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Communications and Cases.

"UMPIRE."—THE MOUTH OF THE TWO-YEAR OLD.

A Communication from W. J. Goodwin, M.R.C.S. and V.S., Hampton Court.

Dear Sirs—I offer no excuse for occupying your pages with a sporting subject, as the members of the Veterinary profession may at any time be called upon for a decision connected with it, which always involves them, when it occurs, in a serious responsibility, and is often fraught with grave importance to the interests of the Turf.

The unprecedented circumstance of a colt foaled in America, and although with some English blood in his veins, is still an American bred one, being upon his merits, first favorite for our next year's "Derby," necessarily excites a degree of surprise and unfounded suspicion which always accompany, and particularly in racing affairs, any unlooked-for event. It is, however, admitted that Mr. Tenbrock has done all that is required of him to insure the qualification of his colt "Umpire," for the numerous engagements in which he is entered in the racing calendar. And however we might feel it to be a national humility to be beaten, and upon our own "dunghill," yet Mr. Tenbrock enjoys so high a character here, and has already proved himself to be so formidable a rival, that should he succeed in such a triumph, we should not regret that it has fallen to the lot of one who has so spiritedly, at great risk and expense, brought his country's horses here to contest their prowess with ours.

If, however, our great national races are to be open to the competition of the wide world, it may be found necessary that we should at least possess the means of ascertaining that we are competing upon equal terms; that is, with animals of the same age: and, although of late years considerable attention has been paid to the mouth, as a criterion of age, yet I am sure you will allow that it is not in the power of the ablest man in or out of our profession, upon examining the mouth of a colt running as a two-year old in 1859, to certify whether such animal were foaled either three months before or three months after January 1, 1857. Hence the necessity, I maintain, of our being in a position to feel assured that horses brought here from the United States, or elsewhere, are foaled at the same season of the year as we breed our own. Let us know that if we are to have free trade in racing, that we race *cæteris paribus,* and then, I believe, that we shall have no reason to be discontented with any amount of it.

So long since as the year 1840, I ventured, in a letter to *Bell's Life* to direct the attention of members of the Jockey Club to the circumstance, "that the mouth could not at all times be considered an *unerring* criterion of age;" and, although this opinion has since proved too true, "The Queen of Cyprus," to wit,* it was purposely contorted into my having stated that the mouth was "NO criterion of the age;" and upon the celebrated trial of the "Running Rein" case, I was cited by the learned council as being ready to be called to make a declaration to the same effect. Fortunately for him, I was not called as a witness, or he would soon have discovered his mistake; but I had to encounter the absurdity of the late Lord George Bentinck's stating that he believed that I wrote the said opinion in 1840 to favour the fraud which was attempted five years afterwards! This did not distress me much, for it was too ridiculous to require refutation.

In the communication alluded to, I suggested that some steps should be taken by the Jockey Club to secure our three great national races from fraudulent entries, and I proposed that a registrar should be appointed, and authorised to exercise a control upon circumstances of so much importance. Since then, a yearly return has been published in the Book Calendar of such foals as breeders voluntarily furnish a list of to the publishers; but my plan was to make eligibility for entry to the Derby or Oaks, consequent upon regis-

* The "Queen of Cyprus," when saddled ready to start for the Oaks, in 1845, was examined and declared by two veterinary surgeons to be four years old. She was not allowed to run, but was proved afterwards to be but three years old, the proper age.

try, and I feel confident that a consideration of the subject is still worth the attention of all breeders and supporters of the Turf. It surely does not follow that, because you cannot make rules to meet all evils, you are, therefore, not to have any rules at all; and in the latter category, it must be admitted, there have been and still are all entries, either for racing or breeding purposes.

For a proof of the daily increasing defects of the Stud Book, as a record, I have only to advert to the great increase of half-bred (so-called) horses, now successfully performing on the race-course. And were "Umpire" to win the Derby, it will not entitle him to a place in the Stud Book, although the veriest mongrel of an Arab, or a Barb (so-called) would at once be admitted to this distinction. Upon this subject I may send you, at a future period, some remarks; for we are now arrived at the helpless condition of being unable to give anything like a satisfactory answer to the simple question, What is now understood to be meant by the term "thorough-bred horse."

Ever faithfully yours.

To the Editors of 'The Veterinarian.'

AN ESSAY ON SECRETION, WITH SOME OF THE CIRCUMSTANCES WHICH MODIFY THAT PROCESS IN ANIMALS.

By Henry Corby, M.R.C.V.S., late Demonstrator of Anatomy at the Royal Veterinary College.

Read before the Members of the Veterinary Medical Association, during the session 1858-9, *and published at the request of the Council.*

Having no desire to arrogate to myself that to which I have no right, and thus to appear decked with the plumes of others, at the outset I beg to state that from the works of the leading writers of the day on physiology, I have collected most of the facts that will be met with in this essay. These I have compared, so as to arrive at a correct conclusion on this important and interesting subject, of which I can offer you at best only an outline: nevertheless, I have striven to avoid a partial or one-sided view of it, having no fancied theories to inculcate, or favourite doctrines to uphold. If, on the one hand, I do not pretend to advance anything that is new, or to have obtained my materials from extraordinary sources, so on the other, I am not aware of having omitted anything necessary for the elucidation of the inquiry into the function of secretion, and the circumstances that modify this process.

If it be inquired what should be the prominent object in the reading of essays at our hebdomadal meetings, and the discussions that follow thereon? I answer, not to teach, so much as to cultivate a spirit of independent thought and investigation; so that you, each for himself, may become master of the question under consideration, and thus derive a benefit which will not depend upon the correctness or otherwise of the opinions that may be advanced, but rather upon your being led to think and study for yourselves.

With this end in view the present essay has been written; and, for the same reason, I have purposely chosen, as the subject matter thereof, a theme of almost indefinite extent, purposing, as I have before said, to give you merely an outline which you may fill up for yourselves hereafter.

At the beginning, it becomes necessary to define the limits within which I am to confine the application of the term secretion; for if it be taken in its fullest signification, as meaning either a separation of certain substances from the blood, or a setting apart of certain materials for definite ends, we shall find too great a variety of processes, and too heterogeneous a mass of facts accumulated together, so as to be able to do anything like justice thereto.

The definition which I think most expressive of the process of secretion, and which I have therefore adopted, is that which asserts it to be a separation from the blood, by an organ especially adapted to that end, of a fluid differing in its composition in a greater or less degree from the blood whence it is derived, and which is always poured out upon the free surface of the organ in which it is formed; it being either intended to be directly carried out of the body, or else to be used for some purpose within it: or it may be that it is partly for further use in the body, and partly to be got rid of as being either useless or noxious if retained.

By this definition we exclude respiration from the secreting processes; and I think rightly so; for, although in the respiratory action we have a separation from the blood of materials which must, if health is to be maintained, be got rid of, and although these materials are thrown out upon the free surface of the respiratory organs, yet the process being dependent upon purely physical laws, and differing in that respect from those which we regard as secreting processes, it is better to be considered alone than in connection with them.

Our definition excludes also the formation of adipose tissue and of epidermis, from the list of secreting processes, although there are many points of correspondence between them; and the correspondence is deserving of careful consideration, as it will be found to throw no small light upon the general nature of secreting processes. In the article on Secretion, in the 'Cyclopædia of Anatomy and Physiology,' you will find arguments adduced for considering fat, hair, and epidermis as the result of secretion, but as I have not time for quoting them, I must refer you to that work for further information on this head.

You will likewise see that the same views are advanced by Mr. Paget, in his lectures reported in the 'London Medical Gazette,' for 1847, entitled, "Lectures on Growth, Nutrition, and Hypertrophy."

Accepting, however, as sufficient for our present purpose, the definition which I have just given you, we firstly have to consider the purposes to which the secreting process is rendered subservient; the reasons, in fact, why there should be any such thing as secreting organs and secretions therein formed.

These purposes are very various; but I think that we may fairly arrange them into four classes: *First*, and least in importance, we have a class of secretions which have merely mechanical uses, as the lachrymal fluid, synovia, and mucus. With these also we must place the secretion of serous membranes, if we consider them as secreting organs; but it seems to me that what has been called the secretion of those membranes is merely an exudation of a small quantity of watery material from the blood, and hardly worthy the name of a secretion.

In fact, we find that the greater number of serous surfaces, during life, are only moistened by a little vapour, those membranes having no true fluid in their sacs; the arachnoid forming the only exception to this rule.

These secretions are all of very simple constitution. Thus, tears contain only a little chloride of sodium, with a small quantity of animal extractive matter, which in all probability is derived from the Meibomian glands, besides water. Mucus contains an animal matter which has been called *mucin*, which seems to resemble albumen, with a little saline matter, principally the lactates and chlorides. Synovia contains six per cent. of albumen, with a little phosphate of lime, carbonate of soda and chloride of sodium, and may be almost viewed as the serum of the blood.

But we shall find, as we proceed with the consideration of the secretions, that their importance is, with scarcely an exception, directly proportionate to the complexity of their chemical constitution; those which I have just named being simple, and serving comparatively unimportant purposes. I say comparatively unimportant, because their intrinsic value, each in its place, is not to be lightly passed over—the tears, for instance—and also a secretion very similar to them in its composition, the aqueous and vitreous humours of the eye, serve most important purposes in connexion with the visual function; while the others I have named serve no less important purposes—the one in facilitating locomotion, and the other in connexion with the various uses to which mucous membranes are rendered subservient.

The *second* class of secretions, are those which are intended, by virtue of their composition, to effect various changes in the food that is taken in, rendering it, by the modifying influences which they exert over it, fit to be absorbed and used for the nutrition of the animal organism. These are the salivary, the gastric, the biliary, and the pancreatic fluids.

One of the most important of these secretions, however, viz., the bile, which serves to assist in preparing the food for absorption, also possesses characteristics which are identical with those of the secretions of the third class; containing, as it does, a material which would be injurious if it existed in the blood, and which, therefore, has to be carried out of the body.

Secretions of the *third* class are sometimes called excretions. They consist of matters for which there is no further use in the organism, and which would prove more or less injurious if retained: the urine, and the secretions of some of the intestinal glands being, of this class, the most important.

The *fourth* class of secretions will include the milk and the semen. These neither serve mechanical or chemical purposes within the body, nor are they to be regarded as excretory matters, for we cannot think that a material which, by reason of its composition, would be injurious if retained within the organism of the mother, can be fit for the nutrition of the offspring.

But in thus asserting that the secretion of the mammary glands is not to be viewed as excretory in its character, I by no means intend to maintain that there is no necessity for the formation of that secretion; on the contrary, I think that by providing an outlet for the quantity of blood which during the period of utero-gestation had been employed in providing directly for the growth of the fœtus, a most important purpose is accomplished by this secretion, and that its suppression by any accidental circumstance is likely to lead to the production of much mischief.

In fact, we shall find, if we look closely into the function of secretion, that even those secretions which we have named as principally mechanical in their uses, do exert, to a greater or less extent, a purifying influence upon the blood, whence they are formed; especially the secretion of the mucous membranes, which seems to possess the power of withdrawing from the blood many matters for which there is no use in the animal economy.

This fact is of moment in considering the *modus operandi* of purgative medicines, many of which seem to be first absorbed into the blood, and afterwards are separated therefrom by the agency of the mucous membrane of the intestines.

We now come to the consideration of one of the most important purposes of the secreting processes; and it is necessary to inquire into the origin of those substances which have to be removed from the blood, in order to its maintenance in a fit condition for the support of the life of an organised fabric.

They have many and various sources; first of all, we may name the continual tendency of all complex bodies to form simpler compounds. This tendency exists among the component parts of the animal fabric, and the exciting agent to effect it is the oxygen, which is carried from the lungs to every part of the body in or by the arterial blood.

Acting as it does, both upon the tissues and also the materials contained with itself in the circulating current, we have a continual formation of substances unfit for retention in the organism, and a necessity for the provision of some means by which they may be removed.

Another source of these materials is to be found in the changes which are consequent upon every exertion of muscular or nervous force. Whenever muscular or nervous tissue is brought into use, there is an alteration effected in some of the tissues which are thus called into action, the amount of change being proportionate to the amount of force generated; in fact, the generation of force appears to be dependent upon a change in the tissue, so that we may view the development of the force as consequent upon the chemical change.

