. In the diseased hare's foot, however, the soft bulging points or so-called blisters were almost black in colour. When the vesicles of vesicular murrain break of themselves or are intentionally ruptured, a clear light-coloured fluid escapes in the early stages, which fluid becomes reddish-yellow as the disease advances to maturity; and further, in either case, the bursting or rupture of the vesicles exposes a raw, ulcerated, and intensely red surface. Nothing at all like this could I discover about the hare's foot; for, on opening one of the largest of the bulging points, some fairly-thick pus escaped from a pipe or sinus extending down to the bone. There were no less than seven of these points, varying from a quarter to half an inch in diameter, each with its accompanying sinus coming from the bone, or perhaps rather leading to it, as I failed to discover anything wrong with any of the phalangeal bones.

The other three feet, and also the external parts of the mouth and nostrils of the animal, were said to be swollen and denuded of hair to a similar extent to the one described. On my showing the foot to a person in this locality who has dealt in game for a great many years, he told me that he had often met with hares and rabbits affected in a similar manner in all their feet and also muzzle. The disease, he says, is more

prevalent in certain seasons than others, but as to the origin or nature of the affection he was altogether in the dark.

It is quite evident to me that it is not the vesicular epizootic of our agricultural stock; and I am inclined to think that it may possibly be the result of a parasitic attack, leading originally to the loss of the fur; but, if so, how are we to account for the swelling, the sinuses, and the pus? I expect to receive another specimen soon, and shall bring the microscope to bear on the subject, and report the result.

To ascertain whether or not this hare and rabbit malady was infectious as regards other animals, and, in fact, to settle if possible the question as to its being the vesicular epizootic, I applied the diseased hare's foot to the mouth and feet of a three months' old pig, and also to the mouth and feet of an eight months' old terrier puppy. It is well known that pigs are very liable to the vesicular infection, and it might be asked, why hares experimented with the terrier puppy? I answer, because I had been persistently informed by a farmer, "who was quite sure of the point," that a collie dog of his had lately suffered from the foot and mouth disease in a severe form.

Suffice to say that none of the usual symptoms of the disease appeared in either animal, nor did any other ill effect follow. Pustular eruptions are common enough in the dog, and sometimes are accompanied by constitutional symptoms akin to those of that protean malady—distemper; but in these days eruptive diseases are by the uninitiated almost certain, in any animal, to be placed to the credit of the vesicular epizootic.

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## THE INTRODUCTION AND SPREAD OF THE FOOT AND MOUTH DISEASE IN LANCASHIRE.

By W. HEAPS, M.R.C.V.S., Preston.

REFERRING to the subject of the prevalence of foot and mouth disease in Lancashire, I have not the slightest hesitation in stating that the recent outbreak in this district was entirely due to the importation of Irish cattle, and its wide diffusion to the bungling proceedings of non-professional men acting as inspectors. If the thing had been properly dealt with at the commencement, it is clear that thousands of animals would have escaped, which have now taken the disease.

From the commencement of the attack to their recovery,

cattle have been allowed to ramble at will from field to field, and by that means to convey the infection from one farm to another.

Information of an outbreak has, as a rule, been given; but then the inspectors have done little or nothing to check the spread of the disease; in fact, days, and in some cases weeks, have elapsed before the "order of blue" has put in an appearance. Truly, it may be said that the police-inspector, on his arrival at a farm, assumes a very knowing look, asks how many healthy and how many diseased animals there are, and but seldom sees them, for he has the idea that if the returns are properly filled up he has performed a great and an important duty. Isolation and disinfection are entirely disregarded, and these, in my opinion—and I am sure the profession will bear me out—are among the chief means by which we can hope to check the progress of a disease so highly contagious as eczema epizootica. I think that all animals sent by sea, even from British territory, if infected, ought to be examined on their arrival by a thoroughly competent person, before being permitted to travel into a healthy district.

Deal with Irish cattle as with foreign, and foot and mouth disease will soon become almost unknown either in England or Scotland.

On some future occasion I may probably have much more to say on this important national subject.

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## SOME OF THE CAUSES OF THE SPREAD OF FOOT AND MOUTH DISEASE AND PLEURO-PNEUMONIA.

By "SCRUTATOR."

THE recent outbreak of foot and mouth disease, in many of the northern counties in particular, is due, I believe, to infection, partly introduced from adjoining counties, but chiefly to animals imported direct from Ireland. So far as I know, no foreign cattle have lately found their way into my county, or into others in the north, with which I am familiar. Its spread here is owing chiefly to the movement of infected animals by road and rail, and from fair to fair; and to the imperfect isolation or non-separation of sick animals on infected premises. It is true that in some stocks its appearance could not be assigned to any *traceable* cause; but

then, in most of the cases in which such outbreaks occurred, the pastures or premises were situated near a line of railway or a highway directly connecting towns where cattle-markets or fairs are held—just as was seen with regard to outbreaks of the rinderpest.

My first case in the present outbreak occurred in a cow which was pastured in a field immediately adjoining the entrance to the railway company's cattle-yard, and which four times a day had to travel along the road by which all cattle going to or from the railway station had to pass.

Some of the cattle-dealers are *very reckless* with regard to the movement of animals infected with the disease, and care little or nothing about consequences so long as they escape detection. The dairy-farmers generally give early intimation to the police of the appearance of the disease in their stocks; but some of the graziers delay doing so until they shall have got a few of their "ripe" beasts off to the market or slaughter-house, as they find the police restrictions, when in force, to interfere with their prices.

The police-inspector, as a rule, knows very little of the disease. He goes to a farm when the occupier sends him information of an outbreak; notes as "attacked" just so many of the animals as the farmer thinks fit to tell him of, or he imagines, rightly or wrongly, to be affected—and I have known him to mistake the natural flow of saliva from the mouth, or a discharge of mucus from the nostrils, or lameness from foul in the foot, or sprained limb, for symptoms of foot and mouth disease. He then orders the farmer to keep his cattle off the highways, and places, perhaps, *one small jar* of chlorine-producing chemicals within the cattle-sheds to disinfect them! He visits the farm about once a week, writes down at each visit as "attacked," "dead," "recovered," the numbers the farmer pleases to tell him; and often is not a little bewildered as to what he *ought* to report if the farmer or his deputy be not at home to give him information of the real state of affairs. At length the farmer, thinking, perhaps, that he has been under "police government" quite long enough, tells the policeman on his next visit that his cattle, pigs, or sheep, are all recovered; learning this the inspector proceeds to look at the animals, and, if his uneducated eye fails to detect any discharge of saliva, lameness, or other suspicious symptoms, he reports all as "recovered;" while at the same time, perhaps, in some of the animals the disease is just commencing, and in others the gums and tongue are as raw as beef. Or it may be that all the animals are perfectly recovered, but the policeman has formed a contrary opinion,

and refuses to report them so. I have known cases of chronic lameness, both with and without any eruption about the feet, assigned by policemen as a sufficient reason for keeping farms under restrictions for weeks longer than was at all requisite, thereby subjecting the occupiers to much loss and inconvenience. Should the farmer complain of this, or refuse to accept the policeman's decision as correct, he is told to get a veterinary surgeon's certificate, *at his own expense*, and, if the certificate be favorable and satisfactory to the chief constable, his cattle are at length set free.

While the disease exists on a farm the diseased cattle are very rarely, with the exception of not being allowed to go upon a highway, placed under any real restrictions. They may rub noses over the boundary fences with neighbouring herds, and so infect all the cattle on the adjoining pastures; and they are left at perfect liberty to supply *gratis* a dose of infection to all cattle travelling along the contiguous highways which may think proper, in a friendly way, to rub noses with them over the fences or gates.

I have mentioned that my first case of the disease in the present outbreak was in a cow belonging to a person whose premises were near a railway station where a large cattle traffic is carried on. This animal was confined in a shed; but her companions, while still ill, were kept in a field, with low fences, having the road to the railway cattle-yard on one side and a turnpike road on another. A better position for infecting the cattle passing from this important railway centre into the surrounding country, or *vice versa*, could hardly have been chosen, yet here the diseased animals remained the whole of the time they were ill!

Here is another fact or two with regard to police inspection. There is a stock of cows within a distance of a few miles of my residence, out of which eight have died of pleuro-pneumonia within the last six or eight weeks. The cattle are located in a field *almost surrounded by highways*, and *the sick have been allowed to remain* with the healthy until they apparently got better or died.

Again, a few months ago I visited a stock about ten miles hence, in which pleuro-pneumonia had appeared, and found that three or four sick and dying animals were left in the same cow-house with the healthy ones. On my remonstrating with the owner, he said he had no means of separating them. The sick and healthy were housed together at night, and turned together into the same pasture by day. I saw some cattle belonging to two, if not three, neighbours pasturing *in adjoining fields*, and was informed, in reply to my inquiries,

that cattle belonging to one of these persons had occasionally broken over the fence, got among the diseased animals, been inside the infected buildings, and afterwards been driven away to fairs! I need hardly say that pleuro-pneumonia has since spread in the neighbourhood of this farm where such a reckless course has been pursued.

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## SUGGESTIONS FOR PREVENTING THE EXTENSION OF FOOT AND MOUTH DISEASE.

By "A MEMBER OF THE EDINBURGH VETERINARY COLLEGE."

THE getting rid of the foot and mouth disease and securing the country against future visitations, is a matter which has recently forced itself on my attention, and I now beg to send you the following suggestions as they have presented themselves to my mind:

1. Stop immediately in and near the infected districts all fairs, cattle auctions, and cattle shows.

2. Let no animals be moved on public highways between sunset and sunrise, or at any other times, without a license. By the term "animals" I mean cattle, pigs, sheep, and goats. These regulations only to be put in force when the disease is very prevalent in a district.

3. No animals to be moved from infected premises, except they be healthy and for immediate slaughter. The slaughtering should take place within a reasonable distance of the infected premises, in the presence of a policeman or his deputy, and within sixteen hours after the license is given.

4. All animals imported from Ireland, or the Continent, to be kept in quarantine for at least seven days after landing, or be slaughtered, except they be officially certified not to have come from infected districts.

5. Railway trucks to be properly cleansed and disinfected every time they are used, and cattle pens and yards daily. All manure, litter, &c., to be destroyed or buried with quicklime.

6. Each county to be divided into convenient districts, and a chief inspector appointed, who might be the chief constable. Each district to have a veterinary inspector, and one or more sub-inspectors, who might be policemen.

7. In case of an outbreak of disease the occupier of the premises on which it occurs should be obliged to send notice

thereof immediately, or within eight hours at most, to the nearest sub-inspector; he should also be subjected to fine if he does not separate his sick animals from the healthy as completely as circumstances will allow, and shut them out by hurdles, or other means, from all highways, running streams, canals, or pools, to which the cattle of other persons have access, as well as neighbouring pastures in which healthy cattle are located. He should also be prevented moving live animals from premises without license, and be called upon to cleanse and disinfect all infected places; burn or bury all infected fodder, dung, &c.; and give to the inspector and sub-inspectors all needful information of the number of animals in his possession.

8. On an outbreak of disease being reported to the sub-inspector, he should immediately, or as soon as possible, visit the premises; declare them infected; note the number of cattle, pigs, sheep, and goats thereon, and order, if not previously done, the complete separation of the sick from the healthy, and their perfect isolation from public highways, canals, running streams, and neighbouring cattle. The sub-inspectors should, also, by the first post or otherwise, send immediate notice of the outbreak, with list of animals and the time when notice was first received by him, to the veterinary inspector, and also to the chief inspector of the district. He should likewise visit the premises as often as convenient—at least twice a week—and see that all the rules and orders are properly observed. He must see that the numbers on the premises at declaration of recovery correspond with those at outbreak, or account for all missing animals or added ones, and report thereon to the chief inspector. He must also inspect the railway cattle-trucks, pens, and yards, in his district, as often as practicable.

*Note.*—No efficient check on the movement or substitution of animals can be established without employing brands or marks.

9. The veterinary inspector, on receiving notice of an outbreak, is to visit the animals; examine them as to the nature of the disease; compare the number on the premises with the sub-inspector's list; give instructions as to cleansing, disinfecting, isolation, and movements; grant licenses for the movement of healthy cattle to slaughter-house; visit animals at least once a week; examine them carefully before pronouncing them recovered; send notice of freedom from infection, when recovered, to the chief inspector, and in from seven to ten days from date of such notice re-examine them, and if found perfectly free from contagious disease

send notice thereof to the chief inspector, who thereupon shall send to the occupier notice (per the sub-inspector) of his freedom from all restrictions.

If the veterinary inspector, on his first visit, shall find the disease is not a contagious one, he shall immediately inform the chief inspector, who shall at once send notice (per sub-inspector) of freedom from restrictions.

The veterinary inspector shall send a report of state of stock to the chief inspector and the Privy Council Office, once a week (not necessarily on Saturdays).

No animals to be declared recovered on infected premises, or be removed therefrom while any cases of disease exist, without a veterinary inspector's certificate, such certificate *not* to be paid for by the owner.

The veterinary inspector to be free from the control of the *local* magistrates, who are often extensive landowners in the district, and not be removable except by the authority of the Privy Council Office. His remuneration to be paid out of the national treasury.

The foregoing suggestions, though capable, perhaps, of being amended in details, would, if faithfully carried out, do much, I think, towards the suppression and prevention of infectious disease. Such as they are they are freely at your service.

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## Pathological Contributions.

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### CATTLE PLAGUE.

THE present condition of Europe with regard to the cattle plague cannot be said to be very reassuring. The disease still threatens Germany, not having been exterminated either in Galicia or Lower Austria. Besides its existence in the Cracow and four other districts of Galicia, to which attention has previously been directed, the plague has broken out at Chrzanow, a place situated about thirty miles west of Cracow, and on the direct line of railway leading into Silesia. It likewise prevails at Atzgersdorf, in the district of Sechshaus, Vienna. The southern parts of Poland are still seriously infected, no diminution of the number of cases having yet taken place.

The disease has likewise made its appearance at Verro, a town in the Baltic Province of Livonia, Russia, in which the

port of Riga is situated. It has also broken out among the cows in the dairies of St. Petersburg. In Southern Russia the plague exists to an alarming extent, especially in the territory of Donsky, Poläisk, and Chernomere. It is reported to have attacked sheep in these districts as well as cattle, and that these animals are dying at the rate of a hundred to a hundred and fifty a day, over an extent of country varying from three to five hundred versts.

From France we learn that the cattle plague exists in the Commune of Hem, Arrondissement of Lille; and in the Communes of Artres, Rosult, and St. Saulve, Arrondissement of Valenciennes. The disease is also extending the area of its existence in the neighbourhood of Havre, and has within the last fortnight broken out near to Dieppe. Haute Marne is not yet free, and we learn that a few days since two animals were found in the Paris abattoirs suffering from the disease, which had been forwarded from that Department.

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### PLEURO-PNEUMONIA.

VERY little variation has occurred in the prevalence of this disease. The total number of counties returned as infected is forty-eight, being four more than last month; but the centres of the malady have decreased, so as barely to exceed two hundred.

In consequence of the disease still continuing in the dairies of Newcastle-on-Tyne, and one case having just occurred on the town moor, the local authority has suspended the cattle fair, agreeably with the power vested in it by the Lords of the Council.

Our information from the Continent is also favorable. In Holland the number of cases existing at the beginning of the year exceeded a thousand, but these had fallen to less than four hundred by the middle of September. The decline has been gradual, and nearly uninterrupted throughout the year. The provinces of North and South Holland, and the western portion of Utrecht, have been the chief seat of the disease.

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### FOOT AND MOUTH DISEASE.

THIS malady still retains a strong hold in many parts of Great Britain, while in others the cases are so greatly diminished in number as to lead to the hope that, ere many weeks have elapsed, the disease will be effectually eradicated.

The infected counties are returned as eighty-two, being a slight increase in the number reported in our last issue, but the centres of the infection have decreased to the extent of about two thousand.

Fairs and markets in connection with the Irish cattle trade have proved prolific sources of mischief, and to this cause and the free movement of animals we owe in chief the present outbreak. The introduction of the disease into the parishes of Anthony and St. Stephen's, East Cornwall, has been traced to some manure which was surreptitiously sold to farmers by the bargemen who had been employed to take it outside the breakwater and throw it overboard. These persons are, we learn, to be prosecuted. The disease has also been conveyed in some unexplained manner from Tenby, Pembrokeshire, to the Island of Caldy.

Our advices, both from Europe and America, show that the disease has nearly ceased in those continents. A few centres only now exist in Holland and some other of the unscheduled countries. A cargo of upwards of twelve hundred sheep was landed at Harwich from Rotterdam on October 11th, and among them the inspector detected four animals affected with the disease. Under these circumstances the whole of the sheep were slaughtered at the place of landing.

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### SMALLPOX OF SHEEP.

THE information received from Stettin is to the effect that sheep-pox has increased to rather a serious extent since the last report. The malady has existed in Pomerania more or less from the beginning of the year, and now prevails at Liebnow, Labes, and Pritznow, in the consular district of Stettin, and at Westhof and Steinhagen, in the Stratsund district. We have also reason to believe that the disease has existence in other parts of Pomerania besides those named, as well as being present in some other of the North German states.

The practice of inoculation continues to be carried out on a large scale, the agriculturists having the fullest confidence in its protective power against the natural disease, as well as that the benign nature of the inoculated sheep-pox rarely leads to fatal results.

Similar facts were long since established in this country with regard to inoculated disease.

## SHEEP-SCAB.

RETURNS have been received from twenty-four counties of the existence of sheep-scab, but the total number of flocks reported to be infected is not large. We have reached a period of the year when we may expect to find an increase in this disease, and especially in ill-managed flocks with regard to dipping and other preventive measures.

By the Order of Council of August 5th, 1871, power is vested in the local authority, by which it may make regulations "for prohibiting any person having in his possession or under his charge a sheep affected with sheep-scab, without treating that sheep or causing it to be treated with some dressing or dipping, or other remedy for sheep-scab."

During the past month the disease was detected in a cargo of forty-eight sheep imported into Grimsby from Rotterdam. The animals were all killed at the place of landing, and their skins disinfected. Within the last few days also a similar case occurred at Hull in some sheep imported from Hamburg. The animals were dealt with as in the first-named instance.

## INFLUENZA IN HORSES.

THIS disease appears to be going the round of the large towns and cities both here and on the continent of Europe, even the "New World" has not been free from its visits—New York having recently suffered severely.

According to the *Newcastle papers*, the malady very recently made great havoc in that town and also in Gateshead. The pathology of influenza requires a more full investigation than it has yet received, and we trust that the present visitation will not be suffered to pass without some of the members of the profession making efforts to throw further light on its true nature and causes.

THE CONTAGIOUS DISEASES (ANIMALS) ACT,  
1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on

landing, within the Month of September, 1871, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	NUMBER OF ANIMALS AFFECTED.					DISPOSAL.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered at place of landing.
Coruña	Plymouth	Foot-and-mouth	14	...	...	...	14	14
Oporto	Southampton	„	138	...	...	...	138	138
Total . . .			152	...	...	...	152	152

“ALEXANDER WILLIAMS,

Secretary.

“Privy Council Office,  
“Veterinary Department, 12th October, 1871.”

## Facts and Observations.

TERCENTENARY OF HARVEY.—Preliminary steps have been taken at Folkestone, the birthplace of the illustrious discoverer of the circulation of the blood, to mark the tercentenary of Harvey's birth by the erection of a suitable public monument to one of the greatest of Englishmen and most illustrious of the world's true heroes. It is not to the credit of our country that no such public monument exists. At a meeting convened by influential requisition, the Mayor of Folkestone in the chair, letters were read from Earl Granville, Baron M. de Rothschild, M.P. for the borough, Lord Robert Montagu, M.P., Dr. Bence Jones, F.R.S., and other influential persons, and the Presidents of the Royal Colleges of Physicians and Surgeons, warmly approving and proffering support. Mr. George Eastes, M.B., with whom the movement originates, read an interesting sketch of the life, labours, person, and character of Harvey. Mr. John Simon, F.R.S., the Medical Officer of the Privy Council, supported the project in an eloquent speech. Dr. Bateman, Dr. Bowles, and

other local gentlemen, moved resolutions appointing a committee, nominating Dr. Bence Jones, F.R.S., treasurer, and Mr. W. G. S. Harrison, B.A., town clerk of Folkestone, and Mr. George Eastes, M.B., Albion-place, Hyde Park-square, London, joint honorary secretaries. Subscriptions to be received at the Western Branch of the Bank of England, Burlington-gardens, to the credit of the fund. When we wish to think well of ourselves and to establish a claim on the gratitude of mankind, we call ourselves the countrymen of Harvey and of Jenner, whose discoveries have done more for the relief of mankind and the saving of life, the glory of science and the progress of biology, than those of any other two men, past or present. Let us show that we know now how to honour their memory.—*British Medical Journal*.

**AMPUTATION OF THE LEG OF A COW.**—The *Birmingham Post* records a case of successful amputation of the limb of a cow by a veterinary surgeon, and the adaptation of a wooden leg to the stump, by means of which the animal is “walking about and doing well.” Cases of amputation of limbs are novelties in the practice of veterinary surgery, arising from the comparative uselessness of animals with mechanically constructed legs. We need not say that they are every-day occurrences in human surgery.

**CARBOLIC ACID IN VETERINARY PRACTICE.**—*La Tribune Médicale* (Sept. 24th, 1871) publishes a letter from a medical man of Savoy, M. Lochon, who states that, in a distressing epidemic of cattle-plague, which had been very destructive, the following treatment arrested the spread of the disease:—  
 1. Bleeding to the extent of three quarts. 2. Administer a quart of lukewarm water in which are dissolved two drachms and a half of crystallised carbolic acid. 3. Give, once or twice, four quarts of strong infusion of coffee. 4. Energetic frictions to excite cutaneous reaction. 5. Scarify the infiltrated regions. 6. In the course of the complaint give several quarts of the infusion of gentian. 7. Dress with the solution of carbolic acid mentioned above the pustules which form on the hide. In this manner were treated fifty cows, seven horses, and one pig. Of all these only one cow died, whilst previous to these measures the mortality was considerable.

**AUSTRALIAN MEAT.**—The Guardians of St. Luke, Chelsea, recently received two cases of Australian preserved meat in 6lb.-cans, one of beef and one of mutton, which they directed the master to report upon. The following is the report of the master (Mr. Gibbons):

“With reference to the quality of Australian meat submitted for report I am of opinion that it is of excellent quality, both mutton and beef, and well adapted for inmates of asylums and other large institutions. The change, however, should be gradual, as it would take some time before the palate could adapt itself to meat prepared without either seasoning or flavour, as in the case of Australian preserved meats. For the aged and infirm inmates in the infirmary it would be an agreeable change from fresh killed meat; but at the same time I fear they would soon become tired of it, and considerable waste would be the result. Its general application in the house for all classes of inmates would, I fear, be an unsuccessful experiment.”

In answer to a *Guardian* the master said he did not think the meat possessed sufficient nutriment or gravy. The Board decided not to introduce the preserved meat into the house.—*Times*.

**PRESERVED KANGAROO MEAT.**—Very recently the *Food Journal* observed that a new kind of preserved meat was being imported into this country from Australia, under the name of “Kangaroo Venison.” It is described as being of good flavour by those persons who have given trial to it. “Kangaroo Venison” is, in reality, made from the tail of the animal.

Mr. P. L. Simmonds, in his *Curiosities of Food*, under the head of “Marsupialia, or Pouched Animals,” says, “the kangaroo is *par excellence* the wild game of Australia, and coursing it gives active employment to its pursuers. The flesh of all the several species is good. The fore quarters, indeed, of the ‘forester,’ the largest of the family, an animal which frequently weighs 200 lbs., are somewhat inferior, and are usually given to the dogs; but from the hind quarters some fine steaks may be cut. When cooked in the same manner, they are little inferior to venison collops.

“The parts of the kangaroo most esteemed for eating are the loins and tail, which abound in gelatine, and furnish an excellent soup.

“Talk of ox-tail soup, ye metropolitan gourmands! Commend us to the superb kangaroo-tail soup of Australia, made from the tail weighing some 10 or 12 lbs. of a full-grown ‘forester.’”

**DEATH OF AN ELEPHANT FROM LIGHTNING.**—The *Journal de Paris* says that during a severe thunder storm, which raged in Paris and its environs on the evening of September 2nd, the electric fluid struck an elephant which

had recently arrived at the *Jardin des Plantes* to supply the place of the one which was slaughtered during the siege, and killed it instantaneously.

SALE OF THE HOLKER SHORTHORNS. — The Duke of Devonshire's sale of shorthorns at Holker Hall, which took place on September 6th, was one of the most remarkable ever held. "We (*Chamber of Agriculture Journal*) remember nothing to eclipse it since the dispersion of the Dawpool herd of Bates' Grand Dukes and Duchesses in 1864. It was upon that occasion that the Duke of Devonshire purchased Grand Duke 10th for 600 guineas. Such a price doubtless called down remark at the time, and probably not a few looked upon the transaction as indicating a greater love of shorthorns than of money. However this may have been, the bull was a bargain, as has been well shown during the past week and upon previous occasions. One of his granddaughters, Grand Duchess of Oxford 18th, by Fourth Baron Oxford, was sold at the extraordinary figure of 1005 guineas, and others of his stock realised very high prices. The general result of the sale was that forty-three animals made £240 13s. 10d. each, and a total of £10,349 17s. Thirty-one cows made £248 2s., and twelve bulls £221 11s. each. The details of the sale were no less remarkable, especially the prices given for the Oxford tribes. Eight members of this family were sold at an average of £588 each, and the high general average of the sale was due to the demand for this particular race. Lord Bective was the purchaser of Grand Duchess of Oxford 18th."

At the sale of Mr. Thomas Bell's shorthorns at Brockton House, Eccleshall, which was held during the week following the Holker sale, the Eighth Duke of York, by Fourth Duke of Thorndale, was sold for the unprecedented sum of 1065 guineas. He was bought by Mr. J. Fawcett, of Scaleby Castle, for himself and friend. Lord Bective's agent was the chief opposing bidder.

THE MONT CENIS TUNNEL AND THE CATTLE TRADE. — The *Salut Public* of Lyons says:—"The opening of the Mont Cenis Tunnel for goods traffic has already been of utility to our cattle market. Two Piedmontese have sent during the last few days a special train laden with oxen. About fifty pigs and twenty calves have also arrived by the same route. But, as the rates of conveyance are not yet fixed, the company takes advantage of the circumstance to charge too dear."

## THE VETERINARIAN, NOVEMBER 1, 1871.

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Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

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## THE CONTRACT SYSTEM.

IN a letter which we published last month Mr. Neville-Grenville recommends agriculturists throughout the country to secure the services of veterinary surgeons upon a system which he shows to be highly economical to the farmer and sufficiently remunerative to the professional man.

By means of an assessment of sixpence per acre it appears that a fund would be obtained for the payment of veterinary surgeons' expenses all over the country. The outlay would be comparatively insignificant, and the advantages gained would be immense. Farmers would have an opportunity of calling in a veterinary surgeon, not only on occasions of serious outbreaks of disease among stock, but in all instances of apparently trifling derangement which often precede the development of important pathological changes. Under the contract system, particularly if adopted on an extensive scale, the chief efforts of the veterinary surgeon would be devoted to the study of the causes and characters of diseases, with the view to their prevention instead of cure. Doubtless, the means of preserving health form an important part of a medical education; but as matters are at present arranged the sciences of hygienics and prophylaxis may be, as studies, interesting enough, but they are certainly to the majority of veterinary surgeons of little practical importance, solely on account of the paucity of opportunities of applying sanitary regulations to the prevention of animal diseases. Until the practitioner is called in to advise respecting the treatment he is generally unaware of the existence of a malady on the farm, or if from hearsay he is acquainted with the fact it is impossible for him to volunteer suggestions which are not required, or to state an opinion which is not asked for; in fact, he is quite powerless unless required to act, and often action is taken when it is too late to be of any material value.

Several reasons concur to render the farmer indisposed to consult a veterinary surgeon in reference to ailments of

stock, while he does not hesitate to ask his advice for the most simple diseases of horses. First, there is a general impression that it does not pay to doctor cattle, sheep, or pigs. If the animals are nearly fit for the butcher, motives of economy at once determine their slaughter; there are also the cost of attendance and the loss of condition, which form important items in the question, and all of which tend to strengthen the conviction that the first loss is the best, and the sick beast is accordingly sent to the shambles.

If the aid of the butcher is not admissible in dealing with outbreaks of disease, there are the herdman, the shepherd, the cow doctor, all of whom are men of practice and who know all about stock, to suggest remedies, and apply them either gratuitously as amateurs or for a very trifling remuneration. These men do not trouble themselves to inquire into the circumstances under which the disease arose, it is sufficient for them that it exists, and they are never at a loss for a drench of wonderful potency which will put everything right in a day or two. If, as often happens, the nostrum fails, it is because the case was not taken in time, and so the malady goes on until, as a last resource, the veterinary surgeon in the district is sent for, too late to be of use, and enjoys the satisfaction of knowing that he will obtain the discredit of failure which is inevitable, and, still worse, he is aware that his non-success will only convince his employer that it is useless to ask his advice in future when his cattle or sheep are sick.

There is no denying the fact that some of the diseases to which farm stock are liable are not amenable to treatment; that is to say, are not to be cured by drenches. Such maladies as splenic apoplexy and black quarter are hopelessly beyond the power of medicine to cope with; parasitic affections, as liver rot, husk in calves, and worm in the throat of lambs (we use the common names of the diseases), are certain to prove fatal to a large percentage of animals attacked, although by judicious management some may be recovered.

In all these instances the least important question is, what is the best remedy? The most important, what are the means of prevention? Once established, the diseases

are beyond control; the real object, therefore, of the veterinary surgeon should be to prevent their occurrence. This can only be done by one who pays frequent visits to the farm, gives close attention to all the details of management, and has an intimate acquaintance with the system of farming which is adopted. Knowledge of this kind will be of the utmost value to the veterinarian who is called in to suggest preventive measures, and it can only be acquired through the medium of close observation, which is only possible under the contract system. We do not mean to assert that at present veterinary surgeons would not be permitted to observe and analyse as much as they please; but we do mean to suggest, what is perfectly evident, that they would not be paid for the time thus expended, and we do not expect that veterinary surgeons, any more than members of other professions, will devote themselves to investigations which, however important, are not of a kind to supply the means whereby they live.

The care of the live stock of the country, we have often contended, should be in the hands of qualified men, and we should expect that the general acceptance of the system suggested in Mr. Neville-Grenville's letter would effect this very desirable object, but in saying thus much we hardly indulge the hope that the present generation will see the system in effective operation.

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### Extracts from British and Foreign Journals.

#### THE FORMATION OF PUS.

Pus was formerly considered as an altered liquor sanguinis, in which the fibrin has assumed a molecular and corpuscular form. The corpuscles were looked upon as having much resemblance in size and general appearance to the white corpuscles of the blood, though the circumstances which determine the change of fibrine into corpuscles of pus were not established. It has more recently been supposed that the pus-globules were the result of the proliferation of the corpuscles of the connective tissue. But Cohnheim, in 1867, maintained, after experiments, that pus-globules are simply leucocytes, or white corpuscles of the blood, which

traverse the parietes of vessels by means of their amœboid movements. Kremianski and Hayem confirmed these views, repeating the experiments, especially on the tongue and mesentery. Dr. Charlton Bastian, in this country, also adopted this opinion, and the name of "migration of leucocytes" was given to this phenomenon. The well-known M. Vulpian also supported these views, finding, like M. Hayem, the globules lying along the vessels, and filling up the intervascular spaces.

But in 1870 a controversy arose on the subject, and M. Feltz, of Strasburg, after carefully experimenting on the mesentery and tongue of the frog and the mesentery of the mouse, showed that new leucocytes formed around the vessels, that these leucocytes did not arise from the corpuscles of the connective tissue, and had in no way traversed the parietes of the vessels. M. Feltz resorted, like Cohnheim and Kremianski, to the colouring of the leucocytes with aniline and cinnabar, and maintained his opinion after a second series of experiments, presented to the Academy of Sciences of Paris on June 6th, 1870.

This physiologist was followed by M. Picot, of Tours, who, in July, 1870, also sent a paper on the subject to the Academy of Medicine of Paris, and proved that Cohnheim was wrong—so much so that, according to M. Picot (from whose letter in the 'Gaz. Hebd.,' Sept. 22nd, 1871, we have extracted these details), the globules of pus newly formed are found far from the vessels.

M. Picot, in a few sensible remarks, shows how difficult it is to make out the migration above alluded to, and enters into minute details as to the manipulation of these experiments. He contends also that, independently of experiments, the fact of finding leucocytes surrounding vessels is no presumption that they have traversed their coats. Thus stands the matter at present. It is to be hoped that the praiseworthy endeavours of the young generation of pathologists will ere long solve the problem.—*Lancet*.

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## THE FUNGOID ORIGIN OF DISEASE, AND SPONTANEOUS GENERATION.

BY JABEZ HOGG, Hon. Sec. R.M.S.

IN the report of the medical officer of the Privy Council just issued, the origin and pathology of contagion is ably discussed, and the crude hypothesis of Hallier bearing upon this point, who, it will be remembered, sought to prove that

the microzymes and sporules of fungi which he found in the fluids of persons affected with cholera caused the disease and explained its contagious nature, is finally disposed of. This vexed question, one of no small importance to the public, and of great interest to the medical profession, receives at the hands of Dr. Sanderson, the writer of this part of the report, all the care and attention it really deserves. His experiments and investigations fully bear out all I have stated on this subject, and conclusively show that neither bacteria nor microzymes are concerned in the production of any specific form of disease in the living animal body, and therefore when found must be looked upon as an indication of a putrefactive process occurring after death. A drop of water, a glass slide, or even a finger coming into contact with a fluid or tissue under examination, is quite sufficient to cause the development of either bacteria or microzymes, in an incredibly short space of time. In this way a disturbing element is introduced which mars and mystifies the most carefully made investigations of the histologist.

Admitting that the spores of fungi are always present in the atmosphere, although at some periods not in very great multitudes, it by no means follows, nor can it be shown that they are the cause of any specific form of disease. And, if it be true that so slight a contamination as that spoken of by Dr. Sanderson when brought into contact with a fluid is sufficient to change its character and start organic germs into life, then experiments said to prove that living matter can begin *de novo* in solutions subjected to long boiling must be accepted with extreme caution. For who can undertake to say with any degree of certainty that the breaking of a beaker, in which a vacuum has been produced, can be conducted with sufficient care to prevent the possibility of a rush of air, carrying with it some organic particles, which shall contaminate or impregnate the whole? This, a point of the utmost importance, has not received much attention, although it is sufficient to embarrass and confound the results arrived at in the investigations of Dr. Bastian.

The ingenious way in which it is sought to explain experiments made by submitting a solution to a temperature of 160° F., alleged to be sufficient to destroy all evidence of life, while in another subjected to a much greater heat, ranging from 260° to 302° F., living creatures have reappeared, is by no means satisfactory. This admits of a different explanation, which will at once suggest itself to those who have thought over the phenomenon. Neither does it prove that because the elements of non-living matter are known to group

themselves anew, so as to produce living matter under the influence of those physical forces which are concerned in bringing about the growth of a plant; that the same forces can be made to combine by long boiling to reproduce life or reconstruct the disintegrated particles of dead matter, and convert them into higher organisms than had previously existed. It seems to me impossible to attempt in this manner the settlement of a point of so much importance as that of the origin of life. And since we cannot undertake to say with anything like certainty that we have succeeded in destroying every living germ in any experiment we may institute, then, I fear, the spontaneous generation hypothesis is hardly worthy of further serious consideration. But with regard to Dr. Sanderson's investigations of certain contagious forms of disease, he produces positive evidence that nothing like bacteria or microzymes can be discovered in the blood of persons affected with scarlatina. This is an important and interesting fact, one very suggestive as to the cause of particular forms of disease, and seeming to lead to the conclusion that contagious affections are produced by a putrefactive change, a contamination introduced from without into the circulation.

From whatever stand-point we view the important question of contagion, or the origin of life, I am quite sure it will ultimately end in a gain to our scientific knowledge; and as every additional contribution will I am sure be acceptable, I shall offer no apology for introducing a very interesting letter, written by Henry J. Carter, F.R.S., some four or five years ago, as a criticism on a paper of mine which appeared in the 'Intellectual Observer,' "On Phases in the Developmental History of Infusorial Life," a great portion of which is quite pertinent to the question under review at this moment.

"BUDLEIGH SALTERTON, DEVONSHIRE;

"*March 14th, 1867.*

"MY DEAR SIR,—I do not yet believe in spontaneous generation, nor will the theory, if ever substantiated, be so until a knowledge of the ultimate forms of the phenomena called 'life' is obtained; while it seems to me that we are as far from this as from the ultimate atoms of matter.

"When we see, under the microscope, insect forms almost as small as the smallest animalcules, and know, from inference, how complicated their structure must be; when we find their limbs as transparent as glass, and thus, apparently, as structureless, yet know that there is structure even in glass.

“When we find that there is no extent to the slowness of change and movement in organised matter, that with the highest magnifying power possessed we can limit; that even unmelted iron is said to flow; when, on the other hand, the power of determining the velocity of bodies diminishes with the magnifying power, so that distance and magnitude itself are required to make us sensible of the rate at which comets travel, even if not of the presence of the atoms of matter *en masse* which form their nebulosities, so that neither one nor the other could be seen if close to us, any more than electricity or uncondensed steam.

“When, I repeat, our perceptions in these respects remain so finite, how can anyone come forward with the assertion that there is such a thing as ‘spontaneous generation,’ based upon the presence of animalcules which, produced under any circumstances, may be, and probably are, far more complicated in their structure, and therefore higher in the scale of organic development than a host of living beings with whose forms even we have as yet no means of becoming cognizant?

“Progressive knowledge may lead the human mind to the beginning of vitality, to the quickening power of matter and its processes, but until this is reached, it seems to me premature to assume as a fact that there is such a power as spontaneous generation.

“With reference to the next point in your paper, the transformation of the protoplasm of the vegetable cell into amœboid forms, who shall limit the extent to which such forms may not penetrate into and live passively in the protoplasm of both animal and vegetable cells, until a favorable opportunity arrives for their future development? I, of course, include in the amœboid forms, the *Myxogostres*, now called by Du Bary ‘*Myxozoa*.’ Just before leaving Bombay, I found the brown stains in some cotton which was submitted to me for microscopical examination, to arise from the development of a mycelium originating in cells or germs of a mycetozoon, which were probably introduced into the cell of the cotton fibre when fresh, and which, on the moisture of the cotton during exposure to the rainy monsoon finding the vitality of its host extinct, naturally appropriated its protoplasm, and produced, while growing, the stains mentioned and consequent injury to the staple.

“I am glad that we are at one accord as to the origin of protozoa in the cells of organised beings.

“It appears to me that Dr. Hicks is in the same zone (so to write) of investigation in this respect as I was before I renounced my opinion of the ‘fancied’ transformation of the

vegetable protoplasm into amœboid animalcules. It was only after studying the *mycelizoa* fungi that I began to see the unlimited extent to which such beings commencing their existence and even feeding themselves up to maturity, might enter into, and develop themselves upon the remains of their dead or dying host.