The oxygen carried to these tissues by the arterial blood with which they are supplied, is the active agent in the production of those necessary changes, and hence result the depression and final loss of both muscular and nervous power which follow upon a deprivation of that indispensable element.

I cannot enter fully into this subject, tempting though it be; I must therefore content myself with referring you to 'Carpenter's Manual of Physiology,' in which you will find much interesting and valuable information connected therewith.

When we consider the continual demand for the development both of nervous and muscular force, for the carrying on of the unceasing movements of respiration and the circulation of the blood, we shall not be surprised that a very considerable quantity of matter has daily to be removed from the blood by the various secretory glands, and we shall also be able to comprehend the necessity for increased activity on their part, which is involved in the performance of severe exertion of any kind.

Further than this, we know that there is a constant liability to the introduction into the circulating current of materials fit for use in the body, but in excessive quantity, and also of materials more or less unfit for use in the organism, or even positively injurious thereto. Now, all these substances are removed by virtue of the excretory function of the secreting glands, and the rapidity with which they may be removed is remarkable. For instance, I find that Mr. Erichsen, in one instance, detected ferrocyanide of potassium in the urine within one minute after it had been swallowed in solution.

Of course, in this case, all the circumstances concurred in favouring the rapid absorption and excretion of the salt, as usually a longer period would be required for the occurrence of the necessary changes.

Besides these already enumerated uses of the various secretions, I have to mention another, which has been considered as one belonging to the bile; namely, that of furnishing a quantity of combustible matter, which, being taken into the blood, is there converted into carbonic acid and water.

This was first alleged, I believe, by Liebig; and you will find it maintained by Todd and Bowman, in their 'Physiological Anatomy.'

The principal argument in its favour, seems to be the small quantity of true biliary matter which is found in the fæces, more especially of carnivorous animals.

Liebig also states that if bile be injected into the rectum, it will be absorbed, and cannot afterwards be detected in the urine, which, as he thinks, supports the theory that it becomes changed in the blood.

Leaving for the present the consideration of this question, I will now direct your attention to one of very considerable importance as connected with the physiology of secretion; namely, the inquiry, Are all the secretions pre-existent in the blood, or are they formed therefrom by the glands?

In order to the giving a definite answer to this question, it will be necessary to investigate, first of all, the general structure of the glands themselves; then the composition of their secretions; and, further than this, to consider some pathological facts which will materially assist us in arriving at its correct solution.

Without the aid of diagrams, it will, perhaps, be difficult to give you a clear idea of the structure of glands, but you will find illustrative drawings in almost all the works that I have named; and I may fairly expect that all of you are, more or less, acquainted with this peculiarity.

In the mucous and synovial membranes, the secretion is formed by the layer of cells which covers their free surfaces; which cells, as they grow, draw from the blood the liquid constituting the secretion of the membrane, and either by rupture or by exudation, pour it out upon the surface of the membrane. In certain situations, as the villous coat of the stomach, and part of the intestinal canal, we find depressions within the mucous membrane, lined by cells which separate certain matters from the blood, as the gastric fluid in the stomach, &c. These may be considered as rudimentary glands; for, in order to the construction of a gland, all that is necessary is that this follicle shall become elongated and increased in calibre, branched at one end, and covered by a fibrous tissue corresponding to the corium of the mucous membrane. Each of the branches of this elongated follicle, now called a gland duct, and often containing muscular tissue among the fibres of its external coat, terminates in one or more cæcal extremities, which either may be dilated so as to assume the appearance of little vesicles, or may be convoluted without dilatation.

The cells which separate from the blood the special secretion of the gland, are situated either in the vesicles in which the branches of the duct terminate, or in the convoluted portions of the duct itself. They draw their materials from the blood, contained in a vascular plexus, which is situated beneath the cells, but separated from them by a thin layer or homogeneous matter called the basement membrane.

In the salivary, pancreatic, and mammary glands, we have examples of the termination of the branches of the duct in vesicular extremities; in the testes, of the convoluted termination of the duct; and in the kidneys we find both convoluted ducts and vesicular terminations to exist.

Brunner's glands in the duodenum, and the buccal, labial, and palatal glands, are thought to resemble the pancreatic and salivary glands in their structure.

In the case of the mammary gland, the duct becomes very capacious near its free end, and constitutes a reservoir, which serves for containing a quantity of the secretion of the gland until it may be wanted; and, as in this case, the demand for the secretion is not equally constant with the formation of the secretion, there are additional arrangements for preventing its escape, but as these are not connected with the secretory portion of the gland they do not come within the scope of the present essay.

We have now, however, to consider the structure of two glands of a more complex character than those hitherto mentioned; namely, the liver and the kidneys. These will need a separate and careful description, but at the same time I shall render each as brief as possible.

The blood, whence the secretion of the liver is drawn, is carried to that gland by a vein—the portal vein. This gland thus differs from all others—every gland, with this single exception, receiving arterial blood from which to form its secretion.

On reaching the liver, this portal vein gives off numerous branches, which, subdividing, ramify through all parts of the gland, and in their course through it are enclosed in sheaths of areolar tissue which is continuous with a similar tissue on the exterior of the gland, and has been called Glisson's capsule. This tissue not only forms sheaths for the branches of the portal vein, but also furnishes numerous little septa, which divide every part of the gland into small lobules, each lobule being described as of the size of a millet seed. From the branches of the portal veins which are found traversing the gland, plexuses of vessels are given off which are distributed upon the outer surface of the lobules and between the lobules, constituting the interlobular plexus; these furnish the secreting capillary vessels; and from the capillaries, the blood is conveyed by minute veins commencing within the lobule,—intra-lobular veins,—into those vessels which convey it to the posterior vena-cava; which vessels running along the base of the lobules, are called sub-lobular veins. Besides these, we have a few branches ramifying upon the sheaths in which the vessels are contained, and called the vaginal plexuses.

Each of these lobules contains a number of secreting cells, which are placed in the interspaces of the capillary network, and are enveloped by a very thin membrane, analogous to the basement membrane of ordinary mucous or serous membranes, and continuous with the basement membrane of the biliary ducts.

These ducts, commencing at the surfaces of the lobules, anastomose freely among themselves, and, becoming larger, pass along the same canals which give passage to the branches of the portal vein, until at last they form a single tube, the biliary duct.

In the horse this passes directly to the duodenum, but in most other animals we have connected therewith, a pear-shaped bag, known as the gall-bladder. This may be viewed as a pouch-like dilatation of one portion of the duct, which has become narrow at its point of junction with the duct whence it originated, and being situated on the inferior surface of the duct, it is conveniently placed for the reception of a quantity of the secretion as it flows along that tube; and is enabled again to return it into the duct by the muscular tissue which forms a part of its walls. The hepatic artery supplying the liver pours its blood ultimately into the interlobular plexus of veins, which has been described among the branches of the portal vein; and it is on record that the portal vein has been found to terminate directly in the posterior vena cava, without supplying the liver, so that the secretion of bile can be formed from arterial blood.

As this gland and its secretion are of very great importance in the animal economy, you will not, I am sure, think that I am unprofitably occupying your time, if I now describe the course which the bile would take from its first secretion to its destination in the intestine.

We say, then, that it is first formed within the lobules of the liver, by the cells which they contain, from the blood existing in a capillary plexus, derived from the interlobular branches of the portal vein; thence, either by rupture of the cells, or by exudation through their walls, it passes into the commencing small portions of the biliary duct, and thence into the larger ducts which are found in company with the large branches of the veins in certain canals within the liver, and thus finally into that part of the duct situated upon the outer surface of the liver, within the transverse fissure; whence it may either enter the gall-bladder, in those animals that are furnished with such an appendage to the duct, or pass directly onward into the intestine, as in the horse.

I must now say something of the secreting structure of the kidneys.

You are all familiar with the division of each of these glands into a central, or medullary, and an external, or cortical portion, as well as with the dilated commencement of their excretory duct, known as the pelvis of the kidney; so that I need give no anatomical details respecting those parts. I may therefore at once proceed to the description of the cortical or secreting portion of the gland. This contains a great number of little globular bodies known as Malpighian tufts, each of which has, in the horse, a diameter of from one ninetieth to one fifty-fifth of an inch; and is composed of a thin capsule enclosing a tuft of capillary bloodvessels, which capsule communicates with the origin of a little tube arising therefrom. These little tubes are at first very convoluted, and are lined by a spheroidal epithelium, and covered on their outer surface by a capillary plexus of bloodvessels, respecting which we have to observe, that it is not formed by the splitting up of small arteries, but by the subdivision of small veins which receive their blood from the plexus within the Malpighian tufts.

Investigations into the comparative structure of the urinary organs in various classes of animals, have led to the conclusion that the spheroidal epithelium, contained in the little convoluted tubes, is the true secreting structure of the kidney, the tufts serving only for the drawing from the blood the watery portions of the urine.

In the medullary portion of the kidney the tubes take a straight course, and gradually converging, form by junction one with another, those cone-shaped or pyramidal bodies which have been called the pyramids of Malpighi. They at last terminate by conical projections into the pelvis of the kidney, and are designated its mamillary processes. They are there surrounded by folds of the mucous lining membrane of the pelvis, called calyces; the spaces between the projecting mamillary processes constituting the infundibula of the kidney.

I have already spoken of the composition of some of the simpler secretions, and shall now enter upon the constitution of the two secretions, bile and urine.

These are both complex in their character. The others, it will be remembered, consisted principally of water, a few salts, and a principle very similar to the albumen of the blood. This, too, so far as chemistry is concerned, is nearly all that we know of the secretion of the testes; while that of the mammary glands contains, in addition to the casein, which we may fairly consider as modified albumen, and some saline matters, both fat and sugar. So far, then, as the chemical composition of these secretions is concerned, we can readily imagine that they may exist in the blood, and that the only function of the glands consists in the separation of their several constituents from that fluid; but in the bile we have a fluid of a more complex character.

Taking the simplest view of it, as sanctioned by chemists, we find it stated to be a combination of an organic acid with soda; this organic acid differing in a marked degree from any of the constituent parts of the body, and also containing a very large amount of carbon, hydrogen and oxygen, with a small quantity of nitrogen and a trace of sulphur. In addition to this we have colouring matter, and, according to many chemists, a peculiar fatty matter, which is called cholesterine. The organic acid readily changes into a resinous compound; and some analysts have therefore given biliary resin held in solution by an alkali as the principal organic constituent of the bile, and asserted that all its nitrogen and sulphur were contained in albuminous matter which was mixed with this biliary resin.

You will see from this statement that it is not yet very certain what are the real constituents of this fluid; but all chemists agree in averring that it contains a very large amount of hydro-carbonaceous matter, which has been partially oxidised.

In the urine, on the other hand, nitrogenized compounds are present in great quantities, and it seems to have a more definite composition.

Its chief organic constituent is urea; a substance containing two equivalents of carbon, two of oxygen, two of nitrogen, and four of hydrogen; it having, consequently, a greater proportion of nitrogen than any other substance within the body.

There is also contained in the urine an organic acid, which in the carnivora is an acid containing, like urea, a large quantity of nitrogen, and called uric acid: but in the herbivora we have an acid containing less nitrogen, designated the hippuric. Beside these, the organic constituents of urine, we meet with a quantity of saline matters, which vary both in quantity and in composition under certain conditional circumstances. The most constant salts are those of lime, soda, and potass. Colouring matter and extractive matter are also found, but no definite account is given concerning either of these constituents.

Of the other secretions, the saliva contains the lactates of potass and soda, with phosphate of lime, soluble chlorides, a little sulphocyanide of potassium, and an animal principle called ptyalin; but its solid matters only amount to twelve parts in the thousand. The secretion from the pancreas is said to resemble saliva very closely. The gastric secretion contains a free acid, with an organic principle known as pepsin; and milk contains casein, fat, sugar, and saline matters.

(*To be continued.*)

MEMOIRS OF A VETERINARY SURGEON.

THOUGHTS IN THE SICK BOX.

By Thos. Greaves, M.R.C.V.S., Manchester.

(*Continued from* p. 692, vol. xxxii.)

A correct knowledge of the normal state of the atmosphere is a vantage-ground that must not be under-estimated in these inquiries. Nor must we omit to notice those conditions of the air which are supposed to be favorable to the generating of disease, and much less those that are indisputably proved to be conducive to the recovery of health. Can any man deny the exhilarating effects produced upon his animal spirits, the hilarity and joy experienced by him, as he breathes a light, clear, bracing atmosphere, called by the poet "the sweet breath of Heaven?" or will he deny, on the other hand, the depressing influence of a dark, heavy, murky one? To say that such robs him of animal electricity is, to my mind, a very inadequate explanation. I am disposed to think that there is something more in it; some reciprocal convertibility or phenomena, not yet fully understood, constituting a scientific problem.

It is a notorious fact that in our best ventilated stables the natural condition of the atmosphere is greatly changed; the consequences of which upon our horses are clearly shown in Mr. M'Dougall's remarks in my former paper, whenever health has yielded precedence to disease, and morbid action has been set up. We then find how highly susceptible the various membranes and organs of the body have become, and how important it is that our patient be at once placed in an atmosphere the temperature and state of which are best suited for him under the circumstances; bearing always in mind this fact, that whilst the various membranes and organs are in this highly sensitive and susceptible state, they are most impressionable, and, consequently, more easily acted upon by restorative influences. It is to me great gratification to know that the internal organization is accessible through this avenue, for it needs but little reflection to convince us that there are some parts of the organism, the delicacy of which the human mind is inadequate to form the slightest conception, and which are nevertheless of the highest importance in the maintenance of life.

FOUL CONFINED AIR, AND VENTILATION.

We always find that whenever air is allowed to stagnate in places having a resemblance to a well, it has a strong tendency to become heated and vitiated, when of course it cannot be long respired without injury to health. It is, therefore, our duty to provide against this as much as possible. As the air becomes warmer it expands and ascends; the pure as well as the impure. And here let me remark, we may have a smoky atmosphere, and yet it shall not be necessarily unhealthy; whilst, on the other hand, we may have a clear, transparent atmosphere, which is all the time most deleterious and highly prejudicial to health. If the cold fresh air is allowed to enter from above, it obeys the natural laws of gravitation; the cold and heavier air forces itself in by pressing downward, and passes underneath the air that is warmer, and thus operates in impelling the warm air on in its upward tendency, like unto small pebbles thrown into a vessel of water, which force the water up over the top. But the parallel holds good only to a certain extent; for the cold air receives heat as it descends, and also gives out its cold to the surrounding air; therefore, before it reaches the lower stratum of the atmosphere, an equilibrium has become established, and, consequently, this lower stratum is very little, if at all, affected. The best contrivance for effecting this kind of ventilation is the "Four Points' Ventilator," or diaphragm, patented by Mr. Muir of Manchester. My own experiments have not as yet convinced me of the correctness of this theory, and I am very strongly in favour of the cold fresh air being allowed to have ingress from apertures on the ground surface. By this means it disposes of itself in altogether a different manner, it being drawn into the compartment in accordance with and agreeable to a law regulating demand and supply, there being a constant tendency to an approaching vacuum in the compartment, consequent upon the heated air continually ascending and escaping; and as the particles of cold fresh air have spread themselves over the whole surface of the floor of the compartment they become of a higher temperature, consequently they are lighter, and in their turn ascend. Thus it will be seen that a constant change of place of particles is ever occurring; and it is clearly our duty to give this law its fullest and freest possible play, for the purpose of securing and maintaining a healthy constitution, one best adapted for usefulness and duration. My experience has convinced me that every stable is defective in its ventilation that has not two or more openings for the ingress of air at opposite points of the stable on the ground surface, and a ventilator at the top.

Are we not, I would ask, highly culpable in imprisoning in a foul atmosphere that noble animal which contributes so largely to our wealth and our gratification, and thus causing him to endure suffering and disease by neglecting these considerations; and this, too, when we have the instruments at our hands which plainly indicate to us—in a great measure at least—what ought to be done to remedy it? I say there is no excuse for allowing this state of things to exist, especially when we know so well how dreadfully destructive are the causes of which we take so little account, and how fraught they are with danger to health and even to life itself; for although Nature is ever an economist, as Professor Spooner aptly observes, putting up with all kinds of shifts to carry on the functions of life, even where scarcely a breath of fresh air ever enters, and where the horse that has been gradually adapted to it may live on, but which would be fatal to a fresh, healthy horse; yet be it known that in all such places the work of demolition is quietly going on, a long balance of arrears is accumulating, and an execution is issued before we are aware the suit has commenced; and from this final issue there is no escape, so great and so strong is the predisposing tendency to typhoid and putrid terminations.

Whenever we have a patient labouring under perverted natural action of the lungs and air-passages, and find him tied up by his head in his stall, or allowed to stand in one position, with his nose in one corner of his loose box, inhaling and exhaling the same air over and over again, we may be sure that while he is in this situation it is next to impossible for him to improve. To make him breathe an atmosphere overcharged with carbonic acid is an equivalent to a gradual prevention of his breathing altogether; for we know that in all these cases of excitement of the lungs and air-passages, the air expelled is charged with more carbonic acid, more animal matter, more animal heat, and more aqueous vapour than it is when these organs are in their natural and healthy condition. The particles of air, too, are driven with greater rapidity and force into the surrounding atmosphere, disturbing its electrical state; and this more especially when the animal is circumstanced as above stated; that is, breathing in a limited space. We also know that moisture affects the electrical state of the air, and there are likewise other elementary conditions disarranged, and combinations formed; and if these influences are in operation for several consecutive hours, I am fully persuaded that a particular state of the air is induced in a high degree deleterious to health, the state being one which fosters and perpetuates diseased action. This is the sure and certain result. The late Professor Coleman called it "animal poison." Suffocation results in the same manner from vitiated air as from an interception of it; and science has shown that carbonic acid is not in itself a poison, but kills by producing suffocation. We do not, however, know the whole truth yet; I mean the exact alteration produced in the air consequent upon these changed conditions. Nor, in our present state of knowledge, do our highest attainments in science, or our most delicate instruments, take cognizance of it; neither do I believe the truth has in all its entirety ever yet flashed across the brightest intellect—it requires a more elaborate scientific investigation. But because we cannot clearly and fully understand and explain these obscure phenomena, let us not ignore them, and affect to disbelieve that a vitiating influence is being exerted. Depend upon it, it is no chimerical idea. Every intelligent and observant practitioner has, I doubt not, over and over again convinced himself of its baneful effects, and, being assured of its pernicious nature, he at once removes his patient, without a moment's loss of time, to a more congenial atmosphere.

TREATMENT OF THESE CASES.

It is, nevertheless, a well-known fact that disease often attacks horses occupying stables where every attention is paid to proper ventilation and cleanliness, and animals, too, with healthy constitutions; but their diseases are, comparatively speaking, few in number, and far less inveterate than in those horses that are otherwise circumstanced. In my practice, in horses having these advantages, the cases of fatality do not average more than one per cent. Their attacks are generally consequent upon long-continued exertion, sudden check of perspiration, rigor upon rigor, neglected catarrhal fever, &c., when that mysterious influence, the vital power, has become weakened; for, while this power remains strong and equally distributed throughout the system, all the functions of life go on with ease and regularity, constituting perfect health; but when this force is rendered feeble, every function becomes weakened in the same proportion.

From the above-named causes, we frequently find the vital force become concentrated, as it were, in one organ, and this most commonly the lungs, as they never relax their activity. At the same time the rest of the system is defectively supplied with this principle; the legs and ears become cold, loss of appetite is evinced, with lassitude, the bowels act torpidly, &c., &c. But the lungs have excited in them a preternatural or an excess of motive force, and there is an increased flow of blood to them, even to the impeding of their action; in short, it is a conflict between this perverted action and nature's efforts to resume the even tenor of her way, and unless the conflict can be quickly arrested, and the circumstances reversed, or modified with promptitude, the damage soon becomes serious; nature ere long yields, and death is the result. This action assumes, in fact, all the essential characters of violent inflammation.

Now it is upon such a case as this I propose to comment. We find the animal's breathing to be very much accelerated, his nostrils expanded, the flanks heaving, all the intercostals labouring, the mouth and breath hot, and he loathes his food; the pulse also is from seventy to eighty, and moderately strong. We will presume he is a young cart-horse, in high condition, and was first perceived to be amiss a few hours before, or perhaps the day before he did not seem so well as usual. Formerly, in such a case, bleeding must have been at once had recourse to, and aloes and nitrate of potass, or a diffusible stimulant given; then clothed well up, his sides blistered, and he was left in his warm stable for the night. The next morning the practitioner found his patient in a state of greater irritability, the pulse quicker, breathing more accelerated, the fæces coated, the tongue furred, the mouth offensive, legs and ears cold, *although in a warm stable*—that, in fact, the fever was prostrating the vital powers, and the air had lost its natural action upon the blood. The practitioner now most likely bled again, and then set to work in earnest with all the paraphernalia of ordinary practice, and relying upon physic to allay the excitement, he found all was uncertainty and loose speculation. This method was the one formerly adopted, and I maintain it has ever been a most egregrious and lamentable error, and one tending only to the destruction of that electric or galvanic influence which maintains the vitality of the system, and keeps the machinery of life in perpetual motion.

This system of treatment enfeebles the powers of life; and, generally, nature sinks without having put forth one restorative effort; for I verily believe the horse is by nature a very "funkey" animal, easily pained, his stamina readily yielding, and he quickly gives in. Well, whilst the case is thus proceeding, and nature is in this predicament, the imagination of the practitioner furnishes him with a dozen utopian projects to be put into execution; but he is, however, so constantly impeded by a crowd of unconnected recollections, that he becomes at last so bewildered, that he applies to one stage the means which are adapted only to the succeeding stage, or *vice versâ,* and the result is, of course, most prejudicial. He now begins to see that he has lowered the system so much that it is unable to carry on the regular actions required for recovery; this is consequent upon the order of nature having been forcibly interrupted, and the fatal termination is rapidly accelerated.

At this stage of the inquiry, it might be of moment to reflect upon the devastation that is going on, and to ask ourselves these questions:—Have we not been endeavouring to force nature to adopt our own cure for her's? Have there not been several occasions, when it would have been much better if we had left more to her and done less ourselves? Take my word for it, if we are honest with ourselves, we shall sometimes condemn ourselves, for not having at one stage of the disease, taken a step, at a critical moment in its history, which might have contributed to recovery. It has frequently struck me, and I doubt not other close observers also, upon what trifling or incidental circumstances depends life or death, during certain states or stages of disease; therefore, instead of being so intent upon cutting short the malady by vigorous or heroic treatment, we should rather pay due respect to its natural course and duration, and reserve our means to carry it safely through its regular stages.

I advocate no lukewarm or inactive practice, but even greater vigilance and care than have been formerly bestowed. We must wait observantly nature's own good time, rendering her the required assistance, so as to enable her to regain healthy action; and, as a first step, and true to first principles in the acquirement of this knowledge, we must altogether abandon that vulgar faith in doses of medicine and bleedings which has so long been a scourge to the practice of Veterinary medicine.

PURE FRESH AIR AND VENTILATION.

To discuss the question of pure air in the midst of all the vitiated emanations that take place in smoky Manchester, methinks the reader may liken to a myth; but what I mean is the purest air that is obtainable by us. I have said, in an earlier part of this paper, that the membranes and organs concerned in the function of respiration, when under an attack of acute fever are highly impressionable; that they will receive or imbibe with avidity influences of a restorative character, with as much readiness as influences of an opposite character. This thought is one "full of beauty." A proper restorative essence being passed over, and absorbed by the irritated membrane, enables it to effect a change in the system without any display. It produces its action secretly, silently, and in that inscrutable manner with which God has endowed nature. Supply your patient, then, I say with abundance of this restorative element, COLD FRESH AIR. It allays nervous action, cools the blood, and fully meets all the indispensable conditions required. It is demonstrated that more oxygen exists, and consequently is absorbed, from cold air than from warm air. If you do this systematically, you will find every effort of nature will be towards the restoration of health. Supply him therefore freely, I repeat, with cold air, but at the same time see that his feet, ears, and skin be warm, so that the heat of the body is not allowed to fly off. All that nature demands from us is, that we remove every impediment out of her way, and facilitate her acts; and with this object in view, every sick box should be provided with two small inlets for fresh air, at different or opposite places on the ground floor. If this be only a plate of six inches square, perforated with six or eight small holes, it will be quite sufficient to keep the air sweet and fresh for one horse, provided there is also an egress at the top.