“The contents of the root-like extremities, filamentous mycelium, and pin-head-like capsules of the *Mucoridæ* may issue, when their cellulose covering is ruptured, in the form of amœboid cells (that is, of course, as regards the *sporidia* before they are capsuled), and so creep away. Then the *Mucoridæ* are closely allied to the *Myxogostres* or *Mycetozoa*; and here no doubt the protoplasm of the *Mucor*-cell or filament, &c., issues in amœboid forms from its cellulose investment, which seems to be, as in many other instances, secreted by, and common to, a congeries of amœboid bodies, thus assuming the specific form of *Mucor*.

“But there is no ‘transformation’ here of the protoplasm, no perishing. The amœboid cells come forth at once and do not bore holes through the cell-wall as the *Mycetozoa* family when developed in the vegetable cell.

“Hence, unless the protoplasm issues at once in an amœboid form, or forms, as a whole, as from the cell of *Edogonium*, &c., or in plurality, as from the filaments and pin-head-like capsule of unmaturing sporidia in *Mucor*, &c., I should still be inclined to view the product as not of the same, but of a different organism.

“No doubt you saw the statement I last made of the probable reproductive process by impregnation in the Rhizopoda in the fifteenth vol. of the ‘Annals,’ p. 172.

“I found in a pair of *Diffugia urceolata* (Cartar) in zygosis, when crushed under the microscope, a number of monad-like monociliated, polymorphic bodies in active movement; the usual nucleated cells much larger; and apparently some of the latter which had become polymorphic or amœbiform.

“The origin of the nucleated cells I had not been able to ascertain—that is, from what part of the *Diffugia* they come. That of the monad-like bodies I knew to have come from the nucleus, which frequently (under reproductive circumstances?) breaks up into these bodies, and therefore, in this case, was not present—had thus disappeared; while the amœboid bodies *without* cilium seemed to be but a more advanced state of the passive nucleated or ovi-like cells.

“Thus I inferred that the small monociliated bodies coming from the nucleus were the male elements, and the larger nucleated cells the female elements, which, meeting

together in the body of the parent, were, in their plastic state, thus brought together at the most favorable moment or impregnation, *i. e.* for the blending of the two elements. While the active amœboid bodies *without* cilium might have been the product after impregnation, thus prepared for independent existence when the parent might choose to throw them off, or might become effete, and thus by dissolution allow them to escape into the water.

“I have much more that I could state to you on the subject, but neither my leisure nor your patience, I fear, admits of the extension. Sufficient, however, has been written to show you the amount of interest I still take in these matters, and thus prove to you how acceptable was the copy of your paper.

“I am, my dear Sir,

“Yours very truly,

“HENRY CARTER.”

*Journal of the Royal Microscopical Society.*

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#### OBSERVATIONS ON THE LUNG DISEASE OF CATTLE KNOWN AS PLEUROPNEUMONIA, WITH ESPECIAL REFERENCE TO THE MEANS OF PREVENTION.

By PROFESSOR BROWN, Inspector in the Veterinary Department of the Privy Council, and Veterinary Inspector to the Bath and West of England Society and Southern Counties Association.

*Early History of Pleuropneumonia. Introduction of the Disease into the United Kingdom.*

ACCOUNTS of the prevalent diseases of the lower animals, by the older writers, are commonly so vague and general in their character that the modern investigator finds but little difficulty in applying the descriptions to various epizootics which are known at the present time. Murrain, distemper, and plague, are terms which have no very restricted meaning, and they have been applied by different writers to totally dissimilar diseases; it is only occasionally, when a disease has some special feature, such as the eruption of sheep-pox, that the historian's account can be certainly identified in its essential details with a malady of a later date.

In reference to lung disease of cattle we are left in doubt as to the precise period of its detection, or the place of its origin; most of the epizootics which have from time to time destroyed cattle and sheep, have been marked by disease more or less well-defined of the respiratory organs, and it is, therefore, easy to imagine that the description of symptoms of a fatal affection, which attacked herds of a former period,

will, in many particulars, agree with that which an observer of the present day would give of the symptoms of the fatal lung disease. It is only, however, among modern writers that we find full details of the remarkable malady which has done so much harm since its introduction, and has lost none of its virulence during thirty years of constant prevalence in this country.

According to Professor Verheyen, of the Veterinary School at Brussels, pleuropneumonia first appeared in Germany and Switzerland, about the middle of the eighteenth century, although by some the disease is considered to be identical with *pleuropneumonia maligna*, which destroyed a large number of oxen in 1693 in some of the provinces of Germany. The same author, in his interesting account of the epizootic pleuropneumonia published in the 'Journal Vétérinaire de Belgique,' and translated by Mr. W. Ernes in 1845, states that, in 1743, the disease invaded the Canton of Zurich. From 1778 to 1784 it prevailed in Upper Silesia, whence it extended to different states of Germany. In 1827 it first attacked cattle in Piedmont. Belgium appears to have suffered also in 1827, and later the disease reached Flanders. Holland is reputed to have remained free up to 1832, when Guelderland first suffered from the ravages of the malady, which continued with unabated force for two years. In 1836 the disease spread to Southern Holland. In 1837 it was prevalent in more than a hundred villages in South Holland, and in that year it is said to have destroyed 7000 cattle.

Until the latter part of the year 1840 the cattle of this kingdom were free from the epizootic disease, which has since that time spread so extensively, and is now so widely known under the distinctive name of pleuropneumonia. Of the statements which have been made respecting the mode of its introduction something has yet to be remarked, but, at present, the facts only present themselves for consideration. There appears to be no doubt whatever of the circumstance that pleuropneumonia invaded this kingdom at least a year before the importation of foreign cattle was permitted.

In the latter part of the year 1840 a fatal disease appeared among cattle in the South of Ireland, in County Cork. The malady, it has been alleged, was introduced from Holland, where lung disease then prevailed, by some Dutch cows which were imported by a friend of the English Consul at one of the Dutch ports, in order to improve the milking qualities of the native breed.

This account of the introduction of the epizootic is not substantiated by sufficient evidence; indeed, an inquiry

which was instituted in 1867 failed to elicit any proof of the importation of Dutch cattle into Cork at or about the time mentioned; although, if the event really occurred, there should be no difficulty in obtaining a categorical account of the details of the transaction, the name of the importer, the number of the cows, and the place of their destination. None of these particulars are forthcoming, and the statement must, therefore, stand upon its own merits. It is admitted that lung disease existed among cattle in Holland at the time, and if by any means diseased cows were introduced into Ireland from that country in the year 1840, it is at least exceedingly probable that they communicated the disease to Irish cattle shortly after they were landed. To the agriculturist, however, evidence upon the disputed point of origin is of little consequence; there is no doubt that the disease, like most other contagious diseases of animals, arose somewhere abroad, and that it prevailed extensively on the continent prior to its appearance in the British Isles.

Pleuropneumonia once established in Cork, in the autumn of 1840, soon spread to other parts of the country, and in January, 1842, it was recognised in the metropolitan dairies. From London the disease continued its progress unchecked through Cheshire, Staffordshire, and Shropshire, and by the end of the year it was heard of all over England up to the borders of Scotland, which it entered in the Spring of 1843. The majority of the early outbreaks in different parts of England were traced to Irish cattle, and it is worthy of remark that, in a recent investigation respecting the prevalence of pleuropneumonia in Cheshire, the evidence all pointed to the same source of infection. The fact is not really difficult of explanation. Lung disease exists among cattle in Ireland to as great an extent as it does among cattle in England. Ireland is the great grazing district whence we obtain our supplies of store stock, and with those supplies the disease to which the animals are liable. If the position were reversed, and England became the exporting country, the results, in respect of transmission of disease, would be also reversed.

In the colonies, particularly in Australia, lung disease has occasioned for many years the most serious losses. England has the credit of having sent the malady to Victoria with a valuable cow; but, if the imputation is true, the disease must have remained latent in the animal's system during a long voyage, as it did not manifest itself until after she was landed and taken to Victoria. In 1854 the disease was discovered in Australia, and spread rapidly to the Goulbourn district, the Broken River, Ovens, and Upper Murray. The Colonial

legislature passed an Act in 1861 with the object of applying certain restrictive provisions to arrest its progress; very little success, however, seems to have attended the operation of the measure.

Since the lung disease has been recognised as a specific malady, that is to say, for at least a period of half a century, it has excited more attention on the part of scientific men than any other disease of the lower animals. Very numerous experiments have been made in the direction of cure and prevention, scientific commissions have devoted themselves to the investigation of the nature of the malady, and the laws by which its progress is governed, legislators have endeavoured to cope with it by the enforcement of sanitary regulations, and yet, in spite of all that has been done by the most advanced science, aided by Government enactments, pleuropneumonia is as rife as ever it was, and we are as powerless now in the presence of the pest as we were when it first appeared in our country.

More remarkable, perhaps, than the failure of all attempts to eradicate the disease is the failure of the endeavours which have been made for many years by investigators to determine certain important points in relation to the nature and essential character of the malady. Pleuropneumonia possesses an abundant literature. There is Dr. Willems' elaborate report on the disease, and the preventive effects of inoculation; there is the report of the Belgian Committee, who took up the subject at the point to which Dr. Willems had concluded his inquiry; there is the report of the French Commissioners who carried on extensive experiments in 1853-1854 for the purpose of testing the alleged contagious property of the disease, and the effects of inoculation; and there is the report of the English Commissioner, who visited Belgium in 1852 to watch Dr. Willems' experiments, and subsequently reported thereon in England. Besides these, and other official reports from Germany, France, Holland, Italy, Austria, and England, there are a host of memoirs from various continental veterinary authorities, and numerous essays, written in response to offers of prizes from Agricultural Societies, by English veterinary surgeons. Notwithstanding all this research, many of the fundamental points are still undecided; at least so far undecided that stock-owners are divided in opinion respecting them.

#### *Is Pleuropneumonia Contagious?*

Without entering into the subtleties which belong to argu-

ments upon the subject of infection and contagion, it will be sufficient to interpret these expressions by the common term "catching." Is the lung disease of cattle an affection which a healthy bullock may catch from contact, either direct or indirect, with the excretions, fluid or solid, of a diseased beast? A few years ago many practical men would have scouted the idea of such a result being possible; and there are not wanting now men, both practical and theoretical, who assert that lung disease is not "catching." The supporters of either view seem to be only capable of appreciating the facts which bear upon their own convictions. Thus, on one side it is asserted that pleuropneumonia often arises in a herd which has been isolated for many weeks previously, and so placed that contact with diseased cattle could not have happened. Again, it is alleged that healthy animals placed with diseased ones do not become affected; and further that, in many instances, only a few of a herd are attacked,—the rest escaping the malady, although no precautions are taken to protect them. All these statements are quite accurate. Lung disease has appeared over and over again among animals which could not have been in direct contact with diseased beasts at any time during three or four months previously to the outbreak. In many instances of recent date lung disease has suddenly appeared among dairy cows several months subsequently to the introduction of fresh stock, and the animals last purchased are not always the first to be attacked. This fact is well known to owners of dairy stock, and, in some degree, accounts for their scepticism in reference to the infectiousness of the disease. Not long ago lung disease was detected in the North of Ireland among some calves about ten weeks old, bred on the premises, and at some considerable distance from other stock. No other cases of disease existed on the estate or in the neighbourhood, and the event was classed among many similar instances in which the origin of the disease was unaccountable. It is also true that healthy cattle have been placed in the same shed or field with diseased animals and have not become affected; and every experienced stock-owner is aware of instances of one or two animals in a herd being attacked fatally, it may be, while the others have entirely escaped.

On the other side of the argument the facts are very definite in character. In numberless cases the introduction of a diseased animal has been followed by the extension of the malady to all or the greater part of the herd. To give a fair idea of the kind of evidence which may be advanced in favour of the contagion theory, the following facts,

which were obtained during an inquiry in 1867, are adduced:—

A young bull, in a farm adjoining one in which there were diseased cattle, broke through a hedge and got among the infected animals. He was immediately driven back to his owner's premises, and in three weeks afterwards exhibited the usual symptoms of pleuropneumonia. In another case a farmer bought six Irish cattle about the end of July, and put two of them on his farm with his stock. A month after the introduction of the two Irish cattle, one of them was attacked with pleuropneumonia; one of the original stock was next attacked, and the disease continued to spread until by the middle of December twelve animals were affected, of which six recovered. The four Irish cattle which were sent to another farm did not suffer, and it is therefore probable that only the one which was first attacked came from an infected herd.

Another stock-owner in the same district bought some Irish cattle in June. One of them was attacked with pleuropneumonia a month after purchase, and the disease quickly extended through the herd.

The next case occurred also in an Irish cow; but as the animal was bought in May and did not show any signs of illness until September, it is hardly likely that she introduced the disease: it is nevertheless true that she was first attacked, and after her death seven cows of the original stock became affected in succession. Four of them died, two recovered, and one remained ill from the effects of the disease at the time of the inspection in December.

Another instance is worthy of notice, on account of the entire recklessness which was displayed by the stock-owner, or the servants, after the outbreak of disease had been recognised. A dairyman, who possessed six cows, purchased an Irish cow, in August. The animal was attacked with pleuropneumonia in October, and was put in a place by herself, but, for some reason which could not be explained, the food and gruel which the sick cow left unconsumed were given to one of the six cows which formed the original stock. This animal at the end of three weeks showed characteristic signs of pleuropneumonia, and the disease extended to the remaining animals. Four of the animals recovered, two were slaughtered by the butcher, and one remained ill at the time of the inquiry. It is quite possible that the Irish cow communicated the disease to the animal which was next attacked before she was removed; but the proceeding which was adopted in reference to the refuse food was not the less reprehensible.

In nearly every instance it was ascertained that the disease had originated among newly-introduced stock, and afterwards extended to the other cattle on the farm. Precisely the same evidence has been obtained in respect to the majority of outbreaks; but it must be admitted that many outbreaks cannot be traced to the introduction of strange cattle—on the contrary, the disease has often originated in animals which have been on the premises for many months.

The report of the French Scientific Commission, published in 1854, contains a record of a most complete series of experiments, which were carried out in order to decide the the disputed point. Animals were obtained from a district in which pleuropneumonia had never been known to occur; they were placed with three diseased cattle in a shed and carefully isolated. The result of the experiment may be thus stated. In six days after the diseased animals were introduced, several of the cows were observed to have a peculiar cough, although the lungs were not found to be diseased, nor was the appetite affected. Soon the characteristic symptoms of pleuropneumonia followed, and several of the animals succumbed. The inference which the investigators drew from these experiments was that healthy cattle are likely to become affected with pleuropneumonia as the result of associating with cattle suffering from the disease. Of 100 which were submitted to the test, 20 proved to be unsusceptible; 80 presented symptoms, more or less marked, of being under the influence of the infection; and 50 of them contracted pleuropneumonia in a decided form. In the course of these experiments it was remarked that "the transmission of pleuropneumonia is capable of being effected at a certain distance, and that it was not necessary for immediate contact to take place before the phenomena of the disease were manifested."

When cattle are feeding in the open fields, it is difficult to determine whether contact with a diseased subject or with the emanations which are given off is the most deadly; but in cow-sheds the observation has been repeatedly made that the disease does not pass in rotation from one animal to the next in order, but attacks them at irregular intervals. Lest this fact should be construed in favour of the idea of the disease being non-infectious, it is proper to remark that the same circumstance was noticed during the prevalence of cattle plague; and it is also true in respect of foot-and-mouth disease that animals in the cow-shed fall sick in various parts of the premises, instead of in the order in which they stand.

To ascertain the manner of communication of the disease,

the members of the French Commission inoculated healthy cows with the blood, saliva, nasal mucus, and excrementitious matter of diseased animals, but without results; and after some months had elapsed the same animals were exposed to contact with diseased cattle, and took the affection. Similar experiments were made by Juk and Dieterich, who, according to Verheyen, inoculated cattle with blood, saliva, mucus from the nose, and serum from the lungs of diseased animals, without any result. Healthy animals were also placed in the same habitations with sick ones, without the disease being communicated to them. In Hanover, the same writer asserts that mucus and saliva of diseased animals were applied to the nasal membrane of healthy cattle, and setons soaked in the same material were introduced beneath the skin with negative effects.

Experiments which were instituted by Vix were, on the contrary, attended with positive results. A portion of diseased lung was placed, while warm, under the skin of the dewlap of a bull, and a similar portion, after being washed in cold water, was placed in the same position in a cow, and in six days both animals were diseased and presented all the symptoms of pleuropneumonia. The rapid development of the disease in these instances goes to prove that both animals were the subjects of pleuropneumonia at the time the experiments were made, and all the experience of later years points to the fact that inoculation with the matter of diseased lungs, and even the introduction of masses of those organs into large incisions, always fails to produce pleuropneumonia. Local irritation, sometimes terminating in gangrene, is a common consequence of such inoculations when performed without the necessary care; but in no case has the malady been propagated as other contagious diseases are propagated by the introduction of the products of the affection into the system of healthy subjects. Sheep-pox may be conveyed with certainty by the minute particles of virus from a vesicle; a little saliva from an animal affected with foot-and-mouth disease, carried in the hands or dress of the attendant, or on a portion of hay, and brought in contact with the mucous membrane of the mouth of a healthy beast, at once induces the malady. The slightest puncture with a lancet or needle, dipped in any of the secretions of the animals suffering from cattle-plague, is sufficient to infect a healthy ox; but pleuropneumonia cannot be in either of these ways transmitted from one animal to another, and the evidence of its contagious nature is rather general than positive.

Verheyen quotes the remarks of continental authorities in

illustration of the difficulty which was felt in deciding the question of contagion. Hugarð says that he possesses no positive facts or satisfactory experiments by which to determine the contagious character of pleuropneumonia. The general course of the disease furnishes, he seems to conclude, evidence sufficiently convincing: wherever pleuropneumonia has appeared there it has been communicated from the sick to the healthy. The disease never attacks the members of a herd simultaneously, but commences with one or two cattle, generally those which have been recently bought. In a short time the number of cases increases, and then diminishes, but the disease does not cease until the majority of the animals have been attacked. Farmers who breed and rear their own cattle and do not replenish their stock from fairs and markets, it has been noticed, escaped the disease even while their neighbours who pursue a different course are suffering from its ravages. Many examples of the introduction of the disease by newly-purchased stock are related by Gerlach Werth, and Hertwig, and our experience in this country for the last thirty years is fruitful in similar instances.

Giving full weight to all the evidence on both sides of the question, it is impossible to doubt the fact of the frequent communication of pleuropneumonia from sick to healthy animals, but it is evident that the degree of activity of the *contagium* varies under different circumstances, and it is also certain that a considerable number of animals resist the influence of the virus even when they are persistently exposed to it. In the experiments of the French Commission, twenty animals out of a hundred were proof against the infection, and only fifty took the disease in a severe form. A much larger proportion, however, will often be attacked, and in some instances the percentage of susceptible animals in a herd appears to be much less than this, the disease ceasing after two or three animals have succumbed. The different degrees of susceptibility to the infection, the sudden cessation of the disease in some cases without any assignable reason, the failure of inoculation to induce the disease, and the frequent escape of animals after being exposed to contact with diseased cattle, are facts which account for the difference of opinion which prevails among both scientific and practical men in reference to the nature and mode of propagation of pleuropneumonia.

Admitting, as we are bound, from the evidence before us, that pleuropneumonia is communicable from sick to healthy cattle, it is nevertheless a fact that it arises in some districts independently of contact with diseased animals, and it is also

true that the extension of the disease is not affected through the ordinary channels. It yet remains to be decided by what means the contagium is carried; but at present the presumption is that the virus is given off by the lungs in such a form that it contaminates the atmosphere, and the more rapid spread of the malady in close sheds, as compared with its progress among cattle in the open country is a fact which supports this view of the matter.