(*To be continued.*)

ON THE TITLE OF VETERINARY SURGEON.

By C. S. GREEN, M.R.C.V.S., Winchester.

IN the October number of the *Veterinarian*, I was pleased to see the subject of the title of veterinary surgeon again brought forward. Having been twenty years in practice, I can sympathise with those who have to contend against the unqualified man,' who is ever ready to assume the name of veterinary surgeon, placing it conspicuously on his premises. As for the argument that has been advanced; namely, that it is for the qualified man to convince the public by his talents who is to be employed; this is a long, an expensive, and a wearisome task; and, I am fully convinced, until something is done to assist the provincial members of the College against this state of things, that no mutual co-operation of the profession will ever be realised. Those I have met with at various times, consider it quite an act of injustice to be left unprotected so long; and I do hope that, as now the subject is brought prominently forward, it will not be allowed again to rest until some plan is devised, so that the public may be informed who are really members of the profession, or in possession of the diploma. The best means of acquainting the public who are pretenders, that I have found in my district, is their examination as witnesses in trials before a Court of Judicature.

Having thus thrown out my idea on the subject, I leave it for the consideration of those better able than I am to give it their mature thought and judgment.

SUDDEN DEATH OF A MARE, IN WHICH EVIDENCES OF ACUTE PERICARDITIS WERE FOUND ON A POST-MORTEM EXAMINATION.

By Messrs. Broad and Woodger, jun., M.R.C.V.S., Paddington.

October 20th.—An aged chestnut cart mare, belonging to Mr. Wise, farmer, of Cricklewood, was admitted into our infirmary, in consequence of an injury of the off fore leg, arising from a kick she had received from a horse while at grass.

The immediate effect of the blow was the infliction of a deepish wound on the inside of the arm, just above the knee-joint.

The limb was much swollen, but the wound had a healthy appearance.

The accident we were informed had occurred about three or four days previous to her admission.

The animal gave no evidence of any constitutional disease; and we contented ourselves by placing her in a large, roomy, loose box, and adopting the usual treatment resorted to in such cases.

The case progressed very favorably until the 24th—four days after admission—when about noon she was observed by the groom to suddenly fall, and to be slightly convulsed.

We being close at hand, our attention was immediately called to her, when it was found that the pulse was imperceptible and the eye amaurotic, with other indications of approaching death. In the course of two or three minutes after, on entering her box, we perceived that life was extinct.

We were naturally much surprised at so sudden and unexpected a result, and reflecting on the probable cause, we examined, first the condition of the mucous membranes, but as these showed no appearance of internal hæmorrhage having taken place, we came to the conclusion that possibly the state of the heart would explain it.

During the morning the mare had fed well, and appeared in her usual spirits. She had also taken a little walking exercise only two hours previous to her death, exhibiting at the time scarcely any lameness.

Post-mortem examination.—The lungs and pleuræ were healthy. The pericardium contained about three quarts of highly coloured serum. Its walls were also considerably thickened, and studded with numerous bands of lymph on the inner surface, of a bright yellow colour. Several small patches of inflammation were likewise observed in the ventricles of the heart, near to the valves of this organ. The heart itself was also larger than usual, and much softened.

ON THE USE OF VALERIANIC ACID IN PLEURO-PNEUMONIA OF CATTLE.

By C. Hunting, M.R.C.V.S., South Hetton.

I read with great interest, in your journal for November, Mr. Smale's communication on the use of valerianic acid in the treatment of pleuro-pneumonia in cattle.

If I understand the article aright, it would appear that Mr. S. has been perfectly successful in *every case* in which he has tried it, and that no appearance of the disease remained after the use of the acid for some eight or ten days.

As I have made this disease a special study for the last ten years, and during that period have treated, or examined after death, upwards of 3000 cases, and cannot boast of any better success now than that which I laid before the members of the Veterinary Medical Association in 1850; I hail with real satisfaction the possession of such a weapon as this to fight our great enemy with; and would ask Mr. Smale to favour the profession, through your pages, with a more detailed account of the cases of lung disease so successfully treated by him with valerianic acid. Also, the dose or doses of the acid to be given, the number of the cases he has thus treated, the stage the disease had reached when the treatment was commenced by him, and whether one or both of the lungs were affected in all or any of the cases; also, if there was little or much fever present in any of them; further, were they recently purchased animals, and of what breed, and were they all treated on one person's premises, or in different localities.

These questions may appear numerous, but the importance of the subject induces me to think that they are demanded, and I hope Mr. Smale will not hesitate to reply to them, thus giving to the profession the benefit of his experience.

ON CHRONIC RHEUMATISM IN THE HORSE.

By J. Bolton Hall, V.S., Royal Artillery.

There appears to be some doubt in England as to whether rheumatism, in any shape, is one of the ills that horse flesh is heir to. Old practitioners generally look with great suspicion upon every new term introduced into the veterinary vocabulary. Be this as it may, I feel fully convinced that rheumatism is a disease that horses are particularly subject to in our colonies, and think that no one having had any experience as a breeder or keeper of horses, will attempt to deny my assertion, if acquainted with a tropical country.

My attention was first called to this disease in China by Captain King, the town mayor of Hong Kong. He remarked to me at the time that he had been reading some work the author of which denied altogether the existence of rheumatism in the horse. Captain King, however, produced a pony "lame all round," as the dealers would pronounce it. I examined him carefully, and could find nothing to exist, except a little pain on pressure being applied to the larger muscles. On inquiring the length of time he had been in his then present state, I was informed for some months.

Being requested to undertake the treatment of the case, and as it appeared to me to be one of chronic rheumatism, I commenced by stimulating the shoulders and quarters, and administered internally the Liquor Pot. Arsenicalis. Under this mode of treatment the animal decidedly improved for about two months, and we were in hopes that he would be able to start for the race, he having won the Ladies' Purse the previous meeting; but the weather becoming wet and foggy, he became again lame and stiff, although not nearly so bad as when I first saw him.

A second case occurred in an old horse belonging to an editor of one of the papers, but the animal being thirteen or fourteen years old, and so stiff that he could scarcely get one leg before the other, I entertained no hopes whatever of a satisfactory issue. The owner, however, thinking of the old adage, "where there's life there's hope," persuaded me to try what could be done for his favorite. I gave to him the Iodide of Potassium, knowing this to be a valuable medicine for the same disease in the human subject, and stimulated the muscles as in the previous case. But, although this treatment was continued for some time, and the owner fancied he could see some improvement, I could not say that I saw any. I therefore recommended him to be shot, hoping to have an opportunity of making a post-mortem examination. All my persuasion, however, with repeated arguments adduced by me for the benefit of science, proved of no avail: the obdurate editor could not be tempted to part with his horse.

I happened to mention the circumstance subsequently to an eminent merchant in the colony, who informed me that he had destroyed several horses for the same thing, and his groom, in several cases, had examined the joints, which, to use his own expression, "had the appearance of being eaten away by worms," so that the affection evidently resolves itself into *caries of the articular surfaces of the bones.* I am sorry that no further opportunity presented itself to me for investigating a subject pregnant with so much interest.

Although many horses were thus attacked and destroyed before my arrival, during a stay of seven months not a single post-mortem examination could I get. But the conclusion I have come to from the meagre opportunities I have had, is, that preparations of arsenic, with counter irritation, will often be found useful in the chronic stage of this disease.

CASE OF RUPTURED STOMACH.

By C. Cartwright, M.R.C.V.S., Abingdon, Berks.

On the evening of the 6th of November I was requested to see a young mare belonging to Mr. Greenaway, of Rudley. On my arrival, about 6 o'clock, I found the animal labouring under what I considered to be the result of some internal injruy, causing internal hæmorrhage. The following symptoms were evinced: pulse low and feeble, but quick; the visible mucous membranes of a pale colour; the mouth pallid, cold, and clammy; the extremities of a deathy coldness; the abdomen tympanitic; the skin cold and tense; bowels constipated, nothing having passed since the morning. On inquiring into the history of the case I was told that she ate her morning feed heartily, and directly afterwards went to plough; she, however, had worked but a short time when she suddenly showed symptoms of distress, and wanted to lie down. They, nevertheless, continued working her until the evening, when, as she became worse, I was sent for.

I immediately gave a draught containing

Ol. Lini, ℥xij;
Aloës Bbd., ʒvj;
Sp. Ammon. Arom., ℥j.

Ordered clysters to be thrown up every hour, and repeated applications of mustard and turpentine to the abdomen. But all the means resorted to seemed of no avail. The mustard liniment produced not the slightest irritation, and the same state of unconsciousness continued; I therefore left, with the conviction that she would not be alive in the morning.

November 7th.—The mare is in nearly the same state, but, if possible, greater coldness exists of the extremities; the eyes are sunken, and in the countenance death is plainly marked. The bowels not having responded, I gave

Aloës Bbd., ʒv;
Sp. Eth. Nit., ℥ij, in gruel.

This draught had scarely been administered five minutes before she gave a low hiccough and vomited up some of the contents of the stomach. Seeing this, I unhesitatingly expressed my opinion that it was a case of ruptured stomach I had to deal with, and knowing recovery to be hopeless, I merely gave an opiate to allay excitement and took my leave.

The animal died about two hours afterwards.

At the desire of Mr. Greenaway I made a post-mortem examination. On opening the abdomen I found a large quantity of bloody liquid existing within the cavity, and on examining the stomach I found a rupture in it to the extent of six or eight inches, extending across the great curvature. The walls of the viscus were pallid, and of so weak a texture that they were torn as easily as a piece of blotting-paper. The stomach itself was nevertheless crammed with dry food, some portions of which had escaped through the opening.

The mare was always a hearty feeder, and in my opinion, from her constantly overloading the stomach previous to work, it so weakened this organ that a rupture was the ultimate result.

CASE OF APOPLEXY IN A HORSE.

By the Same.

I was sent for on the 3d of October to see a horse belonging to a farmer, which I was informed had "staggers." On my arrival I found a four-year-old cart-colt, labouring under congestion of the brain, and almost completely paralysed. He was perfectly helpless, and when moved fell down. The pulse was about 50 in the minute, but scarcely to be felt; the conjunctival membrane was much inflamed; the iris not contracting at all on a light being held near the eye; the breathing stertorous, and the bowels constipated.

I immediately bled the animal, taking away nearly seven quarts of blood (the pulse rising directly after), and gave

Aloës Bbd., ʒvj;
Hyd. Chlor., ʒj;
Sp. Eth. Nit., ℥j, in haustus.

Applied sinapisms containing ammonia to the head, and ordered clysters to be frequently thrown up.

October 4th.—Partial consciousness had returned, but the loss of power in the extremities still existed, and the constipation of the bowels. I gave

Aloës Bbd., ʒv;
Hyd. Chlor., ʒj;
Sp. Eth. Nit., ℥j, in haustus.

5th.—The bowels are acted on, but not violently, and the colt is decidedly better.

℞ Aloës Bbd., ʒij;
Hyd. Chlor., ʒj;
Spit. Eth. Nit., ℥j, in haustus.

6th.—The colt much better, and has a greater use of his limbs. Keep the bowels in a soluble state by the occasional exhibition of the draught last ordered.

10th.—The animal having continued to improve since the last report, I now entered upon a course of tonics, combining with them a diffusible stimulant.

12th.—The colt has now become very much better, and the weather being open, I rubbed some of the Ung. Canthar. over the whole course of the spine, and turned him out, during the morning and afternoon, to grass; at the same time I ordered him to be liberally fed.

13th.—The loss of power in the limbs has now almost disappeared, and the colt is doing so well that I have ceased calling to see him.

CASE OF PUNCTURED LUNGS OF A HORSE.

By A. Owles, V.S., the Carabineers, Muttra.

The following case appears to me to prove how great are the powers of nature in restoring injured parts, even when the injury is both extensive and in a vital organ.

I send only a short account, as the minute detail of the symptoms and treatment would be simply waste of time for all parties.

PUNCTURED LUNGS.

June 11th, 1859.—A young troop-horse, in high condition, ran back from the syce (native groom) and became entangled in his heel-ropes. These go from the hind legs to a peg, and by them the hind legs are fastened. He fell backwards, his side coming on the top of the peg, which stands out of the ground about ten inches, and is two inches in diameter, and fractured the eighth rib, rather less than half way up. The peg perforated the parietes of the chest, and entered the lung, and looked as if it had been saturated with blood for five inches from the top, the other part being simply spotted in places with blood.

I saw the horse soon after the accident, and found him trembling, the breathing very much disturbed, and air passing from the lung, through the wound in the side, to a great extent; the pulse also was much disturbed. I abstracted Oviij of blood, applied a wet pad over the wound, which I directed to be kept constantly wet with cold water, and gave Aloës et Pot. Nit., āā ℥ij, cum Antim. Tart., ʒj, in a ball, to be repeated every eight hours, as I feared acute inflammation and sloughing of the lung.

12th.—The breathing is easier, and the animal eats a little and drinks freely. Keep the pad constantly wet as before, and continue to give the medicine, reducing the Aloës to ʒj in each ball.

13th.—Patient worse; the breathing is humid, and pain expressed, as he grunts when he moves; the Schneiderian membrane is slightly congested, the pulse weak and uncertain. Give Camphor., ʒj, et Pot. Nit., ℥ij, in ball. In the evening he was easier, when the medicine was repeated.

14th.—Both the breathing and pulse are improved. A healthy discharge takes place from the wound, and no air escapes from it now. The fæces are rather hard. Give Aloës, ʒiij, cum Pot. Nit., ℥ij, in ball.

16th.—The animal is gradually improving. The pulse gets stronger daily, and he feels better.

From this period he continued to improve. The wound, with a little ordinary care, healed, and is now, July 12th, quite closed, and the skin nearly drawn over it. The horse looks well, is in good spirits, and apparently quite restored to health.

I feel rather curious to ascertain how nature sets about healing such an injury as the above. I do not know whether the fractured rib entered the lung or not, but I think not. If this horse dies while with us, I shall not forget to examine the injured side.

Perhaps nature throws out a wall of lymph around the injured portion of the lung, and thus, to a certain extent, cuts it off from the healthy part of that organ.

The air ceased to escape after the second day from the date of the injury, which would tend to confirm this view. However, the above are the facts of the case, and they are much at the service of the profession.

BOTANY AS APPLIED TO VETERINARY SCIENCE.

By W. Watson, M.R.C.V.S., Rugby.

(*Continued from p.* 646, vol. xxxii.)

Before continuing my remarks on the grasses, allow me, in reply to the kind suggestion of Mr. Dickens, of Kimbolton, contained in your last number, to state that I shall be pleased to communicate all I know respecting the poisonous properties of the different varieties of the "yew;" but I trust that he will pardon my doing so until I arrive at that portion of my subject under which I propose to consider the poisonous plants generally, when I assure him that a subject of so unusual an interest to our profession shall receive every attention from me.

Grasses continued.

Anthoxanthum odoratum (sweet vernal grass).—"*Panicle*, spicate; *glumes*, unequal; *glumel*, double, outer one with short awns; *stamens*, two: *styles*, two" (Buckman); named from the Greek word *anthos*, a flower, and *xanthus*, yellow.

This indigenous perennial grass is found in almost all pastures, and at all elevations, but flourishes most in rich, moist soils. It is one of our earliest flowering spring grasses, but produces only a small quantity of herbage, which unless it be largely mixed with other grasses is not much relished by cattle, on account of its peculiarly strong taste. Its chief value consists in the very agreeable and fragrant odour it imparts to our meadow hay. This odour, said by some to resemble that of woodruff, and by others strongly scented tea, is most perceptible in its dried state, and is produced from a great number of small glands, containing an essential oil, situated on its glumes. "The essential oil obtained from this plant may be used as a mild aromatic and stimulant. It is one of the very few plants which in their green and ripe state contain benzoic acid." In its green state it contains 80 per cent. of mucilage, 2 of saccharine matter, and 18 of bitter extraction. I have found this grass to be extensively ergotized this past summer.

Dactylis glomerata (rough cock's-foot grass).—"*Panicle*, with the primary branches long; *pedicels*, short, so that the flowers are clustered in bunches; *glume*, of two unequal valves, arranged obliquely; *glumel*, pointed, almost awned;

stamens, three; *styles,* two" (Buckman); named from *dactylos,* a finger.

This perennial, somewhat rough and coarse-looking, grass, is found in all situations, and is of considerable value from the large amount of nutritive matter contained in nearly all parts of the plant. It attains a height of from one to three feet, and flowers and ripens its seed from the beginning to the end of July. Its stems and long leaves yield a valuable addition to the hay crop, and the rapidity of its growth after mowing renders it of great value for aftermath, and in this condition it is much sought after by all kinds of cattle. "It contains 59 per cent. of starch or mucilage, 11 of sugar, 30 of extractive and saline matters." I have, during this last autumn, found this grass also ergotized to a very great extent.

Triticum repens (creeping wheat, or couch-grass).—"*Spike,* very long; *spikelets,* four to eight, flowered; *glumes,* lance-shaped, with or without awns; *glumellas,* two, the *outer glumel* sharply pointed or with a short awn; *stamens,* three; *styles,* two; named from *tritum,* beaten or thrashed" (Pratt).

This well-recognised and troublesome pest to the farmer, known by the names of white couch, twitch, stroil, and quickens, is found in almost all situations. It attains a height of from one to three feet, and flowers during the summer months, but propagates itself with astonishing rapidity by its roots, which contain a much larger amount of nutriment than any other part of the plant. It is much liked by all kinds of cattle. In this country the roots are generally collected and either burned or made into manure with lime, but "in Rome and Naples they are extensively used, either in a simply washed condition or mixed with carrots, as food for horses. And in Britain they might be given raw to pigs, or steamed or boiled to horses and cattle. They might also, after having been washed and macerated, be manufactured into farina for human beings, as they contain nutritive matter of the same kind and in nearly the same proportion as potato tubers." I have likewise found this grass much ergotized this autumn.

A short time since, a circumstance occurred in connexion with this grass, which, though of slight importance in itself, may nevertheless be of some service to those whose observation has not been called to the subject. Upon visiting a horse belonging to a gentleman in this neighbourhood, my attention was directed to a pointer dog, which was picking out the leaves of some kind of grass and eating them, a habit that had been frequently noticed in him. Before and after speaking of the animal's general health, &c., the owner asked me what grass it was, as the dog seemed to prefer that to any other. I soon ascertained, by a slight examination of its leaves and root, that it was the *Triticum repens,* or common twitch. This grass is eaten by dogs to cause vomition, which is probably produced by the roughness of its leaves mechanically irritating the fauces.

(*To be continued.*)

Facts and Observations.

POISONOUS SAUSAGES.

Recently we directed the attention of our readers to the poison developed in meat that has been long kept. (*See last vol.,* pp. 480—520.) Lately, in the neighbourhood of London, several persons have been seriously affected, and one person died, with vomiting and dysentery, after partaking of sausages purchased in Newgate Market, the meat of which was found by Dr. Letheby, to be in a putrid state. It is probable that this hereafter will be added to the number of instances of an animal poison being developed in diseased and putrid meat.

As illustrative of what other causes may be in operation to render food deleterious, we find the following in the *Stamford Mercury:* "About a fortnight ago, a farmer in the fens, having cooked his mangolds and potatoes for his pigs in the furnace in which he had just before dressed his seed-wheat with mercury, the poor animals soon exhibited unmistakeable symptoms of having been poisoned, whereupon this conscientious farmer at once cut their throats, dressed them, and sent them off to London, where they were sold for about a shilling a stone."

DEODORIZER OF SEWAGE.

Drs. Hofmann and Frankland in their report to the Metropolitan Board of Works, state that, of all agents employed for disinfecting sewage-water, the perchloride of iron stands the highest in value, next will come chloride of lime, and lastly lime.

Three equal quantities of sewage were severally acted upon by these agents; after three days, the lime sewage had become very offensive, the other two remaining free from smell. At the end of four days, that containing the chloride of lime began to emit a disagreeable odour, while the perchloride of iron remained perfectly inodorous, and continued so after the lapse of nine days. As it respects the time required for clarification after the addition of the disinfectant, the decided preference is also given to the perchloride of iron, while, from the quantity required being less, it is likewise the cheapest agent.

HEREDITARINESS OF THE EPILEPSY INDUCED IN THE GUINEA-PIG.

By M. Brown-Sequard.

One of the most interesting facts among those discovered by M. Brown-Séquard, is the production of epilepsy in the mammalia, and especially the guinea-pig, as a consequence of certain lesions of the spinal cord. He has frequently repeated these experiments, and with the same results. At a recent meeting of the Biological Society he related the results of the observations he had made during several years upon the young ones born of parents thus rendered epileptic. In some of these he has met with a very distinct epileptiform affection, with well-characterised paroxysms, but differing somewhat from the epilepsy of the parents. In the latter, not only are there spontaneous paroxysms, but others may be induced at will, by irritating or pinching the skin of the face; but in the pigs which appear to derive their convulsive affection from their parents, paroxysms cannot be induced in this manner; while the form of those occurring spontaneously is not exactly the same. The animal is first seized with trembling, and then falling on its flank it agitates its limbs spasmodically. The young pigs thus affected have proceeded in about an equal number from epileptic mothers and fathers. Sometimes parents thus rendered epileptic by myelo-traumatism produce little ones, none of whom exhibit the affection, or while some do others do not. M. Brown-Séquard has had under his observation a very large number of guinea-pigs, and while not denying the possibility of the fact, he has never seen a single animal present an analogous convulsive affection, unless it had previously undergone a lesion of the medulla, or was the offspring of a parent who had been rendered epileptic in this manner.—*Gazette Hebdomadaire*, No. 44, and *Medical Times and Gazette*.

THE VETERINARIAN, JANUARY 1, 1860.

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

THE ANNUAL ADDRESS OF THE EDITORS.

"Roll round, strange years; swift seasons come and go:
Ye brand upon us only an outward sign;
Ye cannot touch the inward and divine."

So rapid is the flight of time that, were it not for recurring periods, we should almost fail to notice its progress.

It seems not long since that we were engaged in reviewing the proceedings of the year then nearly passed; and now we are called upon to repeat the retrospect. It is well if this be pleasing; and if it should be otherwise, it may prove no less profitable, by causing us to search out wherein lies the cause of its not being so.

From this stand-point, then, would we cast back a glance over what has been done by us during the year, so as to see what advance has been made. 'Tis a self-imposed task, it is true; nevertheless, hitherto it has proved useful, since it has often been suggestive, whilst we have been enabled both to record our onward progress and to ascertain the position in which we stand as a profession.

A pause in the march of time might almost be thought to take place at the close of one year and the beginning of another, so that this retrospective view might be made. By the older philosophers we have been told that the actual moment is the confluence of two eternities. We stand for ever at the point between *what is* and *what is to be.* The past, therefore, should awaken in us fresh resolves for the future, since with it new responsibilities will devolve upon us. Each closing year is an epoch in our lives. We are then able to look back upon an ill- or a well-spent period of our existence; and our resolutions are to be taken accordingly. Should the inward monitor not accuse us, it will be well. But few, alas! have not some errors, some neglect or remissness, to lament; and fewer still can say, "I have done all I ought."

These periodical reports may, in the language of Longfellow, be designated

"Foot-prints on the sands of time."

They tell us of its passing, and remind us of our duty. They likewise bring to our remembrance the many changes that are taking place around; some of which, were it not for the deep impressions they make, would pass away and be forgotten. Gradually we feel that changes are also being effected in ourselves, and we would fain leave something behind us—some little proof of the efforts we have made to assist in the building of the temple of science. We have no desire to have heaped over our remains

"The storied urn or animated bust;"

but would rather live in the memories of those whom we have endeavoured to serve, and with whom we have been associated. As masses are made up of individuals, so each may be said to give a tone, a character to the whole—

"Each helps to mould the age, and is moulded by it in return."

Each, too, has a duty to perform, and depending on the performance of it will be his right to censure others. How few are these! Labouring with a determined mind and high purpose, although the period of life be but short, sufficient opportunity is given to each, whatever may be his avocation, to accomplish some end and purpose beneficial to his fellow-man. It seems that our lot is cast in days which admit of no alternative than to move onwards, if so be we are true to ourselves. To stand listless by—to be indifferent to what is going on—or to be careless as to the result—is not only unwise, but suicidal. Doubtless, there is a sense in which we are what we make ourselves; yet labour, unremitting labour, is demanded of us, which, however, is not to be unassociated with the exercise of discretion, lest we err, and mar the work in hand, or fail in the attainment of the object we have in view.