*Period of Incubation of Pleuropneumonia.*

By the term incubation, in reference to an infectious disease, is meant the time during which it remains in the system without causing any external manifestation. The period of incubation, therefore, is the interval which elapses between the reception of the poison and occurrence of illness. This time of "hatching" may be determined with certainty in nearly all infectious disease, by inoculating a healthy animal with the poison of the malady, and carefully watching for the declaration of the first signs of illness, but in the case of pleuropneumonia the same test cannot be applied, because we have no means of inducing the disease with certainty except by exposure of the animal to infection through the medium of association with diseased cattle, a very unsatisfactory method of inquiry, because it fails to furnish the inquirer with exact evidence as to the time of infection.

Notwithstanding the fact of cohabitation, healthy animals may resist the mal-influence of the exhalations from diseased beasts for weeks, while others may become susceptible to its influence in a few days, and the uncertainty as to the time of infection prevents the determination of the period of incubation.

The shortest period which elapses between the exposure of the healthy animals to contact with diseased beasts and the appearance of the first symptoms of illness may be fairly taken as the actual time of incubation. The long intervals which very frequently occur between exposure to infection and the development of disease may be presumed to depend in many instances upon non-susceptibility of the animal exposed. In the experiments of the French Commission some of the animals which were placed in contact with the diseased cattle were the subjects of a peculiar cough in six days after exposure; soon after, other signs of pleuropneumonia appeared, and from the sixteenth to the fiftieth day all the characteristic symptoms of pleuropneumonia were developed. Generally during the progress of the disease through a herd, fresh cases

will occur in a fortnight to three weeks after the first symptoms have been noticed in one or two animals; it is not uncommon for a month to elapse before the occurrence of a second attack; as the disease goes on the interval between the attacks becomes less, so that in a large herd several fresh cases may occur in a week. Occasionally long intervals intervene between the introduction of fresh stock and the declaration of the disease; one, two, and even three months have been known to pass before any symptoms have appeared in the animals last imported. A question always arises in these cases as to the time and manner of infection; if it can be reasonably assumed that the disease may remain in the system for three months without any external manifestations of its presence, the difficulty ceases; but as all the most direct evidence is in favour of the opinion that the average time of incubation is about twenty days, such an assumption cannot be sustained, and we are forced to conclude either that the animal has been infected by indirect conveyance of the virus, or that pleuropneumonia is regulated by laws which are not clearly understood.

It cannot be doubted that the amount of the poison required to induce the disease in the system of a healthy animal is in inverse proportion to the state of susceptibility, and thus a non-susceptible animal may resist the action of the virus which it receives while associating with diseased cattle for several weeks, while another with a high degree of susceptibility may be infected immediately, the period of incubation would most probably be exactly the same in both instances reckoning from the time when infection really took place; but in the case of one the disease may appear to have remained latent for three months, and in the other for less than the same number of weeks, in consequence of the different degrees of resistant power in the system.

#### *Nature, Symptoms, and Lesions of Pleuropneumonia.*

Inflammation of the substance of the lungs, and the pleural membrane which is reflected over them, is a disease common to man and the lower animals, and, long before the cattle epizootic was known at all, the term pleuropneumonia was employed to designate this ordinary inflammation of the lungs and its results. When the disease was first recognised on the Continent, the expression which had hitherto sufficed to indicate a common disease of lungs and pleura was used in application to the epizootic, only being qualified by the terms exudative or contagious, which referred to its special

character. In the history of the malady many titles occur, but, singularly, none of them distinguish the disease, which is so unlike any other disease of the respiratory organs, from ordinary inflammation. The expression which is now in use, pleuropneumonia, is by common consent made to mean inflammation of the lungs and pleura in all animals except the ox, but when applied to him it refers to an affection which is not inflammatory in any of its stages, and never presents any of the phenomena which are associated with inflammation. Of all the expressions which have been employed, *exudative pneumonia*, although not strictly correct, conveys the most exact idea of the peculiar character of the lesions which are distinctive of the disease; the exudation of fibrinous material into the fibrous or connective tissue which exist between the small, many-sided masses (lobules), that make up the substances of the lungs. The various local terms, lung disease, "lung pest," "distemper," "murrain," "pleuro," are scarcely more objectionable than the professional term pleuropneumonia; indeed they may be said to share with it the objection that they are indefinite even when they are not absolutely inapplicable. It is, however, too late to attempt to get rid of the word pleuropneumonia as applied to the epizootic of cattle, and it becomes, therefore, necessary to insist upon its restriction to the particular disease in cattle to which it is constantly, but not invariably, applied. In reference to inflammation of the lungs of other animals the word will continue, as a matter of course, to be used, but considering the comparatively rare occurrence of ordinary inflammation of the lungs of the ox tribe, pleuropneumonia may, without inconvenience, be adopted exclusively as the title of the epizootic disease, which is always distinguished by interlobular exudation.

Pleuropneumonia is essentially determination of blood to the lungs, and exudation of liquor sanguinis, that is to say, blood deprived of its red particles into the connective tissue which is everywhere distributed throughout the lung structure, existing abundantly between the lobules and on the surface of the lungs under the pleural membrane. Exudation occurs also on the surface of the pleura, but the chief deposit takes place under it, and causes its elevation from the lung tissue just as the exudation between the lobules causes them to separate from each other.

At the commencement of the local disturbance a portion of one lung will be found to present the appearance of congestion, not to any great extent, but sufficiently to render that part of the organ quite distinct from all other parts; the

colour is deeper, the diseased portion is slightly swollen and, when it is cut, numerous minute spots of blood suddenly appear on the cut surface. No interlobular exudation may have taken place, but the morbid changes will be, nevertheless, sufficiently definite in character to enable the observer to detect an exact line of demarcation between the healthy and diseased lung tissue even at this early period of the disease.

By a very gradual, and probably continuous process of development, the lesions become more and more defined. The colour of the lung gets darker, until it reaches a deep purple, or nearly black tint; exudation of the serous fluid from the distended vessels fills the meshes of the fibrous tissue between the lobules; the diseased part which is often the greater portion of one lung increases in size day by day; the fluid exudation is constantly being squeezed out of the coagulating solids and falls to the bottom of the cavity of the chest; and at length the animal dies from exhaustion, or the virulence of the affection is expended, and the morbid action is arrested, leaving a large portion of the lung in a state of permanent disorganisation.

The rate of progress of the disease will depend upon the age and condition of the subject, as well as upon the acuteness of the attack; but some idea of the ordinary course of the malady may be gained by reference to a recent case which was carefully watched to its termination. The animal, a milch cow, was one of four in the same shed, and did not present any peculiar symptoms; it may, therefore, be considered that the deposit advanced at the average speed. Only one lung was diseased, and the observation was commenced when a small portion of the lower border of the organ was affected. Auscultation and percussion were employed two or three times a week, and the gradual extension upwards of the disease was very easily traced. At the end of the third week of observation, or about a month from the first appearance of signs of the affection, the whole of the right lung was in a state of consolidation, and the animal was destroyed. When removed from the chest, and disconnected from the windpipe and large vessels, the diseased lung weighed forty-eight pounds, the healthy organ of the opposite side weighed nine pounds.

Enlargement of the lungs, or portions of the lungs, as the result of deposit of new material in the spaces between the lobules and upon the surface is a speciality of pleuropneumonia. The malady may be distinguished with absolute certainty by this single morbid change, which bears no resem-

blance to any other lesion of the lung structure. A section of the diseased tissue is said to present "a marbled appearance," and there is probably no term which will better express the condition as it appears to the unscientific observer. The white lines of newly-deposited fibrin, varying from the eighth of an inch to an inch in breadth, intersecting the dark masses of the congested lobules, give to the morbid part an aspect which can never be mistaken after it has once been carefully examined; and it may be said of pleuropneumonia, that its lesions are so well defined, that the evidence which is afforded by a post-mortem examination is absolutely conclusive.

Inspection of those organs of the animal body which are principally implicated in the disease, however minute and complete it may be, only puts us in possession of a knowledge of effects. It is evident enough that the lungs have received an excess of blood, and that a large quantity of the circulating fluid had been exuded into the tissue of these organs; but the really important question is, What circumstances conduced to these results? And the only answer which the pathologist can offer is contained in a somewhat vague reference to "blood poisoning." As in other contagious diseases the blood of the animal affected with pleuropneumonia becomes charged with some poisonous material, which is excreted by the vessels of the lungs; for example, in small-pox, the virus is excreted by the skin, and the poison of the cattle-plague by the mucous membrane. In each case it is impossible to define the determining causes. We can no more understand why some of the constituents of the diseased blood are poured out in large quantity in the fibrous tissues of the lungs in pleuropneumonia than we can comprehend the ultimate cause of the distinctive eruptions in the various exanthematous diseases.

*Symptoms of Pleuropneumonia.*—The early indications of the disease are not very definite in character: a dry husky cough, with slight derangement of the appetite, diminution of the quantity of milk, and dulness of aspect are the principal signs; in the event of the disease being in the neighbourhood, however, these symptoms are suggestive enough to induce the owner to apply preventive measures, or to consign the affected animal to the butcher without waiting for the development of the malady. As the affection advances the breathing is disturbed, and when it is fully established the respiration is carried on with a peculiar grunt, the animal stands with the back arched, the cough is frequent and painful, the appetite is almost lost, the secretion of milk ceases,

and diarrhœa is often present. Percussion of the affected side elicits a dull sound quite unlike the drum-like resonant tone which is given out when the healthy chest is struck.

If the animal is allowed to live it becomes extremely emaciated, and the breathing day by day is more laboured as the respiratory surface is decreased by continuous deposits, until at length the breathing is carried on through the mouth, which is opened in a gasp at every inspiration, and the animal soon dies from exhaustion.

*Post-mortem appearance.*—According to the duration of the disease the lungs will be more or less affected. The right lung is believed to be more frequently affected than the left, and the diseased surface will vary from a patch of a few inches square to the great part or whole of one lung; sometimes portions in both lungs are affected, and occasionally a mass of lung tissue in the centre of one lung is implicated, all other parts being healthy, and instances where animals have recovered from this form of the disease, the effected portion of the lung has been found, when the ox was slaughtered, quite separated from the surrounding healthy tissue and enclosed in a fibrinous covering. Effusion of serous fluid into the cavity of the chest is an invariable concomitant of the last stage of the disease, and coincident with this there are usually observed large accumulations of fibrin on the surface of the lungs or rather of the membrane which is reflected over them.

In old cases of the disease it often happens that the lungs become affected with abscess; but suppuration or the formation of matter is not one of the ordinary results of pleuropneumonia, the affection not being of an actively inflammatory character, but rather belonging to the class of infectious fevers, the local disease in the lungs being always congestive, and therefore passive rather than active. Lesions of other parts, such as congestion of the leaves of the third stomach (manyplus), spots of extravasated blood in the ventricles of the heart, and other complications which are interesting to the pathologist, are met with, but they are not of much importance to the agriculturist who is principally concerned with those post-mortem appearances which will enable him to distinguish the disease.

*Microscopic appearances of the morbid parts.*—Numerous examinations of the tissues of animals affected with pleuropneumonia have established the fact, that there is nothing in the products of the disease which can be properly termed characteristic. The material which is deposited in the con-

nective tissue of the lung, and also in the same structure of the tail, after inoculation, consists of an albuminous fluid containing blood discs and large exudation corpuscles. Dr. Willems refers to minute moving bodies, which he detected in the fluid that was pressed from diseased lungs; these bodies, and others—Bacteria and Vibriones—have been constantly met with, but they are not peculiar to the exudation matter of pleuropneumonia.

The blood, immediately on being drawn from the vessels, presents the phenomenon of stellate red particles. These however, are often found in healthy blood, and are common in various diseases.

In the milk obtained from diseased animals, large granular corpuscles, identical with those which have been observed in cattle plague and foot-and-mouth disease, are always found; and in the muscular tissue, the peculiar bodies known as psorosperms are frequently very abundant. These bodies have also been detected in large numbers in the flesh of cattle affected with cattle plague, malignant catarrhal fever, and foot-and-mouth disease. In many instances perfectly healthy subjects have been found to be infested with them, although not to so great an extent.

*Preventive Measures : Inoculation, Isolation, and  
Disinfection.*

Contagious and infectious diseases only occur once as a rule in the life of the individual. Exceptional cases have been quoted often enough, their occurrence is admitted, but they do not happen so frequently as to seriously affect the practical bearings of the rule. An animal which has recovered from cattle plague, pleuropneumonia, sheep-pox, or foot-and-mouth disease is for all practical purposes protected against the disease for the future, and the protection appears to be equally certain whether the attack has been a mild or severe one. Acting on a knowledge of this fact, investigators have had recourse to experiments both on men and the lower animals, in order to ascertain what are the easiest and most certain means of artificially producing the disease in a mild form under favorable circumstances as a protection against a natural attack, which is most likely to happen when all the circumstances are opposed to its favorable progress. Inoculation with minute quantities of the virus of contagious and malignant diseases was early practised both on the human subject and also on the lower animals; in all countries veterinary authorities have tested the efficacy of this

form of prevention, either with the object of infecting the animal with a mild form of disease, or of causing it to incur the risk at a time when his life is of little value. Inoculation with the matter of cattle plague has been extensively practised on calves on the Continent. Periodical inoculations of lambs with the virus of sheep-pox take place in Saxony. Inoculation with the virus of pleuropneumonia originated in Belgium, and has been extensively practised for many years both on the Continent and in this country.

By way of preface to the consideration of the subject of inoculation with the matter of pleuropneumonia, it must be definitely stated as a matter of experience that the disease cannot be communicated, as other contagious diseases of animals can be communicated by the introduction of a small quantity of the fluid obtained from the diseased organs or from the system. It is a mere quibble to say that pleuropneumonia can be induced in the fibrous tissues by inoculation; effusion into the meshes of the fibrous tissues can be caused by employment of any powerful local irritant, but the fair question is, can pleuropneumonia be communicated as cattle and sheep-pox can be, by inoculation with a few drops of the fluid products of the disease? And the honest answer is, Certainly not. Reasoning deductively, therefore, it would be fair to conclude that as inoculation with the virus of pleuropneumonia does not produce the disease either in a mild or severe form, it cannot on the general principle afford any protection. The originator of the system, however, Dr. Willems, adopted the inductive method of inquiry, and he has a right to expect that the argument upon the subject shall be conducted in the same manner and his plan tested by experiments. In the spring of 1852, Dr. Willems, Professor at the Veterinary School at Brussels, addressed a letter to the Minister of the Interior, acquainting him with the fact of his having discovered a preservative against the lung disease which had caused serious losses in Belgium, and describing the method of inoculation in these words:—

“I take the liquid which exudes from the lung of an animal recently slaughtered or dead of the disease; and I dip into it a kind of large lancet, then I make two or three punctures at the extremity of the tail of the animal which I wish to preserve from the malady. *A single drop of the fluid suffices for the inoculation.* I have made inoculations with the saliva and other fluids, but do not approve of them. I have also inoculated in other parts than the end of the tail; and in the course of my observation the inconveniences attending the operation on other parts will be alluded to.”

Referring to the effects of the operation, Dr. Willems says that the phenomena of inoculation manifest themselves in twelve to thirty days, and sometimes continue for two or three months. The disease which is induced, he says, is not altogether a local one, as the symptoms exhibited by the animal (*viz.* dulness and loss of appetite) prove.

The local signs of successful inoculation given by Dr. Willems are swelling and hardening of the part operated on and the deposition of an excessive quantity of exudative matter, of the same kind exactly as that which is found in the lungs of an animal affected with pleuropneumonia. In his microscopic investigations, Dr. Willems detected minute moving molecules in the exudation from the diseased lungs, but he failed to detect those bodies in the saliva, urine, and blood of sick animals. He also found in the skin of an inoculated part a marbled aspect like that of the section of a diseased lung. Dr. Willems writes respecting the efficacy of the operation as a preventive of pleuropneumonia with the enthusiasm of a discoverer; and if his view of the value of the remedy were the true one, pleuropneumonia would have long ceased to be a scourge to the bovine race. Twenty years' experience, however, have not tended to increase the confidence of stock-owners in Dr. Willems' discovery, and during that time observation has added materially to the amount of conflicting evidence which was elicited by the investigations of the several scientific commissions appointed to inquire respecting the method of inoculation adopted by Dr. Willems, immediately upon the publication by him of his new method of prevention.

The Dutch Commission, appointed in 1832, reported in reference to the protective effects of inoculation, that

“Although the present trials prove in a remarkable degree that inoculation possesses the power, at least temporarily, to prevent infection, it remains uncertain how far the disposition for the disease is completely or only for a longer period destroyed.”

The Belgian Commission reported in 1853, in reference to inoculation for pleuropneumonia:—

“That the inoculation with the liquid extracted from a diseased lung is not a certain preventive of pleuropneumonia.

“That the phenomena of inoculation may be produced several times in succession on the same animal whether it has previously been affected with pleuropneumonia or not.

“That the two affections (that produced by inoculation

and the natural disease) may exist in the same individual at the same time.”

As to the protective effect of the operation, the Commission consider the point requires to be determined by further experiments.

Professor Simonds, who was commissioned by the Royal Agricultural Society to visit Belgium to investigate the results of inoculation, reported in 1853, after numerous experiments—

“That inoculation made by superficial punctures and simple erosions of the skin invariably fail to produce any local inflammatory action, being the reverse of the case with regard to the vaccine diseases, smallpox, and other specific affections, of which it is an indication of success.

“That the employment of fresh serous fluid and a clearly-made but small incision, during the continuance of a low temperature, will also almost always fail to produce even the slightest amount of inflammation.

“That deep punctures are followed by the ordinary phenomena *only* of such wounds when containing some slightly irritating agent.

“That, with a high temperature, roughly-made incision, and serous fluid a few days old, local ulceration and gangrene, producing occasionally the death of the patient, will follow inoculation.

“That the sero-purulent matter taken from an inoculated sore causes more speedy action than the serum obtained from a diseased lung, and that *removes* cannot be effected on scientific principles.

“That oxen are not only susceptible to the action of a second, but of *repeated* inoculations with the serous exudation of a diseased lung.

“That an animal inoculated with the serous exudation is in no way protected from the repeated action of the sero-purulent fluid which is produced in the wound as the result of the operation.

“That animals not naturally the subjects of pleuropneumonia, such as donkeys, dogs, &c., are susceptible to the local action both of the serous exudation from the lung and the sero-purulent matter obtained from the inoculated wounds.

“That inoculation made with medicinal irritating agents will be followed by similar phenomena to those observed in inoculation with the exuded serum.

“That inoculation often acts as a simple issue, and that the security, which at times the operation apparently affords, depends in part upon this, but principally on the unknown

causes which regulate the outbreak, spread, and cessation of epidemic disease.

“That inoculation of cattle, as advocated and practised by Dr. Willems and others, is not founded on any known basis of science or ascertained law with regard to the propagation of those diseases commonly called specific.

“That pleuropneumonia occurs at various periods of time after a so-called successful inoculation.

“And lastly, that the severity of pleuropneumonia is in no way mitigated by previous inoculation, the disease proving equally rapid in its progress and fatal in its consequence on an inoculated as an uninoculated animal.”

The French Commission reported in 1854,—

“That of 100 bovine animals which were inoculated under the most unfavorable circumstances, that is, when the herds of which they formed part were threatened, or actually invaded by the epizootic, two animals succumbed to the effects of the operation.

“Two animals contracted the malady in spite of inoculation.

“Ninety-six animals were exposed to the contagion, and escaped safe and sound from the results of inoculation, and four suffered from gangrene, which materially lessened their value.

“Inoculation with the fluid obtained from a diseased lung has a preservative influence. It imparts to the organism of the great majority of animals on which the operation is performed a power of resisting infection for a period which is yet undetermined.”