It has been said, "The age in which we live is distinguished above those which have preceded it, by the extension of our commerce, the increase of our national wealth, and the vast additions that have been made by the improvements of science to the substantial comforts and enjoyment of mankind. So far as our own country is concerned, it is an age also of the highest political liberty, and of the greatest religious privileges. Without any hesitation it might be affirmed that there never was a period in the history of the world when the elements of social happiness were so widely diffused, or brought so completely within the grasp of all who are disposed to conduct themselves with ordinary prudence."

And all this calls upon us to aid in the advancement that is taking place—to add our efforts, feeble though they be, to bring about those results which shall culminate in the general well-being of mankind.

It may be thought by some that our position in the scale of science is a subordinate one. Be it so; nevertheless, it has its worth, and few will be bold enough to gainsay its usefulness, since by ministering to the wants and necessities of the lower animals we very considerably enhance the happiness of the nobler animal—man.

We would refrain from boasting, which has been termed the fool's amusement and the wise man's horror; yet we dare not profess ourselves to be indifferent to the appreciation that has been evinced of our labours; contrariwise, we esteem it highly. It will be conceded that there is a pleasure in the performance of a duty; nevertheless, this becomes considerably enhanced when an assurance is given of attendant success. If, as it has been observed, general literature is the pledge and security against the retrogradation of humanity, the effectual breakwater against barbarism, the ratchet in the great wheel of the world, which, even when it stands still, prevents it slipping back—surely something may be claimed for special literature, or that devoted to a separate and distinct section.

We have ever been anxious undeviatingly to maintain the course we at the first laid down for our guidance. The interests of our readers and our own are identical. Whether at all times we have done that which is most conducive to the end we have had in view, it is not for us to say. The adage, *Nemo mortalis*, &c., will not be forgotten by our friends. Nevertheless, *what has been* must be accepted as a guarantee for *what is to be*. We have no fresh pledges to make, no protests or promises of amendment to offer. Our earnest desire is, not only to maintain the position in which we stand as a profession, but also to advance it; and the experience we have gained makes us bold to believe that our efforts will not prove in vain, while the state of our pages gives unequivocal proofs of the estimation in which our Journal is held. May no lack of zeal, no dereliction of ours, ever cause a forfeiture of this support; but with succeeding years may it both continue and increase!

It is an old, old story—as old nearly as the world, and probably will remain the same to the end of it—to tell of unrequited toil. But the poet has said

> "The rose that has been ruffled by the storm,
> Droops not for aye her leaves;
> After the rain
> She lifts her tearful head, radiant again."

It always has been the lot of some men to labour and others to reap the fruit of it. There are those in every community who, like the Athenians of old, are always seeking after something new, while they themselves do nothing. These are the fortunate in life, and men count them wise.

We have before stated that the Journal has become enlarged since in our hands. We have also been obliged to continue the frequent use of small type, and yet at the close of the year we found ourselves in arrears. This gratifying state of things we owe to our contributors; and although it adds to our labour, the occupancy of our time, and our responsibility, yet are we willing to submit to not only all this, but even, if needs be, to much more.

It will be observed that the portion of the cover usually allotted to the names of our contributors having become more than full, with the present number we commence a second series. May this be even more quickly filled than the preceding one has been.

We believe that the past year's volume will be found to contain matter as interesting as any of the former ones. The communications have been neither few nor wanting in importance, while the selections made from contemporary writers have enabled us to place before our readers subjects both varied and useful, by which the profession might be benefited; whilst, at the same time, it has been made acquainted with what is doing in other divisions of science connected with veterinary medicine.

Perhaps we may be permitted to refer to the series of papers on "Botany, as applied to Veterinary Science," by Mr. Watson, as a proof of what has just been advanced. At the commencement of the volume we hesitated not to express our high approval of them, and already we think we see in them gleamings forth of their practical usefulness. Never does a season pass without some inquiries being made which an acquaintance with botany alone enables us satisfactorily to answer.

The translations, &c., from foreign journals have been uninterruptedly continued by Mr. Ernes.

The important division of VETERINARY JURISPRUDENCE has occupied much of our space, and it was only by the use of small type, already adverted to, that we were able to find room for it. When, however, our Journal is referred to by counsel in courts of law, it becomes, in every sense, desirable that this section should not be lost sight of.

It is with some degree of regret that we have been again compelled to insert controversial matter. But a limit must be put to presumption, and charlatanic schemes must not be allowed to go on uncondemned nor unchecked. Further, the endeavour to build up a professional reputation by the detraction of others is sure in the end to fail, and ultimately to recoil on those who attempt it. On that account it is we have withheld some communications which we thought were not only uncalled for, but calculated to engender feelings that ought not to exist between the members of a profession. The motives imputed do not sometimes exist; they are merely conjectured, and when given expression to often provoke the bitter retort. And what is the good to be derived from this? A few bad spirits may, perhaps, exult in an awakened controversy, it being in consonance with their feelings; but the many will deplore it. It is, however, "ill striving to straighten the legs of grasshoppers." Such persons glory in their crooked ways, and are only happy when creating discord. These we would leave, as we have no feelings in common with them.

We know that in thus acting we give offence to the accusing party; he likes not to have the *ban* put upon his writings, which he thinks he has all right to have publicity given to. Herein lies one of the difficulties of an editor—judiciously to withhold from insertion that which is calculated to be productive of evil rather than good. Want of union is division, and where this is there is no strength in the body. Discord too often neutralizes all efforts made for advancement, and a whole community frequently suffers through the inconsiderate conduct of a few of its members.

We have always considered ourselves caterers for one section of the professional public, and our desire has been to obtain for our pages such matter as shall contribute to its mental sustenance and healthful condition. We have declared ourselves to be neither iconoclasts nor revolutionists; rather would we preserve the old landmarks than destroy them; nevertheless, we hold ourselves free to act for the general good. "There is an oppression which driveth a wise man mad." This we cannot tamely submit to, believing that although there may be errors in judgment, we are nevertheless actuated by right motives. "Onwards" is still our motto. It is true we have advanced, but we are not satisfied with the whereunto we have attained; it reaches not so high as our ambition—albeit this may be a dangerous pole-star—would raise us. Yet, while all around us is giving proof of the onward march of mind and indicates development, we dare not, cannot stand still, lest we become laggards in the race. All we ask is the continuance of the support we have hitherto received, and our hopes for the future are confident and strong. Our labours may be considered but supplemental to those of others, "our journal being just what the profession makes it"—an observation that cannot be too often repeated.

Thus have we reviewed the proceedings of the past year: may the coming one prove no less propitious than it has been. We are not unconscious of the slender thread on which hangs popularity, nor how fickle is public applause:—

> "Ever varying, like the shade
> By the quivering aspen made."

Still our desire is, the period of our probation being ended, satisfactorily to perform our duty to the profession, knowing this—the advantages to be derived will be mutual.

It only remains for us to close by a reference to those members of the profession who have been taken from among us by death. The number has not been so great in this as in antecedent years.

In our last annual address we expressed a hope that ere another year had elapsed peace would be restored to India, and now we have the gratification of being enabled to state that such is the case. The proclamation of her Majesty appears to have given universal satisfaction; chief after chief, and prince after prince, have accepted the amnesty, and acknowledged the sovereignty of England, trusting to her clemency. A few dying embers of the mutiny have yet to be trodden out, which smoulder like the ashes of an extinct volcano, whose force has been fully spent. This singular, this before unheard-of insurrection—this strange drama—is rapidly approaching its termination. Fearful indeed has been the destruction of life during it, but the beginning of the end has come, and after the subsidence of the storm, although now and then the waves may dash ineffectually upon the shore, we shall hail the calm, rejoicing in it, for the power of Great Britain in the East will hereafter be irresistible, and becoming consolidated, it may be hoped that by the operation of industry, aided by science, the capabilities of that rich country will become developed.

In that rebellion several of our professional brethren lost their lives. It was not theirs to move in serried ranks, nor wield the falchion. Their duty was not warlike; nevertheless they fell, basely murdered. Can it be said,

"Happy for them was the opportunity of death"?

Yet for them the heart of the nation has not throbbed, orators have not declaimed, senators have not applauded. Their names are simply recorded in our humble pages, and we regret their loss, for we knew them all. Little thought we that, while yet young and hopeful, just entering on life's duties, they would have been hurried hence, and in such a manner. May no recurrence of the like atrocities awaken a nation's sorrow, nor our own.

Yet although none have fallen in war, or by the ensanguined hand of massacre during the year, we have had to record the death of one and the return of others, on whom the climate of India has produced its enervating influence while engaged in the performance of their duties. The rest were among us here, many being much younger than ourselves, with whom, perhaps, the change is not far distant. Still, they are only gone before, and we shall meet again—

"Where—every faculty renewed—
No evil mingles with the good;
Where pain and parting ne'er intrude—
We'll meet again."

THE AGE OF THE RACE-HORSE AS INDICATED BY HIS TEETH.

We consider the question raised by Mr. Goodwin in his communication, to be one of great importance, both to the veterinary profession and the supporters of the turf. We need hardly remind our readers that, according to the laws of the Jockey Club, an animal born antecedent to the 1st of January in any year, without reference to the precise date of its birth, is at that time considered a year old; or, in other words, the age of all thorough-bred horses is dated from the first day of the new year.

The position which has been taken in the betting circle by "Umpire," a horse foaled out of the country, and one remarkable for the general development of his frame, has naturally raised the question, whether the dentition of a two-years old will, at any time before the completion of the year, afford satisfactory evidence to a scientific examiner of his having been foaled two or three months before or subsequent to the 1st of January?

After considerable experience connected with dentition, we unhesitatingly answer, that so near an approximation to the *exact* age of a horse is not afforded by the teeth, either between two and three years old, or at any other period of the animal's life; although a good judge, being guided by the time of the year he was making his examination, and other collateral circumstances, will most likely not greatly err in the opinion which he may give.

In the case in question, we believe that no doubt of the animal's age having been correctly given is now entertained, and that the best scientific evidence obtainable has fully borne this out. Nevertheless, this leaves the problem still unsolved. If dentition cannot be implicitly relied upon, surely, as suggested by Mr. Goodwin, some addition to the means now at our disposal should be made, so as to protect the racing world against fraud; and we cannot see why the owners of thorough-bred horses should not be required to fill up certificates, to be returned to the Jockey Club on their entrances for our great races, setting forth the names of the breeders, as well as the exact ages of the respective animals; as is done by the proprietors of cattle which are brought together at our agricultural exhibitions. We think that some such plan as this might be adopted; but we would not urge its adoption in preference to the system of registration proposed by Mr. Goodwin.

Translations and Reviews of Continental Veterinary Journals.

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

Journal des Vétérinaires du Midi, for July, 1859.

EXPERIMENTS ON THE PRODUCTION OF VERTIGO IN THE SHEEP, OX, GOAT, &c.

By M. C. Baillet, Professor, Imperial Veterinary School, Toulouse.

Since the remarkable researches of the Belgian and German naturalists have drawn the attention of the scientific world to the migration and metamorphoses of the Cestoïdea, other interesting and multiplied experiments have confirmed the discoveries first made, and no one among those who have studied this division of zoology can doubt the reality of the principal facts upon which are based the new theories. But if the general laws which preside over these phenomena are at present well understood, it is not so with a multitude of secondary questions, the study of which is bound up with the habits of each particular species, and the solution of which offers on that account the greatest interest for the etiology of certain vermicular diseases.

In a work, published nearly twelve months ago, the author has endeavoured to demonstrate, by microscopic research, that several species of the order Tænia, closely connected with one another, can inhabit the intestines of the dog, and that each of them corresponds to a particular hydatid.

Further, that probably to this circumstance must be attributed the non-success of some experimenters, who, to produce vertigo in sheep, have made use of segments of the tænia of the dog.

In the experiments which the author instituted this year, he proposed to ascertain whether the same species which produced vertigo in the sheep would also produce it in other ruminants; that is to say, in the ox and the goat.