Equally conflicting evidence is to be found in reports which have been published since 1854 up to the present day; and the testimony of individuals who have tested the system of inoculation on their own breeds is not more satisfactory. Sometimes inoculation fails to cause any external symptoms of disease in the part as in the recent experiments which were undertaken in Norfolk; sometimes very extensive swelling, followed by mortification, loss of a large portion of the tail, and occasionally death, are the results; but, in the majority of the cases, the introduction of the fluid from a diseased lung into an incision in the end of the tail is followed, at an interval of ten to fourteen days, by swelling and heat of the part, and the effusion into the areolar tissues of a straw-coloured fluid which, under the microscope, presents all the characters of serous exudation. Occasionally blood is effused into the tissues of the inoculated part, and in such a case a section of the swollen tissues has a somewhat marbled appear-

ance, due to the intersection of the mass of dark blood, with long lines of white fibre; but the comparison of the aspect of the inoculated tail with the consolidated lung is purely fanciful.

Inoculation, if properly performed, is practically a harmless operation, requiring but little skill in the operator, but much care in the selection of materials and the after treatment of the animals to prevent them inflicting injury upon the part by rubbing against projecting bodies. Mr. Priestman operated, between the years 1859 and 1865, on 4477 cows, and of these only 30 died from gangrene as the result of inoculation. Experience has definitely proved that inoculation is not a certain preventive of pleuropneumonia; but the balance of evidence is in favour of the conclusion that the disease is much less prevalent in inoculated than in uninoculated herds, and also that it ceases more quickly when inoculation is practised immediately upon the detection of the malady in a district than it does when no precautions are taken; but it is necessary to add that equally good results have attended the adoption of such preventive measures as isolation and disinfection.

The precise value of inoculation, as a means of arresting the spread of pleuropneumonia, has never yet been ascertained, and probably never will be, as the solution of the problem would necessitate the carrying out of experiments on a grand scale over a large extent of country, involving a much greater outlay of time and money than under all the circumstances could be reasonably incurred.

*Isolation.*—As a preventive of contagious disease no measures can be more effective than perfect isolation; but to properly carry into effect any system of complete separation of diseased and healthy animals demands an amount of persistent watchfulness that cannot easily be insured. The system of isolation is based on the principle of preventing the contact of healthy animals with those affected with disease, and the restrictions should apply equally to all substances which have been in contact with the diseased animals. In every instance regulations must be made to meet the necessities of the particular case; and, therefore, no precise directions can be given. It scarcely need be affirmed that the slaughter and burial of infected animals is the most successful method of diminishing the number of centres of infection; but in pleuropneumonia there are economic considerations which stand in the way of the adoption of the stamping-out system, and unless the plan were adopted with equal energy all over the country at the same time no substantial

benefit would be gained, while great loss would be incurred to little purpose in some districts; stoppage of all fairs and markets as an essential step in carrying out a perfect system of isolation. No stringency of caution would entirely exclude infected animals from large gatherings of cattle at sales and fairs; but at present no attempt is made, in the majority of instances, to check the practice of exposing cattle from infected districts for sale in public; hence it happens that contagious disease constantly radiates from such centres of cattle traffic with a rapidity proportioned to the facilities of transit.

*Disinfection.*—With the design of neutralising the *contagium*, certain chemical agents are commonly employed as preventives during the existence of infectious maladies among men and animals. Carbolic acid, chlorides of lime or zinc, sulphuric acid, or chlorine gas, are advocated as disinfectants; and probably each of them possesses sufficiently active powers if it is used in a concentrated form. Carbolic acid, or the allied agent, cresylic acid, has been tested in pleuropneumonia with remarkably beneficial effects. Some years ago some experiments were carried out by Mr. Priestman at the suggestion of the writer, and the results were so satisfactory that the employment of carbolic acid as a curative and preventive of the disease is still continued. Professor Baldwin of Glasnevin has also used carbolic acid in the treatment and prevention of pleuropneumonia with great success.

The method of application is as follows:—cresylic acid, diluted with 40 parts of water, is mixed with sawdust and scattered plentifully over the floor of the shed every day. Sick animals are removed, and, at the same time, all the animals which have been exposed to the infection receive one or two doses of the acid—a drachm mixed with a pint and a half of water, containing a little soap in solution, once or twice a day. In many instances the disease has been arrested at once by this treatment, and in all its progress has been retarded; but very considerable difficulty has been found in most instances in inducing dairymen to take the necessary trouble to carry out the directions,—it is so much less irksome to adopt the usual practice and remove the animals one by one as they fall ill, send them to the butcher and supply their places with fresh stock to be infected in their turn. In this manner the disease is kept up in some establishments for years, indeed is seldom absent for many consecutive months, and comes at length to be looked upon by the proprietor as one of the inevitable evils associated with a dairyman's business.

*Legislation in reference to Pleuropneumonia.*

When pleuropneumonia first appeared in this country, its contagious nature was not clearly established, and for several years no attempt was made by the legislature in England to check its progress. The first Pleuropneumonia Act was passed in Melbourne in 1861, and was entitled "An Act to prevent the further spread of the disease in Cattle, called Pleuropneumonia."

In section 1 of the Act "the Governor in Council is empowered to appoint three persons as Commissioners to carry into effect the provisions of this Act."

Section 4 gives remarkable powers to the Commissioners, who, "on receiving information, in writing, from the owner of or occupier of land that the disease, cattle pleuropneumonia, is believed to exist in any cattle, may enter upon any land where such cattle may be, and examine the same, and if the Commission shall deem it proper, they may cause to be slaughtered for examination by some qualified veterinary surgeon one or more of such cattle wherever the same shall be found; and if, in the judgment of the Commissioners, the disease shall exist in such cattle, they may order such number of them as they think proper to be forthwith destroyed, and may make such other order in relation to all or any such cattle and the carcasses thereof, with a view to prevent the spreading of the disease, as to the Commissioners may seem proper."

In section 5 it is ordered that "one commissioner, or any justice, on receiving information, in writing, that any cattle are diseased, or have recently been exposed to the disease, may order such cattle to be detained at or removed to the nearest convenient place, and the commissioner may then examine such cattle and cause one or more of them to be slaughtered, and if, in the judgment of the commissioner, the disease shall exist in such cattle, he may order the remaining cattle, or any such number of them as may be thought proper, to be forthwith destroyed, or may make such other order as aforesaid."

The Governor is empowered, by section 10 of the Act, to declare premises "infected, and prevent the movement of cattle out of declared districts." Offenders against the provisions of the Act subject themselves to a penalty not exceeding fifty pounds, or imprisonment in default.

In England no Act relating to the disease was passed until 1869, when the Contagious Diseases (Animals) Act came into operation. By this measure pleuropneumonia was included among infectious and contagious diseases. The pro-

visions of the Act respecting pleuropneumonia are both general and special. General directions apply also to all the other infectious diseases which are included in the Act, and the special provisions relate only to pleuropneumonia.

Section 9 of the Act provides that if any animal is affected with pleuropneumonia, the owner or person in charge is, as far as practicable, to keep it separate from animals not so affected, and is, with all practicable speed, to give notice to a police constable. The police constable is required to give notice to the inspector of the district. The inspector is then required to proceed to the place where the disease is reported to exist, and make the necessary inquiries.

Section 54 of the Act provides that "where an inspector finds pleuropneumonia to exist within his district, he shall forthwith make a declaration thereof under his hand, and shall deliver a notice under his hand of such declaration to the occupier of the field, stable, cowshed, or other premises where the disease is found; and thereupon the rules set forth in the seventh schedule to this Act shall have effect until the determination and declaration of the local authority relative thereto, in this Act provided for."

Section 55. "Where an inspector makes a declaration of the existence of pleuropneumonia, he shall with all practicable speed send a copy thereof to the Privy Council, and deliver the declaration to the local authority; and if it appear to them that pleuropneumonia existed, as declared by the inspector, they shall so determine and declare, and thereupon the pleuropneumonia rules of this Act shall continue to apply to the field, stable, cowshed, or other premises to which the declaration relates; but if in any such case it appears to the local authority that pleuropneumonia did not exist, as declared by the inspector, or that a fresh case of pleuropneumonia has not occurred for thirty days in such field, stable, cowshed, or other premises, then the local authority shall so determine and declare, and the pleuropneumonia rules of this Act shall cease to operate in relation thereto."

Section 57 of the Act relates to the exposure of diseased animals (affected with pleuropneumonia) in fairs and markets, and their transport by road, rail, or water, and gives the local authority power to seize and detain any such animal so dealt with, in contravention of the Act, for any time which may be deemed necessary, at the expense of the owner.

Section 58 relates to the exposure of diseased animals (affected with pleuropneumonia) on any common or unenclosed or insufficiently enclosed land, and constitutes any person so acting an offender against the Act.

*The penalty for an offence against the Act.*—The penalty for infringing the Act or any order based on it is twenty pounds, or if the offence is committed in respect of more than four animals, a penalty of five pounds may be imposed for each animal, instead of the penalty of twenty pounds.

Special arrangements relating to pleuropneumonia are made in the seventh schedule to the Act, as follows:—

1. These rules are to have effect with respect to any field, stable, cowshed, or other premises infected with pleuropneumonia.

2. Cattle affected with pleuropneumonia are not to be moved from such field, stable, cowshed, or other premises, or from any land or building contiguous thereto, in the same occupation, except for immediate slaughter, and according to regulations to be from time to time made by the local authority for insuring such slaughter.

3. Other cattle are not to be moved from such field, stable, cowshed, or other premises, or from any land or building contiguous thereto, in the same occupation, except for immediate slaughter, without a licence, signed by an officer of the local authority appointed to issue licences in that behalf, certifying that the cattle moved are not affected with pleuropneumonia, and have not been in the same shed or herd, or in contact with cattle so affected.

4. Sheds and places used by cattle affected with pleuropneumonia are forthwith, after being so used, to be cleansed and disinfected, to the satisfaction of the local authority.

The last Order of Council, which came into operation on February 17, 1871, completes the law in reference to pleuropneumonia. Under its provisions a Local Authority may apply most stringent measures for the eradication of the disease.

*Clause 1* of the Order refers to the date of its operation, viz., from and after February 16, 1871.

*Clause 2* provides for compulsory slaughter and compensation:—“Where a Local Authority is authorised by the Privy Council to put in operation this provision of this Order, such Local Authority may cause all cattle affected with pleuropneumonia within their district to be slaughtered, subject to the following provisions:—

“1. The Local Authority shall, by way of compensation for every such animal, pay to the owner thereof such sum, not exceeding twenty pounds, and not exceeding one half of the value of the animal immediately before it was affected with pleuropneumonia, as to the Local Authority seems fit.

“2. They may require the value of any such animal to be ascertained by their officers, or by arbitration, and generally they may impose conditions as to evidence of the slaughter and value of any such animal.

“3. They may, if they think fit, withhold compensation in respect of any such animal, where the owner or the person having the charge thereof has in their judgment been guilty, in relation to such animal, of any act in contravention of the Act of 1869, or of any Order or regulation, or licence of the Privy Council or of a Local Authority, or has, in relation to such animal, failed to comply with the provisions of the Act of 1869, or of any such Order, regulation, or licence, in respect of the giving of notice of disease, or in any other respect.”

*Clause 3* relates to compensation in connection with insurance:—“Where any animal has been slaughtered in pursuance of this Order, the owner thereof shall not be entitled to recover in respect of the insurance thereof any sum which, together with the payment which he receives for the same under this Order, would exceed the sum which he would have been entitled to receive in respect of the insurance.”

*Clause 4* has reference to the recording of particulars of animals slaughtered under the Order:—“Every Local Authority shall keep, in such manner and form as the Privy Council from time to time direct or improve, a record, stating the date of any order for slaughter, and the execution of the order, and other proper particulars; and such record shall be evidence, if any question arises concerning an order for the slaughter of any such animal, or concerning compensation in respect thereof.”

*Clause 5* provides for the regulation of the movement of diseased animals and of substances which have been in contact with them; regulation of the movement of “other cattle from premises where pleuropneumonia exists” being already provided for in the seventh schedule to the Act, sec. 3:—“Where a Local Authority is authorised by the Privy Council to put in operation this provision of this Order, such Local Authority may, from time to time, with the view of preventing the spreading of pleuropneumonia, make regulations for the following purposes, or any of them:—

“For prohibiting or regulating the movement out of any field, stable, cowshed, or other premises, of any cattle affected with pleuropneumonia, or of the carcasses of any cattle which have died or have been slaughtered in consequence of being affected with pleuropneumonia.

“For prohibiting or regulating the removal of hay, straw,

litter, or other thing commonly used for food of animals, or otherwise for or about animals, that has been in the same field, stable, cowshed, or other premises with cattle affected with pleuropneumonia.

“ Provided that such Local Authority shall from time to time define the area within their district within which any such regulation shall have effect, and they may from time to time revoke or alter any such regulation.”

*Clause 6* permits a Local Authority to prohibit fairs and markets :—“ Where a Local Authority is authorised by the Privy Council to put in operation this provision of this Order, such Local Authority may, from time to time, with the view of preventing the spreading of pleuropneumonia, regulate or prohibit the holding of any specified market, fair, auction, sale, or exhibition, of cattle within their district, and may, from time to time, alter or revoke any such regulation or prohibition.”

*Clause 7* reserves to the Privy Council the right to revoke any Order which may appear to be too stringent :—“ Provided that the Privy Council, if satisfied on inquiry, with respect to any regulation or prohibition made by a Local Authority under this Order, that the same is of too restrictive a character, or otherwise objectionable, may direct the revocation thereof, and thereupon, as from the time specified in that behalf by the Privy Council, the same shall cease to operate.”

*Clause 8* refers to payment of expenses :—“ Expenses incurred by a Local Authority in pursuance of this Order shall be defrayed out of the Local Rate.”

*Clause 9* relates to infringement of the Order :—“ If any person acts in contravention, or fails in any respect to comply with the provisions of this Order, or of any regulation of the Local Authority made thereunder, he shall be deemed guilty of an offence against this Order.”

It may be presumed that this Order will render any further restrictive legislation, in respect of pleuropneumonia, unnecessary, inasmuch as under its provisions, in addition to those of the Act and of the General Order, a Local Authority may apply the “ stamping-out system ” to the disease precisely as though it were cattle plague. It is not, however, likely that the powers conferred by the Order will be very generally employed, on account of the great expense which would be incurred in compensating the owners of slaughtered cattle.

Nothing in the Act or Orders referring to pleuropneumonia, in any way affects the question of actions at common law which may be brought for the recovery of damages sus-

tained by the owners of cattle in consequence of the negligence of owners of diseased or infected animals, whereby the malady has been communicated to their stock.

In some parts of the country energetic action has been taken, under the provisions of the Act, with good results; but in the majority of cases the measures which have been adopted have been feeble in character and ineffectual in operation. It must be admitted that the whole results of legislation which was directed to the prevention of the spread of pleuropneumonia have not been satisfactory; nor is it probable that the malady will be eradicated unless recourse be had to preventive means as stringent as those which were found to be necessary to effect the extermination of the cattle plague.

*Journal of the Bath and West of England and Southern Counties.*

## Analysis of Continental Journals.

By G. FLEMING, M.R.C.V.S., Royal Engineers.

### STUDY ON *TINEA FAVOSA* IN THE DOMESTICATED ANIMALS.

By M. F. SAINT-CYR, Professor at the Lyons Veterinary School.

*(Continued from p. 748.)*

*Experiments relative to the transmission of Tinea from one animal to another.*—These experiments, already somewhat numerous, were undertaken, not only with the view of assuring myself as to the contagiousness of the disease—a fact that the evidently parasitical nature of the affection would, *à priori*, have sufficiently attested—but also to study the characteristics of *Tinea* at its commencement, clinical observation alone not permitting this to be done, for, as I have already said, the malady is nearly always of some duration when our advice is sought. The following is the way in which I conducted these experiments, which are generally successful, if care is taken to choose proper subjects—that is, young animals.

On a part of the body which the creature cannot readily reach with its paws—as the top of the head—the hair is cut as short as possible over a space equal to the size of a one- or two-franc piece; on this is applied a mild vesicatory, such

as the Milan fly, which is conveniently covered, and allowed to remain for twenty-four or thirty-six hours. When the blister is removed, the epidermis is found to be raised by a small quantity of serum; this epidermis is detached, and on the humid surface is sprinkled a little of the favus dust, either in a dry state, or, which is better, damped by a drop of water. The surface thus sown may be afterwards covered by diachylon plaster—a precaution which is not indispensable, but useful, as it maintains the surface in a state of humidity favorable to the germination of the parasite. If applied, this plaster may be removed in forty-eight hours. The following is what is then observed :

The sown surface, which was a little moist at the moment when the plaster was taken off, soon dries; the epidermis is regenerated; but instead of forming a continuous layer, smooth and adherent, it becomes detached, and comes away, during several days, in the shape of furfuraceous scales of variable sizes. From the eighth to the twelfth day we begin to distinguish, on the surface where the favus dust had been deposited, some little tubercles the size of a pin-head, a grain of millet, or, at the most, a small lentil, little prominent, but hard to the touch, and of a grayish colour. At first hemispherical, these tubercles soon become depressed at their centre, while their borders rise and give them a more or less marked cupuliform aspect. These are veritable *favi*, traversed by a little tuft of bristly hair, and which only differ from the *favi* already described by their remaining a long time of a dull gray tint.

If this primary favus crust be removed it is reproduced very rapidly, sometimes by the following morning; this second crust exhibits, very distinctly, the characteristic sulphur-yellow hue. Otherwise, in the primary crust, as in that which succeeds it, there is found, on a microscopical examination, the same elements—mycelium, sporophorous tubes, and spores—noticed in the *Tinea* crusts, as they are presented in clinical observation—elements which may also, as I have assured myself by experiment, prove capable of producing the disease.

With time these *favi* increase; others are developed in their vicinity; the nearest soon touch by their margins, and then they become deformed; at times their central depression is obliterated by the incessant accumulation of new cryptogamic elements, and the cupuliform aspect disappears; but it is very rare that we do not witness it sharply defined on the borders of the affected part.

*Relations of the Tinea of animals to the Tinea of man.*

—After what has been said, it is already evident that the disease described offers numerous analogies to the Tinea of children. The same essentially parasitic nature; the same *cupuliform aspect* of the primary lesion; the same composition in the crusts; and, lastly, a perfect resemblance between the constitutive elements of the microphyte that produces the two maladies. There is, therefore, nothing more required to establish a complete identity between them than to prove that they are transmissible from one species to another; that the Tinea of the child, for example, may be transmitted to the cat, and that the disease we produce in sowing on the skin of the cat the spores of Tinea derived from the infant clearly offers all the characters of the affection I have observed, and which I have described in this animal. This is what I have undertaken to do.

On the 7th February, 1866, M. Dron, at present chief surgeon in the Antiquaille Hospital, sent me some crusts taken from the head of a child affected with the disease, and under his care. Some days afterwards I sowed them on the head of a cat, according to the procedure already indicated, and as a result I obtained a very fine Tinea, exactly similar to those produced in my previous experiments. There could be no doubt, then, as to this fact. The Tinea of the child is contagious for the cat, and this Tinea, transmitted directly from the child to the cat, offers the same characters as that transmitted directly from cat to cat. We might, therefore, from this conclude that the Tinea of the cat may also be transmitted to the child, and that, consequently, there is a complete identity between the two diseases.

*Etiology.*—The essential cause of the malady in animals is *contagion*, or, to speak more exactly, the transfer of the spores of the *Achorion* from a diseased to a healthy animal. It cannot be conceived that there should be any other really efficient cause than this for such an essentially parasitic malady. But certain contingent circumstances have, nevertheless, a real and very evident influence on its development.

Among these contingent circumstances, the one whose action is best demonstrated is the *age* of the subjects. All the animals in which I have as yet observed the disease were young; the cats, seven or eight in number, were only from six weeks to two months old; the dog was about four months, and it was the oldest of my patients.

The experiments referred to above confirm the influence which I have attributed to youth in the production of Tinea. I have twice attempted to transmit it to adult cats, but

could not succeed; while all the experiments, eight in number, which I made on animals under three months old, have yielded, without an exception, a positive result.

A certain degree of humidity of the surface on which the spores are deposited also appears necessary to the germination and development of the microphyte. If we are content to deposit them on a dry surface with its epidermis intact, we generally fail; but, on the contrary, we always succeed when we deposit them on a surface irritated by a blister and moist from serosity.

Perhaps there are other circumstances which favour or hinder the germination of the parasite; but I have not been, as yet, able to note their influence.

*Prognosis and treatment.*—In animals *Tinea* is far from possessing the same degree of seriousness, the same tenacity, that it has in children; it might even be said that in proportion as it is tenacious and difficult to cure in children, so is it benignant and easily remedied in animals. All those I have been called upon to treat have been somewhat rapidly cured by the most simple treatment. I have even seen one of my experimental cats, when completely left alone, recover from the disease in about three months. The following is the treatment I have usually resorted to, and with constant success.

I commence by removing the crusts, which are more or less adherent, by means of a spatula or the blunt extremity of curved scissors, taking care not to make the part bleed. When the skin has been cleaned in this way as much as possible, I every day apply to it a concentrated solution of corrosive sublimate (sublimate from 1 to 5 grammes, distilled water 50 grammes). After the first application the favus crusts sometimes have a tendency to be reproduced, and the cryptogamic elements to multiply. In such a case it is necessary, at the second dressing, to remove the crust as at first. Five or six dressings are usually sufficient; at times, however, and especially when the disease is seated at the base of the claw, they must be continued for a longer period. As a rule, nevertheless, the malady is soon overcome.

Under the influence of this parasiticide treatment the skin, which is depressed, is not long in regaining its vitality and its normal thickness. During the first two or three days a new crust forms, but this has not the sulphur-yellow colour of the primary crust, and if examined with the microscope there are no longer to be found traces of the parasite, but only numerous epithelial elements. Finally, this crust falls off, leaving the skin depilated, but everywhere level, smooth, and supple; in a word, perfectly healthy. Then the hair

begins to grow, and in a variable period, generally about three months, it is difficult to discover the part that has been affected.

Instead of lotions of sublimate, I have sometimes employed, with equal success, friction with an ointment composed of 1 part nitrate of silver to the 100 of lard.

It is, perhaps, astonishing to find that a disease which is so intractable in children is so readily cured in animals. I think this diversity is in great part due to the difference in the organization of the skin. In the dog, and more particularly in the cat, this is thin, fine, and very supple; it is furnished with numerous hairs, which are delicate and not deeply implanted. The human scalp, on the contrary, which is the usual seat of Tinea, is thick, and the bulbs of the hairs are inserted profoundly in its texture; so that as the spores of the vegetable parasite insinuate themselves to the bottom of the hair-follicle, to the internal face of which they form an adherent layer,\* it will be seen that it is all the more difficult to attack the parasite, when it is so deeply situated.

What leads me to believe that this is the cause of the difference in gravity of the disease in animals and mankind is, that the favus which, in the latter, is sometimes seen on other parts of the body than the scalp, is then incomparably less refractory to treatment. "When the favus simultaneously occupies the scalp and other regions of the body," says M. Bazin, "baths alone will free the body from it, and most frequently it will not be reproduced."†

*Consequences for the public hygiene.*—Animals, like people, are liable to Tinea; indeed, it appears to be somewhat common among them, for since 1864—that is, in a period of four years—we have collected nine observations; and if it has not been reported more frequently, it is, no doubt, because the attention of observers has not been drawn to it.

The animals in which it has, up to the present time, been observed in have been—the *cat*, in 1847, by M. Jaquetant, and by ourselves in 1864; the *mouse*, by MM. Bazin and Pouquet, in 1858, and quite recently by M. Tripier,‡ physician in the Lyons hospitals; and, lastly, the *dog*, by us, in

\* Ch. Robin, 'Vegetaux Parasites,' p. 442.

† E. Bazin, 'Recherches sur la Nature et le Traitement des Teignes,' 1853, p. 94.

‡ R. Tripier, 'Communication à la Société des Sciences Médicales de Lyons,' Séance of the 21st August, 1867.

(I omitted to mention, in my introductory remarks to M. Saint-Cyr's memoir that Dr. Tilbury Fox, in his work, 'On the Skin Diseases of Parasitic Origin,' when speaking of Tinea, mentions the case of two Italians in England who kept white mice. One of these was infected with the

1867. This malady, identical in man and animals, is essentially contagious. Not only can it be transmitted from man to man, and from animal to animal, but it can be also conveyed from man to the animal. We may, then, admit, without hesitation, that it can likewise be transferred from animals to man. This is demonstrated by an unpublished experiment by Dr. R. Tripier, of Lyons, who successfully inoculated himself with *Tinea* from a mouse; it is also confirmed by clinical observation, as appears from the following facts:

On the 25th January, 1866, there was shown to us, at the clinic of the Veterinary School of Lyons, a young cat about two months old, in which we recognised, at the root of the claw of the middle toe of the right paw, a very fine favus patch. Two children of the house whence this cat was brought, a boy and girl, accompanied it. They feared that the cat, with which they were in the habit of playing, had given them *its disease*. They, in fact, each showed us two erythematous places which they begged us to examine.

In the little girl, one of these spots was about the size of a two-franc piece, regularly circular, very pruriginous, of a red colour, and seated on the forehead at the commencement of the hair. According to the child's account, it had been there about fifteen days. We saw nothing on its surface of the nature of vesicles or pustules, but only some yellowish crusts. A second patch of the same extent as the preceding existed on the inside of the thigh, a little above the knee. It offered the same characters as the first, with the exception that instead of crusts there were only some lamellæ of epidermis on its surface. This was only eight days old.

The boy had on each forearm an erythematous patch of a bright red colour, also very pruriginous, about the size of a silver five-franc piece, and exhibiting all the characteristics of those already described.

I immediately sent these two patients to Dr. Rollet, who obligingly examined them and sent me the following note:

“To the naked eye the eruptions presented by the two children you sent to me have the principal characters of erythematous patches, on which the favus of the skin commences at those points which are only covered by fine hair; but on examining, with the microscope, the epidermis scraped from the surface of these places, I have not been able to find appreciable traces of the fungus, though, nevertheless, I believe that the *Achorion* will finally become developed there,

malady from a diseased mouse, and he was the means of conveying the parasite to his brother.—G. F.)

for it is probable that when I examined the parts the parasite had not had time to germinate and multiply in the manner we see it when fully developed."

Some time afterwards, in May or June, 1866 (the precise date was unfortunately mislaid), the clinic of our school again gave me an opportunity of studying the *Tinea* in a young cat belonging to a well-known architect of this town. The servant who brought this patient also showed on herself two erythematous patches, one on the neck, the other on the left forearm. As before, I sent this girl to Dr. Rollet, who, as in the preceding cases, was led to believe the disease to be *Tinea* commencing, and attributed it to contagion.

I do not conceal from myself what is wanting in these facts to render them entirely demonstrative, as in neither of the three patients was the parasite to be found; nevertheless, it seems to me that we may, without much temerity, assign to the disease in these three persons a certain degree of parentage with the malady in the young cats, with which they lived in habitual contact. This was also the opinion of M. Rollet, whose competency in such a matter is well known to the scientific world; and this opinion appears to me to acquire a high degree of probability when we bring these facts to bear upon the interesting observations of Mr. Draper, as cited above, and especially the conclusive experiment of M. Tripier, also alluded to.

In addition, I am now in a position to support this evidence by a new and most conclusive fact, which will be adduced hereafter.

From the foregoing it therefore results:—

1. That animals, and particularly the dog, cat, and mouse, are susceptible of contracting *Tinea*.
2. That they may contract it by direct contagion from animal to animal; but that they may also, and the cat especially, receive it through their relations with diseased children.
3. That the mouse being liable to the malady, it is very probable that this little rodent most frequently gives it to the cat. We all know how much young cats love to play with the living mice brought to them by their parent.
4. That young cats affected with the disease may, in their turn, transmit it to children, who, as we are all aware, amuse themselves by fondling these gentle creatures.
5. By their contact with the young cats, which are also often attacked by favus, children are exposed to contract this affection, which is as pertinacious as it is repulsive; from this circumstance, which has hitherto scarcely been suspected,

the attention of observers should, in my opinion, be seriously attracted to the cause of the malady.

I believe I ought also to give in this place, as a natural complement to this work, the detailed history of some facts that I have been enabled to gather quite recently with regard to the malady in question.

*(To be continued.)*

#### EXPERIMENTS RELATIVE TO THE PATHOGENESIS OF TETANUS.

By MM. ARLOING and TRIPIER.

THOSE who seek to discover, from a chemical point of view, the conditions which favour the production of tetanus, arrive at very different results; which seems to indicate that the causes that may produce this affection are multiple, or that none of them are yet known. But it cannot be denied that this disease at times assumes an epidemic character; it is frequently seen in towns, and at all times it is incomparably most prevalent in the hospitals. Besides, it is not rare to observe it affecting two or three patients occupying the same part of a ward; and, finally, we may meet with several successive cases of tetanus in one part of a hospital without observing a single case in the other parts.

The existence of that form of tetanus designated spontaneous (idiopathic), although very rare in our country, cannot be denied; the medical journals publish at least one or two cases every year. Traumatic tetanus is incomparably more frequent, sometimes occurring in the first septenary, at other times much later, and when the surgical affection for which the patient was admitted to the hospital is partly, if not completely, cured. Then we at times learn that a window has been left open during the night; or if we consult the state of the temperature, it is found to be cold or warm, and the weather damp or dry.

Tetanus is more particularly frequent as a consequence of wounds to the extremities of the limbs, and especially contused wounds of the fingers and toes; it is exceptional to see this complication after wounds of the head and trunk.

Most commonly the patients commence to experience pain in the region in which the injury is situated. Soon the pain extends upwards towards the root of the limb, sometimes following the anterior part, at other times the posterior or lateral portions. This pain, which the patients compare to that produced by pricking or burning, comes on by starts, and is accompanied by movements of flexion, extension, rotation, &c. &c. The affection may limit itself to these symptoms

(surgical tetaniform cramps); on other occasions the muscles of the jaws are affected (trismus); finally, the disease may become general, and reach the muscles of the trunk (tetanus proper).

Relative to the mode in which tetanus is produced, there exist two principal theories in connection with the nature of the causes themselves which have been enumerated; these are the humoral theory and the nervous theory.

In the first, a previous infection of the blood by a pyogenic or other substance is admitted; in the second, it is thought that the nervous irritation is primary, and is brought about without the medium of the blood.

If the hypothesis of the humorists is to be accepted, we might suppose that in inoculating an animal with matter taken from the wound of a man suffering from tetanus, or by transfusing his blood into the healthy creature, the disease would be produced. It was to verify this primary point that we made the double experiment (the injection of blood and pus—1, on rabbits; 2, on dogs). The results were negative in both cases; the temperature of the rectum did not vary to any sensible degree.

This non-success certainly demonstrates that tetanus is not developed by inoculation from man to rabbits and dogs, but it does not upset the hypothesis of the humorists. To be convincing, the inoculation ought to be made on man (a condition difficult to realise), or, which comes to the same end, from one tetanic animal to another of the same species; this is precisely what it has been possible for us to do. The animal was a very vigorous Percheron horse, affected with general spontaneous tetanus; about 200 grammes of its blood were drawn from an opening in the jugular vein and received into a vessel properly heated; it was immediately poured into an injection funnel placed in the jugular vein of another horse. The rectal temperature of the latter animal, taken before the experiment, was about  $38^{\circ}$  (Centigrade =  $100^{\circ}$  Fahr.); towards the second day it only increased from 2 to 3.5ths of a degree, and this was only maintained during thirty-six hours. There was complete absence of tonic and clonic contractions.

This last result was very important, and, though unique, yet we may say that in tetanus there is not an infecting process with primary alteration of the blood, as is yet believed in Germany by Roser, Billroth, and others.

There remains the hypothesis of the neurists. For a long time it has been attempted to produce tetanus by pricking and bruising the peripheral nerves. Laurent Descot, in his

work, relates a number of experiments of this kind. Lately, M. Legros informed us that he had tried constriction of the nerves by the aid of a ligature. All these tentatives have failed.

We have attempted these experiments, and, in addition, we have crushed the feet of frogs and rabbits. These animals died at various periods, but without exhibiting any signs of tetanus. At the moment when the experiment was performed energetic contractions of the injured foot were certainly observed, and there was even a little rigidity; but these phenomena lasted no longer than from a few seconds to a minute or a minute and a half. All the rabbits succumbed sooner than the frogs.

We have also irritated the nerves in the limbs of dogs, pinching them on three or four different occasions, and these two or three times a day. Here also there was evanescent contraction, which soon ceased after the irritation; the rectal temperature was scarcely affected, and these animals always withstood the experiments better than the others.

At the autopsiæ we constantly found a more or less extensive perineuritis, according to the duration of the irritation; the spinal cord was perfectly healthy.

In view of these results it was permissible to ask if frogs, rabbits, and dogs were not refractory to tetanus, and, indeed, we had never distinctly observed this disease in these animals. Therefore it was that we determined to experiment upon the horse, in which tetanus is relatively frequent after castration. If we hesitated a long time before commencing it was because we were obliged to throw the animal down, and for this reason the experiment was rendered very difficult.

To begin with, the plantar nerves in their metacarpal track were irritated by means of forceps; there ensued very powerful struggles, the animals were violently agitated, and yet there were no durable contractions; the rectal temperature was augmented from two to three fifths of a degree at the most.

In one instance the column of mercury ascended rapidly to  $42^{\circ}$ , and already we hoped we had attained our object, when we perceived an enormous fluctuating tumour on the haunch of the side on which the animal lay. There could be no doubt then that we had to do with an abscess. The autopsy revealed the presence of a vast effusion of blood extending deeply into the pelvis. There was no trace of pus, but the peripheral tissues were thickened and indurated, and formed a kind of shell to the sanguineous collection. This infiltra-

tion, at the same time serous and plastic, indicated an inflammatory processus, and sufficiently explained the considerable augmentation of temperature just mentioned.

Despairing of success from the employment of mechanical irritants, we thenceforward employed continuous currents.

At the commencement, a wire was passed through the metacarpal nerve of a horse; but this procedure is not good, for if resorted to during the first trials, in about two or three days the nerve was so altered that the irritation was not sufficient. It was to obviate this inconvenience that we adopted small plates bent at right angles and narrow where the bend was made; one part was introduced beneath the skin and rested on the nerve, while the other projected beyond the lips of the wound, which we took care to bring together by sutures; this assured better contact with the nerve, and allowed the apparatus to be attached.

The electrodes were hooked each time into the small opening that we had made in the external part of the plates. The two plates being placed, one above, the other below the plantar nerve, we caused in turns the current furnished by two or four of Bunsen's elements to be passed through it. In the latter case the pain was insupportable; the animal reared up on its hind legs, and threatened to fall. With two elements the pain was less acute and was supportable; but from time to time it caused very powerful contractions in the forearm and shoulder of the irritated limb; the animal was restless, made deep inspirations, and soon the whole of its body was covered with an abundant perspiration. In these conditions the rectal temperature was never raised more than a degree.

Such are the results obtained by acting directly on the nerves by means of mechanical and galvanic irritants. But though we have not succeeded, it does not follow that the hypothesis of the neurists is to be abandoned; we believe, on the contrary, that it is necessary to persevere in this way, and that other irritating agents should be sought for; perhaps different intermediate conditions may be required.

Before terminating, some MS. remarks relative to the prognosis and treatment of tetanus may be acceptable.

It is generally believed that the elevated temperatures in this disease depend upon the muscular contractions. Our opinion is entirely opposed to this, and, to begin with, these high temperatures are not the rule; there are cases of subacute or chronic tetanus in which the muscular contractions are very extensive, and nevertheless there is only noted, at the most, a temperature of  $38.1^{\circ}$  or  $38.2^{\circ}$ . It is remarkable that, if

the temperature be examined before and after the spasm, there is frequently no difference observed, or the column of mercury ascends but one fifth of a degree. The elevation of temperature, when it exists, should not be ascribed to the muscular contractions. The real cause is to be sought elsewhere, and we shall not be far wrong in attributing it to a lesion of the nervous centres. Indeed, high temperatures are met with in the most serious cases, when there are few, if any, extensive contractions; and if in the acute form elevated temperatures are the rule, it is precisely because these cases are nearly always fatal.

With regard to the lesion itself, we can only say that many times we have remarked that the spinal cord was congested, and that nuclear proliferation was evident. M. Bouchard has particularly verified these results in two cases of subacute tetanus, and he is of opinion—contrary to the principle established by Rokitanski—that this only occurs when the disease has lasted for a certain time. Moreover, if we do not always find alterations appreciable to our means of investigation, we have no right to conclude that there are no lesions. In our opinion, the disease commences by irritation of the peripheral nerves, and this irritation may remain there, or, on the contrary, be propagated to the nervous centres. If not very intense, the nervous centres are merely excited, there is but little elevation of temperature, and the patient may recover; but if the irritation be strong, then to this excitation is added a veritable alteration, the temperature rapidly rises, and there is a great chance of a fatal termination.

In a therapeutical point of view, we believe that neurotomy is still the most rational means that can be employed, but it must always be resorted to as soon as possible. Besides, the section should not be confined to one nerve, as has been recommended for a long time, but all the nerves of the limb should be divided. Our experimental researches on the section of peripheral nerves have peremptorily established the fact, that so long as a nerve remains intact in the limb the transmission continues to be made. In one of the notes presented to the Institute last year, we cited the case of a patient who, in consequence of a gunshot wound at the root of the thumb, gradually felt cramps increasing in the limb, accompanied by inordinate flexion of the hand on the forearm, and then on the arm; in a few days there was trismus. Section of the median nerve was practised at the middle part of the arm, but, so far from amending, the affection continued; the muscles of the trunk, until now un-

affected, became involved, and relief did not arrive until some days afterwards. The patient recovered, but we readily suppose that no one would credit this fortunate issue to the section of the median nerve. Note, in passing, that in this case the temperature, which was taken with much care, remained the same during the disease, and it was only slightly elevated; this supports the opinion we have emitted. Quite recently, M. Ollier has given us another fact which pleads equally in favour of our opinion. This case was also a gunshot wound of the thumb. When the patient had scarcely recovered, he asked to be allowed to go for a short walk; immediately on his return he was seized with painful cramps in the limb; a little later trismus set in. M. Ollier, who was called in on the sixth day after these accidents occurred, immediately divided the median nerve; as the pain persisted, some hours afterwards he cut the cubital nerve; and when there was no cessation the same day, he decided to divide the radial nerve. After this the man complained no longer of his limb; a notable amelioration appeared to be produced. We cannot say what might have occurred if all the nerves had been cut at the commencement of the affection, but this we can say, that the operation is not serious, as at the end of a few months there is a complete recovery of sensibility and motion; it is incomparably less grave than, and answers the same purposes as, the amputation proposed by Larrey, if only the sections are made as near as possible to the roots of the limbs in order to avoid the anastomoses.—*Société de Biologie.*

#### DEATH OF M. URBAIN LEBLANC.

IN the midst of her great misfortunes, France has sustained the loss of one of the most distinguished veterinarians she could boast of in recent times, and one whose presence and influence will be sadly missed, at least in Paris. M. Urbain Leblanc died during the unhappy events which have so troubled and distracted France, and though it is some months since that occurrence took place, it is only lately that we have been favoured with a sketch of his professional career, as portrayed by his friend and colleague in science, M. Bouley, in a funeral address delivered before the Academy of Medicine. As this distinguished member of our profession was personally well known to several veterinary surgeons on this side of the Channel, and as his writings and labours in science may be familiar to others who did not enjoy that privilege, we gladly transcribe the historical notice given us by M. Bouley.