Of all the tribe Ruminantia, the sheep is the one that is most commonly attacked with vertigo, and although it is less frequently seen in the goat, nevertheless, many veterinary surgeons have had opportunities of observing it in those animals; but it is infinitely rarer in the ox. However, M. de Siebold informs us that in Southern Germany a great number of the ox tribe are attacked with this malady. M. Prince has also stated, in the *Journal du Midi*, that it is frequently met with in the Jura Mountains of France.

But it is not only ruminants that are exposed to the ravages of the cœnuri, they have been found in the rein-deer, the camel, and the roebuck. M. P. Gervais has met with them in a mouflon at Montpellier, M. de Blainville in a chamois at the museum in Paris, and the author assisted at the autopsia of a gazelle at the Veterinary School of Toulouse, in the cranium of which an enormous cœnurus existed.

Whatever may be the animal in which they are found, they are always in the form of vesicles, having semi-transparent parietes, their size varying with their ages, and on their surfaces *scolices* more or less numerous exist. These external appearances are, however, not sufficient to establish, without further proofs, that, in the different kinds of ruminants, the cœnurus found in them belongs to the same zoological species; and it can only be by experiments, and the study and comparison of the *scolex* of the one and of the other, that it can be hoped to solve this question.

Many of the proglottides were collected from the fæcal matter of the bitch, Rigolette; the only one that remained alive of those to whom the cœnuri had been administered in 1858. It may be as well to remark here that it was more than sixteen months since, that a portion of a cœnurus had been given to Rigolette, and although not a week passed without finding a proglottis, or fragments of several segments of the tænia, her health did not appear to be at all impaired by the presence of these parasites in her intestines. But it might be presumed, that had she been employed as a shepherd's dog, it would have occurred to her owner to have kept her from the flock, or she might have fearfully spread the seeds from which vertigo is derived. She was not, however, the only dog from which the author obtained the proglottides for his experiments. Others were furnished by three young dogs, to which, on the 2d and 25th of February, 1859, had been given two cœnuri, found in the brain of two lambs that had been slaughtered on account of their being affected with vertigo. Two of these dogs were killed on the 21st of

May. In the intestines of one of them were found 49 *Tæniæ cœnuri*, varying from 55 to 70 centimetres in length; and in the other 113 of the same worm, and of similar lengths. The third dog is still alive. He frequently voids proglottides, and, on the 18th and 20th of June, there were found in his excrements four entire tæniæ, which presented all the characters of the *Tænia cœnurus*.

In order that these experiments might attain their desired object, the author has experimented, at the same time, on lambs, kids, and calves, and even on an old cow, and a goat, six or seven years old, although the ages of these latter afforded very little hope of success.

The first experiment was on two lambs. They were given the proglottis taken from the dog Rigolette. The first had administered to him on the 10th of March, 1859, ten proglottides, and symptoms of vertigo manifested themselves suddenly on the 20th, and continued till the 23d of the same month. During the whole of that time the lamb constantly laid down on its right side, and when put on its legs it could hardly stand. Its gait was unsteady, and it always turned to the right whenever it could be made to walk a few steps.

On an autopsia being made, the brain was found, on its upper surface, to be of a pale-yellow colour, and furrowed in a striking manner, resembling the traces left by the larvæ of certain insects on organized matter which they have passed over. All the blood-vessels of the surface of the brain were much distended, and, on cutting into the substance of that organ, it was observed to be marked with numerous red spots. In one of the furrows above described some vesicles were found of a spheroidal shape and transparent.

On the 21st of May, the second lamb was given fifteen segments of the tænia taken from the intestines of some dogs that had been destroyed on the same day.

The symptoms of vertigo had not long to be waited for. On the 30th, the animal was observed to be very dull, stood in a corner, and refused its food. On the 1st of June the head was evidently carried on the right side. There was also marked debility; the cubitus was almost constant, and when made to walk a few paces the action of the limbs was unsteady. On the 3d the state of the animal indicated great suffering, and the head was rested against the wall, which it pushed at with all its might. The next day these symptoms continued, and ultimately they became more aggravated, until the animal died, which was on the 7th of June.

On the autopsia, which was made immediately after death, the yellow-coloured furrows on the surface of the brain were found to be much more extensive than in the first case. There also existed between the cerebral convolutions, down to the ventricles, 163 globular-shaped vesicles, each about the size of a millet seed. Three similar ones were likewise met with between the folds of the nervous substance of the cerebellum.

For the first time, the author observed that these vesicles were placed in a sort of cone-shaped infundibulum, which seemed to be formed by the compressed nervous substance. It must also be added, that some traces were seen on the cranium of the passage of the proscolex. On the pleuræ, the heart, and some parts of the peritoneum, the same yellow furrows were visible.

II.—Experiments on Goats.

Four kids were selected for experiment. The Proglottides administered to them were obtained from the same source that the others were.

To avoid confusion, we will take them in numerical order.

No. 1 was a very young kid, taken from its mother before it was weaned. On the 4th of March, 1859, it was made to swallow ten segments of the tænia cœnurus, voided by the dog Rigolette. Nothing particular was observed until the 10th of the month, at which period a new segment of a worm was given, also from the fæcal matter of the dog. On the 11th, in the morning, the kid was found lying down. Attempts were made to make it stand up, but it was so weak that it could not keep on its legs without holding it, and in that position it turned its head to the left side, resting it on the shoulder. It died at two o 'clock in the afternoon.

On the autopsia, which was made immediately after death, the brain was perceived to be gorged with blood, and on a section of it being made, numerous red spots were found to exist; but there were no yellow furrows on its surface, nor apparently any vesicles. It is, however, probable that the animal succumbed to the disorder caused by the proscolex in the brain.

No. 2.—On the 15th of April to this kid was given, six proglottides taken from the fæcal matter of Rigolette, and on the 19th, two more segments were administered to it, obtained from the same source. Up to the 3d of May, the animal fed well, and appeared to be in good health. On the 4th, it was found lying down on its right side, and making impotent efforts to get up. On being touched, it rolled over and over, until it got to the wall,—just like children at play on the grass roll themselves down an eminence,—bleating all the time in a plaintive tone. The eyes were retracted convulsively within their orbits, and when placed on its legs, it could not stand, but fell like a lump on the litter. However, during the day the symptoms somewhat abated. The animal got up by himself, and ate a little ; but the head was constantly carried on the right side. When made to move, its walk was feeble and unsteady. This amendment did not continue long, for on the 5th, it was again down on its right side, and, as on the previous day, rolled himself over and over, under the least excitement. From that time it was nearly always down, but would eat a little, mechanically, as it were, when fodder was put within its reach. If, on being turned over, it was accidently arrested on the left side, it appeared to suffer greatly. It now seemed to be unconscious ; the head was sometimes thrown back on the withers, the nose being extended upwards. It did not, however, remain long in this position, but made violent efforts to get on its right side ; in which position it was always quieter. On the 8th of May it died.

On making an autopsia, there were found in the brain 43 vesicles, varying in size from that of a mustard seed to a pea. They were distributed in the following manner : 25 were found in the left lobe, 16 in the right lobe, and only 2 in the cerebellum. All were situated near the yellow matter, which covered the surface of the brain, and which had exactly the same appearance as that before described in the lambs. Here, also, we could recognize on the cranium, and in divers other regions, the traces manifested by the passage of the proscolex.

The kids, Nos. 3 and 4, resisted all attempts to instil the embryo of the tænia cœnurus into their nervous centres. The first took 23 segments obtained from the dog Rigolette, but all the effect produced, was a little dullness for three or four days. The second took 15 segments, taken from the young dogs that were killed, and five from the fæcal matter of the dog still alive, yet nothing was found either in the cranium or other organs, appertaining to the administration of the tænia cœnurus after their death.

III.—Experiments on a Calf.

The author has only experimented on one calf, to which he administered, on the 16th of April, 1859, 35 proglottides ; on the 17th, two ; on the 27th, ten ; on the 11th of May, eight, and on the 20th, twelve or more, all taken from the dog Rigolette.

At the beginning of May, the subject of this experiment showed some dullness. Its eyes were almost always half-closed and weeping, particularly that on the left side; its walk was unsteady, it ate but slowly, and was indifferent to surrounding objects. On the 21st, this state was aggravated. The animal was found lying down, resting on the sternum; the body was inclined to the right, and was only prevented from falling by the wall. The neck was bent in such a manner, that the head rested on the left shoulder, the hair of which was wet with tears; it refused all food, but, at times, still ruminated. In attempting to make it get up, it could only rise on its knees. With assistance, it was got upon its legs, and it then could only be made to walk two or three steps with the greatest difficulty, after which it fell on its knees again, and turned over on its right side.

On the 22d, these symptoms were so much aggravated, that it was easy to foresee that death would speedily put an end to its sufferings, and this occurred on the morning of the 23rd.

On the autopsia, 24 vesicles were found in the brain, the smallest of which were the size of a pea, the largest that of a cherry. Of these, five, which were perhaps on the surface of the brain, became detached the moment the coverings of that organ were removed, without being able to determine their exact situation. Eight existed in the right lobe, nine in the left, and these were all deeply seated in the substance of the brain. Of the two others, one was situated on one of the tubercles of the corpora quadrigemina on the right side, the other was partly enclosed in the middle lobe of the cerebellum, and partly extended forward. These vesicles, which were deep-seated, had made small depressions in the nervous substance, at the bottom of which is almost always found a small infundibulum of almost a cone-shape. This seemed to be formed by the condensation of the nervous substance.

IV.—Experiments on Adult Animals.

To perfect as much as possible these researches, two adult animals were submitted to experiment. One was a he goat, seven years old. At different times more than 800 proglottides were given to him, taken from the dog Rigolette, and the young dogs which were destroyed on the 21st of May, and also from the one that was still alive; but his health has not undergone the least change.

The other animal was an old cow, which at three different times took 100 proglottides obtained from the same sources. She also did not show the slightest symptoms of vertigo.

She was killed on the 23d of June, but no traces of disease were found in the brain. It might have been presumed that these animals would resist this sort of verminous infection, inasmuch as their tissues are but little adapted to the emigration of the proscolex of the cestoïdea.

These experiments may be summed up in the following manner:

Three dogs took, at the same time, portions of the cœnuri obtained from the brains of two sheep, and in all three the tænia cœnurus was found in their intestines.

2. To two lambs was given the proglottis of the tænia cœnurus, and both fell a sacrifice to vertigo; and in the brain of them were found a certain number of cœnuri and other serious alterations in their great nervous centre, caused by the proscolex.

3. Four kids were likewise made to swallow the proglottis of the tænia, and although the results were negative in two of them, the congestion of the brain in the third must be attributed to the invasion of the proscolex. And as to the other, the existence of numerous cœnuri in the brain suffices to establish the complete success of the experiment.

4. To a calf was given, like the preceding ruminants, the proglottis of the tænia cœnurus, and at its death twenty-four cœnuri were found in its cranium.

5. An aged cow and an old goat were subjected to the same test, but they remained healthy; this, however, might have been foreseen on account of their age.

The result is, that in twelve animals experimented on, eight have confirmed in a most positive manner the reproductive function of the cestoïdea. But this conclusion is not the only one derived from these experiments; for, as before stated, the microscopical examination of the scolex detached from the cœnurus of the sheep, the goat, and the ox, allows, as a fair presumption, that it is the same species of the order Cestoïdea which gives rise to vertigo in these different animals. In fact the proglottisides and the segments which were administered to these ruminants, were all derived from cœnuri that had existed in the brain of sheep. As for the dog Rigolette and the others, it was by making them swallow the cœnuri of sheep, that the tæniæ cœnuri were produced in the intestines of these carnivora. If, therefore, the eggs of the tæniæ have produced the cœnuri in the brain of the calf and kids, it cannot be doubted that these cysticerci are the same as those of the sheep, since they are derived directly from the cœnuri taken from the cranium of the sheep.

We are therefore justified in drawing the following inferences from these experiments: 1. That the eggs of the tæniæ cœnuri in sheep will also produce them in the goat and in neat cattle. 2. That, consequently, these three hydatids, although they existed in three different species of ruminants, are to be considered as belonging to one and the same zoological family or order.

We have further to add that, in these experiments, we have greater proofs than in those of last year of the progress of the proscolex in the tissues. The study of the yellow furrows, which we have found more than once without the cranium, suffice to remove all doubt, on this point; as in certain cases the resemblance of these traces has been so similar to those which we have observed in the brain, that it would be contrary to evidence not to recognise that they are derived from the same cause.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF THE COUNCIL, HELD OCT. 26, 1859.