“M. Leblanc has left a durable mark in his profession, by his conduct throughout a life which he had entirely consecrated to it, and with a fixity of idea and determination that never flagged. To comprehend and realise the value of this well-spent life, it is necessary to go back to the somewhat distant period when he entered upon his career. This was in 1814. Our veterinary institutions had not then been in existence more than fifty years, and if the first graduates from the schools had done much to continue and expand the work of the founder, still this work had not yet attained to more than its rough outline. By his natural disposition, M. Leblanc could not but associate himself in the efforts of those who had preceded him, and this he did with an ardour that age never chilled. Such as he was at the commencement, so we have always known him, even after fifty-five years' exercise of his laborious profession. Always active, even while wearing his long white hair, assiduous in the accomplishment of all his duties, present in body and mind at the meetings of all the societies of which he formed a part, intervening when the time came to discuss that which he was competent to do, and devoting to the registration of the observations he had collected, or the memoirs he had conceived, the few, very few hours spared to him by a practice that grew larger in proportion as he himself grew in public estimation.

“The list of the works we owe to M. Leblanc is an extensive one. During the long period of which I have spoken his activity was applied to every department of veterinary science—medical and surgical pathology, therapeutics, operations, the art of farriery, commercial jurisprudence, medical jurisprudence, sanitary police, hygiène, teaching, scientific and professional institutions—his mind embraced all.

“It is not here, nor in the frame of mind in which we now find ourselves at this time of a supreme separation (says M. Bouley), that it is possible to analyse the entire works of our learned confrère, so diversified and extensive are they; but I should like, in characterising them by their chief traits, to show what M. Leblanc was, to mark the aim to which his efforts tended, and to record the essential results that they have produced.

“I cannot better portray M. Leblanc than by saying that he was always for progress, and that he incessantly and persistently sought for it; and I hasten to add, that more than once he has been enabled to realise it by his own efforts. This solicitude, from which he never deviated, had been for him on many occasions a useful counsellor. It was this which first determined him to join in the editorship of the

*Journal Vétérinaire*, published at Paris by the Professors Dupuy and Vatel, and afterwards to continue it on his own account.

“The labour of medical journalism was that which was most compatible with the incessantly active life to which he was forced by his professional affairs. The periodical journal was as the register in which it pleased him to inscribe the facts of his extensive practice, and it allowed him to collect and make known a multitude of observations and memoirs which have benefited science.

“That which M. Leblanc has done with unflagging zeal for fifty years has been the means of exciting others, for he had a maxim—that each was for all, especially in medical science, and that it was the duty of every one to do his best to increase the common patrimony by making known, through the usual channels of publicity, all that might, in one’s own practice, possess an exceptionally interesting character. M. Leblanc did much himself in this way, and he also achieved much by his example and advice. How much that has been published in his journal would never have seen the light if those who produced it had not been stimulated and encouraged by him!

“This ardour for progress which animated M. Leblanc rendered him impatient of the inertia that he might observe in others, or the resistance they opposed to the realisation of his ideas. Thus it was that he was obliged to expend a large portion of his activity in struggles for the triumph of that which he believed to be, and which was in fact, often a good cause. Many pages of his journal are occupied by polemical discussions, in which the just limits of conscience and moderation were sometimes exceeded; but it must be said, in justification of M. Leblanc, that on the other side of the discussion he has frequently been replied to in too strong terms. If I recall at this time these old souvenirs which had long been effaced from the memory of M. Leblanc, it is only to afford me an opportunity of proclaiming how much those who contended with him mistook his character and intentions.

“It was not only by the establishment of a periodical journal, which he carried on for more than thirty years with all his energy, that M. Leblanc has contributed to the diffusion of professional knowledge; we are indebted to his unflinching initiative for the institution of the Central Society of Veterinary Medicine; and though his name is not inscribed among those of its founders, it was, nevertheless, owing to him that the society was constituted. It was he

who compelled all the recalcitrant spirits to yield and to accomplish—much against their will, perhaps—a good work, whose realisation he had pursued for a long time. It mattered little to him that he was undeservedly excluded when it was formed; he knew well that, with the claims he had acquired, the doors of the new society could not fail to be opened to him on the day when, conformably to its statutes, he should seek to be elected for admission amongst its members. He did not wait long; justice was rendered him, and from that time M. Leblanc became one of the most active coadjutors of this society, which he had certainly some right to regard as his work—a considerable work, truly, and which ought to have been for him an object of real satisfaction, as, during the twenty-seven years it has been founded, the Central Society of Veterinary Medicine has rendered to science and the profession most important services, through the labours of its members, and by those, which are produced under the instigation of its periodical meetings. Without M. Leblanc and his perseverance, this institution, already so fruitful of good results, would perhaps have been yet to be founded.

“It is no more than justice to attach to the name and the initiative of M. Leblanc the establishment of the Veterinary Mutual Aid and Provident Society of the Seine, of which he was the president. If it was not on his direct proposition that this society was founded, it was certainly under his inspiration, as for a long time previously he had prepared people’s minds for it by numerous publications, and even by an attempt which failed in a short time, though long enough to affirm by a good action the excellence of his principle. The idea was sown and fructified in due season, and M. Leblanc had the satisfaction of having assisted at its development, and to preside over it during the later years of his life.

“There was another object that he strove to accomplish with that constancy of mind which was one of the characteristic traits of his nature, but in this he was unsuccessful. He was desirous of obtaining for his profession the guarantee of a law analogous to that which assures to medical men the monopoly of their profession; and it was especially in the name of the public interest that he demanded a guarantee against those who, without any study, and frequently even without any aptitude, exercise without hindrance the profession of treating the diseases of the domestic animals. M. Leblanc spared neither time nor trouble in endeavouring to bring his project to a favorable issue, but all his efforts failed through the resistance of legislators; success escaped

him, but the gratitude of his colleagues is none the less due to him for all he did for them, and the care, thought, and energy he expended on their account in this matter.

“If we now examine the share that M. Leblanc took in the scientific movement of his time, we shall see that it is considerable. His proper work is marked by the imprint of observation; it was among his patients that he every day gathered together the scattered elements, to publish them separately as he acquired them, or collectively, according to their affinities, in the *Memoirs*.

“To him belongs the merit of having largely contributed to the introduction, into veterinary practice, of all the methods of observation with which modern science has enriched itself. Before his time auscultation, percussion, mensuration, the examination of the blood, and the employment of the microscope, were not resorted to by veterinary surgeons. With Delafond, M. Leblanc shares the honour of having initiated these new methods and rendered them familiar. There was not a new idea produced in science that he did not lay himself out to study, that he did not make the object of experimental verification, or that he did not seek to apply to the branch of the art he cultivated. Thus it was that he commenced his researches, experiments, and works on the contagiousness of glanders, on iodine injections into serous cavities, on the diseases of the heart, on tracheotomy, on the cattle plague, on rabies, on the age of anatomical lesions, &c. I name these by chance, and abridge the list, for the recapitulation of all the subjects of his studies and writings would be too long.

“There is another merit which must be acknowledged and remembered, in order to render that homage to his memory which is due to M. Leblanc; this is the costly abnegation with which he placed the means for conducting researches at the disposal of experimenters; rooms, instruments, assistants, and even animals for experiment—all he furnished with the greatest liberality, only too happy to aid in the advancement of science by this disinterested concurrence.

“Rayer found in him a devoted coadjutor, when, after having made the great clinical discovery of the transmissibility of glanders from the horse to mankind, he furnished the experimental proof of this by re-transmitting to the equine species the disease that had been contracted by man.

“Before Rayer, Trousseau (to cite only the most celebrated) owed to the concurrence of M. Leblanc the power of making himself known, by the first works which they accomplished in common; he found in him not only a coadjutor, but a

devoted friend whose services he never forgot, for he loved to recall, in the days of his prosperity, how much the house of Leblanc had succoured him at his entrance into professional life.

“ This career of M. Leblanc, so actively and so usefully employed, should surely well merit his occupying in due time one of the places at the Academy of Medicine reserved for the representatives of veterinary science. This was his ambition, and it was perfectly legitimate ; he had to struggle to realise it, but this striving was as natural to him as the determination to succeed, and, without allowing himself to be discouraged by the opposition he encountered at several successive meetings, he maintained his candidature, and finished by making it prevail. This was justice, and his academic career well proved it to be so. During the whole period of nearly twenty years that Leblanc belonged to this assembly, there was not a discussion on any subject on which he was competent to speak that he did not take a share in with all the authority of his knowledge and his vast experience.

“ M. Leblanc belonged to all the veterinary societies in France, and a large number of those of other countries. The Acclimatisation Society and the Society for the Prevention of Cruelty to Animals reckoned him among their members, and, notwithstanding the occupation that the most extensive practice in Paris gave him, he still found time enough to be assiduous at their meetings.

“ Notwithstanding the seventy-three years of age to which he had attained, M. Leblanc was, until a few months ago, full of that greenness which should have permitted him still to reckon upon long days ; but the accident to which he was the victim at this time crushed his hopes. Nearly killed, he nevertheless contrived to get about again, so vigorous was his constitution ; but the blow he had received was an insurmountable one, and after surviving a few months, during which he was quite changed from what he used to be, he suddenly died.

“ The ancients said that when death took away a man in his youth, it might be considered a favour from the gods. At the sad period in which we live, one is almost tempted to say that the death which seized Leblanc when in the full possession of all his faculties, had been sent through the favour of Providence, to spare him the anguish of the dreadful spectacle that surrounds us. He who had so patriotic a soul has happily been exempted from beholding Paris a prey to the greatest indignities, and witnessing the sanguinary drama which has so stained our history.

“ But if those who depart in such moments are less to be pitied, those who remain do not the less experience the great and supreme pain of the separation without hope of return. We all share in this pain, so acutely felt by the family of M. Leblanc; but that which should be a consolation to them in their misfortune is the honorable name he has left behind him, and the memory of a life so completely consecrated to the accomplishment of good.”

We have but little to add to the generous and well-deserved tribute paid to the worth of the deceased by M. Bouley. It is sufficient to point to the high scientific position of the eulogist, the place in which this discourse was delivered, and the assembly who listened to it, to be aware that the loss veterinary science has sustained in the death of M. Leblanc is one of no ordinary kind.

While deeply sympathising with those on whom this bereavement, socially or scientifically speaking, will weigh heavily, it is yet allowed us to cherish his name in the multitude of valuable scientific facts which he had treasured up during his long and laborious life; but more especially must his memory be held in reverence for the excellent and, alas! that we should have to say it, somewhat rare example of unwearied industry and zeal in advancing to the utmost of his powers the scientific position and social status of the profession he loved so well.

Though well known in scientific literature by the many able and interesting articles he published on almost every subject connected with comparative pathology, yet perhaps on this side of the Channel we are more familiar with his name in connection with his editorship of the *Clinique Vétérinaire*, and also with the splendidly illustrated work he published in conjunction with the celebrated Trouseau on the surgical anatomy of the domesticated animals. Nearly, if not quite, the last of his literary efforts was the publication of a little pamphlet *On the Necessity of Instituting a Veterinary Sanitary Service for the whole of France*, in which, by lucid arguments and a series of well-compiled analytical tables relating to enzoötic diseases in the various departments of that country, he conclusively demonstrated the great advantages that must accrue from a proper sanitary organization by the Government, in which departmental and district veterinary surgeons would be the chief agents.

## ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF THE COUNCIL, HELD  
OCTOBER 4TH, 1871.

(OFFICIAL REPORT.)

The PRESIDENT in the chair.

PRESENT:—Messrs. T. D. Broad, J. C. Broad, T. Burrell, H. J. Cartwright, J. Cowie, W. Field, G. Fleming, Gowing, Greaves, Harpley, Hunt, Lowe, Moon, Naylor, Owles, Silvester, Wilkinson, Withers, and the Secretary.

*The Secretary* read the notice convening the meeting.

On the minutes of the last quarterly meeting being read,

*Mr. Wilkinson* asked whether any further information had been received from Mr. Prentice.

*The Secretary* stated that no additional information had yet reached him.

*Mr. Lowe* suggested that if the minutes were signed as they stood they would decide the matter as to which Mr. Wilkinson had given notice of motion, because they stated that a notice had been sent to Mr. Prentice to the effect that a candidate was not eligible for re-examination unless he produced a second certificate.

*Mr. Wilkinson* said that such was really the law of the Council. The principle was adopted at the last meeting; but to make it a strictly legal proceeding they were obliged to suspend the notice for three months. It was for the Council now to decide whether such an addition should be made to the bye-laws or not.

The minutes were then confirmed.

A letter was read from Mr. John Bretherton, of Liverpool, acknowledging the receipt of a certificate in lieu of his lost diploma.

A letter was read from Mr. Jeeves, of Belfast, inquiring whether James M'Court, of Belfast, was a member of the Royal College of Veterinary Surgeons, and whether any examinations in connection with the Royal College of Veterinary Surgeons were held in Edinburgh prior to 1843.

*The Secretary* reported that both these questions had been answered in the negative.

A letter was read from Mr. R. H. Dyer, M.R.C.V.S., of Limerick, inquiring whether O'Sullivan Keyes was a member of the College. Mr. Dyer was informed, in reply, that the name did not appear on the Register.

A letter was read from Mr. John Webster, of Riccall, addressed to Professor Spooner, in which he desired to be

informed whether he was not a member of the College, having attended as a pupil.

*The Secretary* stated that he had replied to Mr. Webster stating that, as his name did not appear in the Register, it was evident he was not a qualified member of the Royal College of Veterinary Surgeons.

A letter was read from Mr. W. H. Hooper, of Cheltenham. Also one from Mr. Paul Wray Hayden, of Melbourne, stating that he had been shipwrecked on a voyage to India, and had lost his diploma. The date of the diploma was 1846. Mr. Hayden asked whether a certificate that he was a licensed member of the profession could be furnished to him.

*Mr. Wilkinson*: It is a case like the one decided at the last quarterly meeting?

The signature to the letter of application was compared with Mr. P. W. Hayden's signature in the Examination Book, for the purpose of identification, and on its appearing to the satisfaction of the Council that the signatures were those of the same person, it was resolved that Mr. Hayden be furnished with a certificate similar to those granted in allied cases.

A letter was read from Col. Fitzwygram, of the 15th Hussars, who holds the Highland and Agricultural Society's Certificate, stating his wish to become a candidate for the diploma of the Royal College of Veterinary Surgeons, and also one from Mr. John Gillespie, to the same purport. Mr. Gillespie's communication set forth that he held the Highland and Agricultural Society's Certificate of 1856, and, having purchased a business in the city, he was desirous of having the diploma of the College as soon as possible.

*Mr. Wilkinson* stated that Mr. Gillespie was entitled to come before the Board for a nominal examination. It was, however, for the Council to decide whether they would admit him to an examination at once, or whether he must wait until Christmas.

*Mr. Lowe* inquired whether there was any precedent for the proposed course.

*Mr. Wilkinson*, in explanation, said that in order to bring about a kindly feeling between themselves and those gentlemen in Scotland holding the Highland and Agricultural Society's Certificate only, it was arranged by the Council that the bye-laws should be suspended so far as to admit of these gentlemen becoming members of the College with a merely nominal examination.

It was then arranged that the examination should take place on that day fortnight.

A notice was read from Mr. Armatage to the effect that the annual meeting of the Central Veterinary Medical Society would be held on Thursday, October 5th.

*The Registrar* reported that he had been subpoenaed to attend at the Assize Court, Shrewsbury, on July 28th, in the case of *Pitt v. Clayworth*, to prove that Mr. Pitt's name was not entered on the Register, and that he attended accordingly.

#### *Finance Report.*

The report of the Finance Committee was read; also the quarterly balance sheet.

*Mr. Silvester* moved that the report and balance sheet be received and adopted.

*Mr. Cartwright* seconded the motion, which was agreed to.

Cheques were ordered to be drawn for current expenses.

The *report* of the House Committee was also received and adopted.

#### *December Examinations.*

It was arranged that the examinations should be held in the week preceding Christmas Day, the particular day or days to be named by the professors.

*The Secretary* asked, with regard to the practical examination, whether it was to be conducted as in April last.

*Mr. Wilkinson* said that the pupils who would come up at the Christmas examination were gentlemen most of whom had been examined before and had already paid their fees for the practical examination, consequently holding a second practical examination of such students would cause an additional expense to the College. The College lost money at the last examination, when the full fees were paid.

*Mr. Hunt* presumed that pupils would have again to go through the practical examination provided they did not pass the previous one to the satisfaction of the examiners. If they had passed it satisfactorily, it was hardly necessary to put them through a similar examination again. If it was not so, he did not see how they could give up the practical examination, which was most important, and if the examination had not been gone through satisfactorily the pupils must undoubtedly be examined again, whether it entailed a loss on the College or not.

It was agreed that the practical examination should be added to the list of the Christmas examinations. The arrangement of details was left to the Secretary.

*Mr. Gowing* expressed his regret that the Secretary of the

Central Veterinary Medical Society had omitted to renew the application for the use of the College House for the ensuing year. He thanked the Council for the use of the board-room in the past, and, as a member of the Council, he would move "That the board-room be placed at the disposal of the Central Veterinary Medical Society for the ensuing twelve months, and that its ordinary general meetings be held on the days succeeding the quarterly meetings of the Council."

*Mr. Fleming* seconded the motion, which was agreed to.

*The Secretary* suggested that some gratuity should be given to the servants for the extra cleaning of the rooms, &c.

*Mr. Fleming* said that the Society would be quite willing to pay all expenses incurred, and they would attend to the suggestion.

*The President* having announced the termination of the quarterly meeting of the Council, *the meeting was made special.*

*Mr. Wilkinson* then moved that an addition be made to Bye-law 33 to the following effect:—"That no rejected pupil shall be eligible for re-examination unless he produces a certificate of having received further instruction at one of the recognised schools."

He had already explained the reason for this addition to the bye-law, and it would therefore not be necessary to detain the meeting by going into further explanation.

*Mr. Silvester* seconded the motion, which was agreed to.

*The President* announced that a special meeting of the Council would be held on that day fortnight, in order to confirm this alteration of the bye-law.

Cheques were ordered to be drawn for the examiners' fees and also the insurances payable at Christmas.

The Council then adjourned.

SPECIAL MEETING OF THE COUNCIL, HELD OCTOBER 18TH, 1871, FOR THE PURPOSE OF CONFIRMING THE ALTERATION OF BYE-LAW No. 33.

PRESENT:—Messrs. J. C. Broad, Burrell, Cowie, Field, Harpley, Lowe, Moon, Pritchard, Wilkinson, Withers, and the Secretary.

On the motion of *Mr. Harpley*, seconded by *Mr. Withers*, Mr. CLEMENT LOWE, Vice-President, took the chair, in the absence of the President.

The minutes of the quarterly and special meetings, at

which the alteration of the bye-law was adopted, were read and confirmed.

Letters were read from Professors Brown and M'Call, Messrs. Balls, Naylor, and Owles, regretting their inability to attend the meeting.

*Mr. Wilkinson* drew attention to the statement made at the last meeting of the Council as to the eligibility of a rejected student appearing before the Court for re-examination, unless he brought proofs of having subsequently attended one of the recognised schools so as to acquire a greater amount of information. He was of opinion that it was not in accord with the bye-law.

The amended bye-law having been read, it was moved by *Mr. Wilkinson*, and seconded by *Mr. Cowie*—"That the alteration of Bye-law No. 33, made at a special meeting of the Council, held October 4th, be now duly confirmed."—Carried.

The amended Bye-law was then duly signed and sealed in accordance with the provisions of the Charter.

*Mr. J. C. Broad* gave notice of motion to consider the propriety of continuing the Christmas examinations, and also to raise the examination fees.

The Council then separated.

## CENTRAL VETERINARY MEDICAL SOCIETY.

(OFFICIAL.)

THE annual general meeting was held on Thursday, the 5th October, at 10, Red Lion Square, for the purpose of electing officers and Council for the ensuing year. The President, George Fleming, Esq., F.R.G.S., M.R.C.V.S., &c., occupied the chair.

The report, which was read by the Secretary, embodied a very satisfactory retrospect of the Society from its establishment, fifteen months ago. The meetings were said to have been generally well attended, and considerable interest to have been displayed in promoting the objects for which the Society had been organized. The list of Fellows includes about fifty members of the profession residing in London and its suburbs, together with country practitioners, some of whom were accustomed to make a journey of upwards of thirty miles to attend the monthly meetings. The Council referred with extreme pleasure to the grant of the use of the Board Room of the Royal College of Veterinary Surgeons by the Corporate Body, and believed that the kindness will be duly appreciated by the Fellows, as a gratifying acknowledgment of the Society and its objects. The report also announced that a

diploma of fellowship had been adopted. At a later period of the evening a copy was handed to the meeting for examination, and highly approved of. The financial position of the Society, as shown by a statement of accounts, appeared to be highly satisfactory, the balance in the hands of the Treasurer being upwards of £65.

The following is the list of officers and Council appointed for the ensuing year:

President: G. Fleming, F.R.G.S., &c. (re-elected). Vice-Presidents: J. C. Broad, F. J. Mavor, T. W. Gowing, C. Lowe (re-elected). Council: A. Mavor, F. Jarvis, J. Rowe, Jun., E. Woodger, T. S. Price, A. Broad, W. Clark, T. Burrell, Jun., J. Woodger, Jun., W. Field, Jun., W. Hunting, T. W. Gowing, Jun. (re-elected). Treasurer: J. Woodger, Sen. (re-elected). Secretary and Librarian: G. Armatage (re-elected).

The first meeting of the Society in the coming session will be held on Thursday, November 9th, when the Fellows will take into consideration the means of carrying on certain experimental observations. Mr. F. J. Mavor having some propositions to make relative thereto, it is hoped a commencement will be definitely made in various branches of investigation, which as a primary object the Society has from the first set forth.

It was also decided that the meetings should be continued monthly as hitherto, when an opportunity will be presented for the usual discussion of matters relating to veterinary science and the examination of morbid specimens contributed by the Fellows.

GEORGE ARMATAGE, *Secretary.*

### THE COLEMAN PRIZE.

THE award in connection with the Coleman Prize having been made by the Governors of the Royal Veterinary College on the report of the Professors of the merits of the papers sent in, the presentation of the medals and certificates took place at the close of the introductory lecture at the College on Tuesday, October 3rd. Professor Spooner, as Principal, availed himself of the occasion to address to each of the successful candidates some very appropriate and encouraging observations, which were highly appreciated by the entire assemblage.

#### AWARD.

Silver Medal	.	.	Mr. D. H. Tombs, Brighton.
Bronze Medal	.	.	„ Thos. Colley, Conisborough, York.
1st Certificate of Merit		„	William Bromley, Lancaster.
2nd Certificate of Merit		„	William Jackson Moore, London.

## COLLEGIATE MONITORS.

THE competitive examination, written and oral, for the office of Monitor at the Royal Veterinary College was commenced on Saturday, October 14th. The number entering the lists was larger than on former occasions, and the contest well sustained. The following gentlemen were ultimately selected.

The names are given in the order in which they stand in the College Register of Pupils.

Mr. Iles Matthews	.	.	Woolwich.
„ W. H. Hinde	.	.	Brockdish, Norfolk.
„ T. Briggs	.	.	Prestwich, Manchester.
„ C. Middlehurst	.	.	Liverpool.
„ M. P. Greene	.	.	Corbally, Co. Clare.
„ H. Collett	.	.	Carter's Green, West Bromwich.
„ H. J. Hancock	.	.	Uxbridge.
„ O. S. Hills	.	.	Leamington.
„ Peter Avis	.	.	Uckfield, Sussex.

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## MATRICULATION EXAMINATION.

THE following gentlemen have been admitted students of the Royal Veterinary College on the report of Dr. Jacob, Dean of the College of Preceptors, and President of the Examination Committee. The report further stated that out of the number presenting themselves five had failed to pass the examination test.

Mr. L. Butters	.	.	Percy Street, Liverpool.
„ O. T. Slocock	.	.	Upton Court Farm, Slough.
„ C. R. Anderson	.	.	Middlesborough.
„ J. T. King	.	.	Botley, near Southampton.
„ F. W. Bolton	.	.	Crescent, London Road, Ipswich.
„ B. Bowker	.	.	Stoneclough, Manchester.
„ D. Spilman	.	.	Ripon.
„ S. L. Hames	.	.	Leicester.
„ H. Bird	.	.	Bolton.
„ R. Morgan	.	.	Abergavenny.
„ F. Case	.	.	Cockthorpe, Wells, Norfolk.
„ G. Smith	.	.	Hanley, Staffordshire.
„ T. Williams	.	.	Barnard's Green, Worcestershire.
„ J. Harker	.	.	West Derby, Liverpool.
„ H. Barnes	.	.	West Derby, Liverpool.
„ T. Goodall	.	.	Melton Mowbray.
„ J. Sharpe	.	.	Crowle, Lincolnshire.

Mr. H. T. F. Mullinex .	Kentish Town Road, London.
„ W. H. Shorthouse .	Great College St., Camden Town.
„ C. Oldfield . . .	Market Street, Edgware Road.
„ J. R. Ward . . .	Leicester.
„ F. Proctor . . .	Manchester.
„ W. Lawrence . . .	Canterbury.
„ C. F. Hogben . . .	Hythe, Kent.
„ J. A. Lipscomb . . .	Lewes.
„ S. Durham . . .	Dublin.
„ P. A. Lawlor . . .	Dublin.
„ G. Rugg . . .	Meopham, near Gravesend.
„ T. Chambers . . .	Fakenham, Norfolk.
„ H. Mullinger . . .	Park Road, Knightsbridge.
„ T. J. R. Endle . . .	Plymouth.
„ R. McNae . . .	Dumfries.
„ R. Derbyshire . . .	Fennell Street, Manchester.
„ S. Worsley . . .	Pendlebury, Manchester.
„ F. Petchell . . .	Magdalen, Lynn, Norfolk.
„ H. Davis . . .	Hertford.
„ W. T. Rendall . . .	Lowick Bridge, Carnforth, Lancashire.
„ R. F. Shillingford . . .	Caversham Road, Kentish Town.
„ W. D. Guest . . .	Hanley Castle, near Worcester.
„ J. Miller . . .	St. George's Square, Portsea.
„ A. J. Milne . . .	Army Service Corps, Woolwich.
„ J. S. Menzies . . .	Prescot, Lancashire.
„ B. Y. T. Raymond . . .	Avenue Terrace, Cowley Road, Oxford.
„ J. Crotty . . .	Kildemo, Co. Limerick.
„ N. Bruce . . .	Old Street, London.
„ A. H. Thomas . . .	Swan Terrace, Stockwell Road, London.
„ H. Hicks . . .	Metheringham, Lincolnshire.
„ J. Marshall . . .	Morton, near Manchester.
„ W. Lewis . . .	St. Alban's.
„ J. G. Cross . . .	Shrewsbury.
„ J. G. Phillips . . .	Maidstone.
„ J. Stephens . . .	Tregony, Cornwall.
„ T. Mackenzie . . .	Goldsmith Square, Stoke Newington.

The following were also admitted pupils on the production of certificates :

Mr. B. E. de Lateur . . .	London ; certificate from Edinburgh University.
„ F. W. Bolton . . .	Watford ; certificate from Pharmaceutical Society.
„ John Ward . . .	Leicester ; ditto.

## Veterinary Jurisprudence.

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NORWICH GUILDHALL.

SATURDAY, SEPT. 30TH.

(*The Mayor in the Chair.*)

CONVICTION FOR EXPOSING DISEASED SHEEP.

JOHN WALPOLE, of Antingham, farmer and dealer, was summoned for unlawfully exposing in the Cattle Market, on the 2nd Sept., fifty sheep infected with a contagious disease, to wit, sheep-scab, whereby he had incurred a penalty of £25. Mr. Mendham supported the information.

*Mr. William Smith*, veterinary surgeon, said he was inspector of the Norwich Cattle Market, and on September 2nd saw there a number of sheep belonging to John Walpole. There were fifty sheep affected with the disease called "scab;" they were all more or less affected. A large number were decidedly affected, some not so much. At least ten sheep were badly diseased. Witness had a conversation with defendant and told him the sheep were decidedly affected with "scab," and defendant replied that they were part of a flock that had had the scab, but had been pronounced sound by the inspector of his district. Witness asked how long that was ago, and defendant said he could not recollect exactly, but they had all been "dressed" for it and he thought they were well. Witness told him that it was against the law to expose such sheep, and advised him to send them to a slaughter-house, and have them killed. Defendant asked if he sold them whether they could be killed at any slaughter-house, and witness told him that they must not be taken along any of the roads. Some person came up just then and wanted to buy the sheep, when witness told him that unless he slaughtered them at the nearest slaughter house he had better take them to the place whence they came and give notice to the police of the district. At least ten sheep were very much affected with scab, and one especially was very bad. The others were also affected, and some were also swarming with maggots. In reply to the Bench, witness said scab was a local and not a constitutional affection, and sheep infected with scab would not be unfit for food.

*Mr. G. H. Plumbly*, veterinary surgeon, of Skeyton, said he knew defendant, and was on Norwich Hill on Saturday, September 2nd. He saw defendant and Mr. Smith there, and his attention was called to a quantity of sheep belonging to defendant. These sheep were affected with scab. He could not say how many had

the disease, but saw one sheep that was badly diseased. Had defendant exercised reasonable diligence he must have discovered the fact that the sheep were suffering from scab. More than six months back witness had treated sheep belonging to the defendant for the disease. In reply to the Bench, witness said one sheep affected with scab might have got amongst the flock without defendant's knowing it. In answer to defendant, witness said he knew that a man named Plummer had been employed by defendant to dress the sheep. He had six months back officially returned these sheep as sound. In re-examination witness said a man of defendant's experience ought to have detected scab as soon as he saw it. It was impossible to make a mistake concerning the sheep. Witness saw one very badly affected. If the sheep had only been suffering from "fly" the symptoms would have been different.

*Mr. Robert Gillett*, farmer, of Antingham, saw Mr. Smith and some sheep on the Castle Hill on the 2nd inst. He ascertained that the sheep belonged to Mr. Walpole. There could be very little doubt about the sheep being affected with scab. They were decidedly so affected. Witness said no man could see the sheep without being convinced they were suffering from scab. In reply to defendant, witness said a sheep affected with scab would pluck its wool, but a sheep affected with maggots or flies would not do this. If a sheep was badly "lousy" it would bite its wool; but any man who had once seen scab must know it again at once.

Defendant called *James Storey*, who said he remembered defendant reporting these sheep some time about Christmas last. Witness went to Plummer's for defendant, and told him to dress the sheep and cure them. Plummer did cure the sheep, and they were pronounced sound somewhere about last May. Witness had been in the habit of seeing these sheep every day, but he was not aware that there was anything the matter with them. In cross-examination, witness said he was farming bailiff to defendant. Defendant bought the sheep off the farm, allowing 58s. a piece for them.

In defence *Mr. Walpole* said the sheep were pronounced sound, and he did not know that they had anything the matter with them. He had slaughtered the sheep in accordance with Mr. Smith's instructions.

The magistrates having retired to consult,

*The Chairman* said the Bench considered the case fully proved as to one sheep. There were doubts respecting the others, and therefore the penalty would be reduced to £5, with £3 2s. costs.

## WATERING OF CATTLE AT RAILWAY STATIONS.

IN the Court of Quarter Sessions for Gloucestershire, the Great Western Railway Company appealed against a decision of the Cirencester magistrates in having fined them for not having provided a due water supply for animals at the Cirencester Station. Cirencester is on the Cotswolds, and has a very large sheep market, with also a good supply of cattle. On the day named, 1500 sheep were sold in the market by an auctioneer, and of these, it was said, 1000 were sent away by rail.

Professor Brown, Vice-President of the Royal College of Veterinary Surgeons, and one of the Chief Inspectors under the Privy Council, made a report to the Government as to several principal stations on the Great Western Line, and included Cirencester, as having no provision for watering cattle; and the result was that Cirencester was included in the next Order of the Privy Council. But no alteration was made, and it was now contended that the station had ample accommodation, and that the respondents ought to have proved that the provision was not to the satisfaction of the Privy Council. The magistrates decided that due provision had not been made, and that the conviction must be confirmed. The point is new, and a case for the Queen's Bench was granted.

## ARMY APPOINTMENTS.

WAR OFFICE, PALL MALL; *Sept. 26th.*

SECOND REGIMENT OF DRAGOON GUARDS.—Veterinary Surgeon Alfred Adrian Jones, from Royal Artillery, to be Veterinary Surgeon, *vice* Veterinary Surgeon, First Class, T. P. Gudgin, promoted, September 27th.

SIXTH DRAGOON GUARDS.—Veterinary Surgeon John Ashworth Rostron, from Royal Artillery, to be Veterinary Surgeon, *vice* Veterinary Surgeon, First Class, F. F. Collins, promoted, Sept. 27th.

VETERINARY DEPARTMENT; *Oct. 6th.*

Veterinary Surgeon of the First Class, William Partridge, from the Royal Artillery, to be Staff Veterinary Surgeon.

## MISCELLANEA.

## MAGISTERIAL DISCUSSION RELATIVE TO THE EMPLOYMENT OF THE POLICE AS CATTLE-INSPECTORS.

At the General Quarter Sessions of the Peace for the County of Monmouth, which has just been held at the Town-hall, Usk; S. R. Bosanquet, Esq. (Chairman), presiding, the following discussion took place relative to the employment of the police as inspectors under the Contagious Diseases (Animals) Act.

*Mr. A. D. Berrington* called the attention of the Board to the serious expense the county was incurring in the matter of the Contagious Diseases (Animals) Act. This quarter certainly the bills were reduced to £250, which was at the rate of £1000 a year, and they remembered that last year the expense was at the rate of £2000 a year. At that time there appeared to be a difficulty in imposing duties upon the police with respect to the disease. In Gloucestershire, Somersetshire, and other counties, the matter had been entrusted to the police, but a letter had been received from the Home Office stating that the county police were not to be employed in any other duties except those relating to their police duties. The difficulty now appeared to be removed. The Clerk of the Peace had the copy of a letter which had been addressed to the Home Office by the Clerk of the Peace for the County of Oxford in which it is now stated that there was no objection whatever to the county police being employed under the Act, provided the Chief Constable is of opinion that it does not prejudicially affect their other duties.

The Clerk of the Peace read the letter.

*The Chairman* said that there was another difficulty not mentioned by *Mr. Berrington*. The Treasury pay a quarter of the cost of the police, and they might reasonably object to their employment in this manner, as it would increase their number and so increase the quarterly payments to them.

*Mr. Berrington* begged to move that the matter be referred to the Executive Committee, and that they be requested to take the whole matter into their consideration at an early date, and endeavour to make arrangements for the transfer of the management of the Act to the police if they think it desirable. It would save the county a  $\frac{3}{4}$ d. rate if it could be done.

*The Chairman*: The police must have the power of calling in veterinary surgeons.

*Mr. Berrington*: That would be a matter for the executive to arrange.

*Mr. John James*: You must bear in mind that application is made for additional duties upon the police at the very time that you receives application from many parts of the county for an increase of police.

*The Chairman*: I think there can be no objection to refer it to

the Executive Committee. There are new powers allowed, and you had better consider the exigencies of them.

*Mr. Kennard* begged to second *Mr. Berrington's* proposition with regard to the police. He found that the Act had been carried out by the police in Gloucestershire, and the saving had been enormous. They had now to bear an expense in this county of £1000 a year, and most likely that would be exceeded. In Gloucester, he believed, they had reduced the annual cost from £1000 to £80, and the cost had been reduced in a similar manner in other places.

*Mr. Octavius Morgan* said in the one case they had to make an entirely new organization. In the other they had an organization which worked well, and it would be better to employ that body than to employ a second organization (hear, hear). They had better increase the number of police to do the work, and do it well, than have a new organization, which would cost considerably more. It depended entirely upon the opinion of the Chief Constable, whether it would interfere with the duties of the police or not.

*The Chief Constable* said, that at present the whole of the duties connected with preventing the removal of animals were performed by the police, but they could not at present certify whether the sheep had the scab or not. He believed there were only two policemen in the force who could do the duty. In the counties referred to by *Mr. Berrington* the disease of scab was not so common as it was in Monmouthshire. Moreover, the police in those counties were much stronger in number in proportion to the population than they were in Monmouthshire. The superintendents were more numerous, and, therefore, they could perform the duties. With respect to the scab in this county, he respectfully submitted that the Court could give what orders it liked; the police would obey those orders, but the duty would not be done, simply because of its impossibility.

*Mr. Relph* moved that the rearrangement of the districts be taken into consideration at the same time. This was ordered.

*Chief Constable's Report.*—This report stated that during the year forty persons had been proceeded against under the Contagious Diseases (Animals) Act, and thirty-eight fined or ordered to pay costs.

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#### TESTIMONIAL TO SIR JAMES PAGET.

We extract the following from the *Medical Times and Gazette*:—  
 “SIR,—The profession will learn with unmixed satisfaction that it is in contemplation to present a testimonial to Sir James Paget on his elevation to the baronetcy. It is very honorable to St. Bartholomew's Hospital that this proposal should have emanated from thence; but, sir, the scientific world recognises Sir James Paget as belonging to it and to the profession at large, and I am persuaded that the profession at large will gladly endorse this recognition if opportunity be conceded it to participate in the move-

ment. The main question which naturally presents itself is—What form should such a testimonial most appropriately take? Passing over the familiar and well-worn expedients of a piece of plate or a portrait, as less worthy emblems of a feeling like this, would it not be more in unison with the character of the recipient, as well as more distinctly expressive of their appreciation of it by the givers, if a Paget Fund were established in connexion with the British Medical Benevolent Fund (of which Sir James Paget is already a trustee, and his sympathy with its purposes so thoroughly known), in order to found one or more annuities for ever, for the support of aged and destitute members of the profession, or their widows, to be chosen from the most deserving and necessitous in the same careful manner as that in which the other annuitants supported by that institution are at present selected; or in any other way which Sir James might himself suggest?

Will you permit me, through your valuable aid, to submit this for general consideration; and whether it would not for all time enhance the honour we desire “to render to whom honour is so justly due,” to identify with it a help in need to the less successful of our brethren in the race of life?

“I am &c.,

H. F. S.

*To the Editor.*

## OBITUARY.

WE deeply regret to have to record the sudden death, on September 24th last, of Mr. Samuel Solly, F.R.S., Vice-President of the Royal College of Surgeons, &c. &c. Mr. Solly was for many years one of the Examiners to the Royal Veterinary College, and on the obtainment of the Charter of Incorporation he held a similar appointment to the Royal College of Veterinary Surgeons. In these positions Mr. Solly won the respect and esteem of a large proportion of the members of the profession. His loss is much regretted by a large circle of friends—professional, social, and domestic. Mr. Solly had just attained the not very advanced age of 66.

We have likewise to record the death of Mr. Alfred Williams, M.R.C.V.S., of Kington, Hereford. His diploma bears date May 21st, 1845.

## ERRATUM.

In Mr. Macgillivray's reply to Mr. Simpson, published in our last number, for “a few,” line 11, page 712, read, “but few if any.”

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