The President, W. Burley, Esq., in the Chair.

Present: Assistant-Professor Varnell; Messrs. J. Turner, W. J. Goodwin, W. Field, J. Wilkinson, J. Legrew, W. Cheeseman, W. Mavor, S. Withers, W. Ernes, J. Moon, and W. Helmore.

The minutes of the previous meeting having been read and confirmed, the Treasurer placed before the Council the quarterly balance sheet of the accounts of the College, which having also been read—

It was moved by *Mr. Withers,* seconded by *Mr. Legrew,* and carried, that the Treasurer's report be received.

There being no other business to bring before the Council, the meeting broke up.

E. Braby, *Hon. Sec. pro tem.*

At a meeting of the Board of Examiners, held December 21st, 1859, the following gentlemen, late Students of the Royal Veterinary College, having passed the required examinations, received their diplomas, and were entered as members of the College:

Mr. J. Anderson, Glasgow.
„ T. J. Richardson, Tring.
„ F. Jarvis, London.
„ P. W. Sandover, Ermington.
„ T. Neeve, Halesworth.
„ M. D. Byrne, Brighton.

Veterinary Jurisprudence.

BREACH OF WARRANTY.

MALMESBURY COUNTY COURT.

Alfred Ward, of Nettleton, gentleman, *v.* Benjamin Curtis, of Hullavington, horse-dealer.

This case, which was tried in this court in June last, when the jury were unable to agree to a verdict, has excited an unusual degree of interest amongst all classes in this and the surrounding neighbourhood, and in consequence the court was densely crowded on Monday, Sept. 5th, when a new trial took place before James Francillon, Esq., judge, and a respectable jury. Most of our readers are probably familiar with the leading facts of this case, but as a good deal of new and additional evidence was imported into the present hearing, and as some diversity of opinion exists on the subject of the question in dispute, we again give a detailed report of the proceedings, in order that those who feel an interest in the case may, on perusal of the evidence, be in a position to form an opinion as to the correctness of the verdict or otherwise.

The gentlemen composing the jury on the present occasion were: Mr. William Peacey, Crudwell, Mr. Joseph Hiscock, Hankerton, Mr. William Cave, Newnton, Mr. Richard Elliott, Sherston Magna, and Mr. William Newth, Sherston Parva. The damages claimed by the plaintiff were, it will be recollected, £11 12s. 6d., and the amended particulars alleged that, contrary to the defendant's warranty, the horse in question was, at the time of sale to the plaintiff, unsound, and was not good in harness, and not free from vice. Mr. Edlin, barrister-at-law, of Bristol, instructed by Messrs. Deane, Chubb, and Saunders, of Gray's Inn, London, appeared for the plaintiff; and Mr. W. S. Jones, of the firm of Messrs. Jones and Forrester, solicitors, Malmesbury, conducted the defence. Mr. Jones admitted the warranty, but denied the breach. Mr. Edlin, in his opening address to the jury, gave an outline of the evidence which he should lay before them, which would, he believed, conclusively bring home to their minds that the warranty had been broken, and that therefore the plaintiff would be entitled to a verdict. Mr. Edlin then called—

Mr. Ward, the plaintiff, who deposed as follows—On the 31st March last, I purchased of defendant, at Hullavington, a nag-horse at £37. Defendant signed a written warranty stating that the horse was sound, good in harness, and free from vice, which warranty I now produce. I drove the horse home. On the following morning I tried the horse, when I found it go stiff on its fore legs, especially the off fore leg. On Wednesday, the 6th April, I drove the horse from Nettleton to Bath. I found it very awkward in going down the hills, and the horse went very badly. I went the least hilly road, and found that the horse went worse than when I had previously tried him. The horse stumbled a good deal on rough road, and wanted the whip in going down the hill—in my judgment the horse did not go good in harness. Drove him with all the care I could. The distance to Bath is about twelve miles, and I was nearly three hours in performing the journey. The horse had a good rest in Bath. It made a very bad stumble in going down the Gloucester road. I thought he had broken his knees, but he had not. I left Bath about six o'clock. In coming up one of the hills there was something at a gate, the horse shied from one side of the road to the other, and I thought he would have gone round. On the following morning, the 7th April, I noticed when the horse came out of the stable that it went stiff and slightly lame on its fore legs. On the following day (Friday) I drove him out a short distance, and found that it went worse than it had at all, both with regard to shying and going. On the 8th April I wrote to defendant, stating that the horse shied and went badly on his fore feet. Defendant did not reply to this letter. On the following Saturday I called at defendant's house, and told him the horse was subject to shying. Defendant said the horse did not shy. Defendant asked if I knew whether the horse was unsound. I told him I was not sure of the horse's unsoundness, but that I was going to have him examined. Defendant told me he would write to Mr. Rumming, from whom he had the horse. On the 11th April I drove the horse to Chipping Sodbury, and had it examined by Mr. Limbrick, a veterinary surgeon. On the same day I wrote to defendant, communicating Mr. Limbrick's opinion to him as to the horse being unsound. Near my house there is an incline, and on starting to Chipping Sodbury the horse nearly fell in passing this spot. On the 12th April I returned the horse to defendant. On the 13th the defendant sent the horse back to me. Shortly afterwards the defendant, accompanied by Mr. Scott, a veterinary surgeon of Chippenham, came to my house. Mr. Scott examined the horse, and pronounced it sound. Defendant said he should not have the horse again, and I told him I should not have it. Mr. Scott afterwards said, "I think you had better try and settle it in some way or other. Mr. Curtis had better supply you with another horse in a week or so, and you keep the horse till then." The horse was left on that condition. I never saw defendant afterwards, and the other horse never came. On the 27th of April I sent notice of sale to defendant. The horse was sold on the following day, the 28th, and realised £28 10s. I had kept the horse that time at the defendant's request. Defendant was present at the sale. The horse was sold to a Mr. Neale, of Thingley, near Corsham. I afterwards in June last went with Mr. Leigh, a veterinary surgeon of Bristol, to Thingley, and pointed out the horse. I then found the horse shod with leather. I again went on a subsequent day with Mr. Kent, of Bristol, to examine the horse. It required some "scheming" to get at the horse. The horse had a very bad broken knee when I examined it with Mr. Leigh. It had not a broken knee when it was sold by auction.

Cross-examined by Mr. Jones—Before I bought the horse I knew Mr. Rumming had been the owner of it. I very properly went to see Mr. Rumming about it. I asked Mrs. Rumming the reason of her husband parting with the horse. She told me that it was very good in harness, and that the only reason of their parting with the horse was because it did not go fast enough. Curtis told me I might put the horse in the gig, but don't remember that Curtis told me to try the horse in any way I liked. When I tried the horse, defendant's man drove it. The horse was pulled up together, and went very well for about half a mile. The pulling up is generally resorted to when horses have bad feet. I have had thirteen years' experience with horses. A man named Holborow exercised the horse after Mr. Curtis returned it to me. Don't know that early in the month of April last my carter galloped the horse backward and forward on the bad roads as hard as possible. The horse has flat and rather broad feet. Don't know that broad and flat feet are not liable to injury. The roads are not particularly bad in my neighbourhood. On the Saturday I went to defendant I don't know whether I complained of the horse's fore legs. I know I complained of it in my letter. On the Monday I went to Sodbury I started in the morning. Never knew a horse stumble on his hind feet. Had no conversation with Mr. Leigh about the horse before. I told him that I believed there was a lameness. Had some difficulty and scheming to see the horse. I was not aware that Mr. Neale had a case at the assizes till afterwards. Mr. Neale's bailiff told me that neither his master nor the horse were at home. We found the horse on another farm occupied by Mr. Neale. I thought there was a little scheming, because I had information that the horse was only a mile or two from the other farm. When the horse was in the stable, it often pointed on the off fore foot. I never spoke to Rawlings of Yatton Keynell, to get him to settle the action. I never said that I didn't care if I could only get a verdict.

Re-examined by Mr. Edlin—I heard in my own place about three weeks since that the horse had been galloped by my man. Defendant once said to me that he thought there was a little hair off the hip, but never complained to me that the horse had been improperly treated whilst in my possession.

By the Jury—The horse was not shod with leather when I bought it of Curtis.

William Bushell, plaintiff's farrier, and James Fream, plaintiff's man-servant, were both tendered by Mr. Edlin for examination, but no questions were put to either witness.

Edwin Bailey was next called and examined by Mr. Edlin—Is a farmer at Nettleton. Witnessed the warranty. Defendant said the horse was sound and good in harness. Went to Chipping Sodbury with plaintiff when he went to see Mr. Limbrick. The horse went better up hill than down. Stumbled on both his fore feet, and should fancy he was not a safe horse in harness. Heard Mr Curtis say he would get another horse in a week or so. When the horse was on the top of a hill he cubbled, and went decidedly lame on his fore feet, and stepped as though he was afraid to step out and go forward.

Cross-examined by Mr. Jones—Don't know but what I said this at the last hearing, or something to the same purport. Mr. Ward's gig is a light one. The horse went lame both on rough ground and down hill. Curtis did not say he would give me a new hat if Mr. Ward bought the horse.

By the Jury—The horse was lame on the off fore foot.

Mr. John Kent, veterinary surgeon, of Bristol, examined by Mr. Edlin—I obtained my diploma in 1813, and have been in practice forty-eight years, during which time I have had great experience in the treatment of horses. On the 22d July last I met Mr. Ward at the Corsham Station. Mr. Ward then showed me the horse in question. I examined it for the purpose of expressing a scientific opinion. Examined the two fore feet very carefully, and found the feet diseased and the horse lame. There was general disease of both fore feet, it was sensible to the touch. Ossification was going on in the cartilages of both feet—the off foot was most diseased. The disease could not be seen. I produce a horse's foot with cartilages. In the one produced the cartilages are elastic. In the horse in question the cartilages were replaced by ossification. Ossification had been going on many months. The disease is very slow in its progress. Cartilages are attached to the coffin-bone, the bony substance being deposited for the cartilages is extending to the coffin-bone. I have no doubt the navicular bone was becoming ulcerated. The disease, I think, must necessarily have existed for upwards of six months. The horse had an unnaturally flat sole and thin hoof, and was unfit for its work. I produce a specimen of cartilages in a progressive state of formation. Before ossification takes place, disease exists not less than three or four months. There are some horses with a predisposition to this disease, and when knocked about the disease would develope itself more quickly. The disease in the horse in question had developed itself in both fore feet, but in the off foot the most. The flat sole and thin hoof would constitute unsoundness, if nothing else did. I examined the hocks, and found both diseased. There was chronic disease. Ulceration was also going on between the two cuneiform bones. I have no doubt the horse was unsound on the 31st March, and even two months before that time. The animal will be unsound as long as it lives. I attribute the horse's broken knee, which I saw, chiefly to the navicular disease. Owing to the pain produced by putting his feet to the ground, the horse no doubt stumbled and broke his knee.

Cross-examined by Mr. Jones—Horses can do a good deal of work and yet be unsound. The horse was lame. I could discover that he was lame in his fore legs, and that his action was impeded in his hind legs. When I examined the horse I saw it walk and trot. I discovered lameness on his trotting both before and behind. I had him walked and trotted on turf. If I had seen him walked and trotted on hard ground the lameness must have been more visible. I think a horse with the disease I have described could perform an ordinary day's work. The horse must have been lame, more or less, from the 1st January. His action must have been impeded from that time, at least, though it might not have been observable to a common person. This impediment would gradually increase into observable lameness. When running to grass, the lameness might disappear, but the disease would still be going on. When both feet are suffering together, it makes a difference, and does not produce that nodding of the head. It is possible for a horse to have all the diseases I have stated, and not exhibit much lameness. The horse whose navicular bone I produced went comparatively free from lameness almost up to the time of his death. On handling the bones of the fetlock of the off fore foot, I form my opinion that the horse has navicular disease. The horse goes badly down hill because the navicular bone is pressed on the other. If the horse had disease in one leg only, it would have gone more lame. Ossification has just commenced forming in the specimen I produce. Never examined the horse in question either before or since the 22d July last. (Mr. Jones here handed in a certificate, dated 31st August last, signed by the witness, wherein it was stated that he had that day examined a cob-horse for Mr. Henry Fussell, and that it was perfectly sound.)

Cross-examination continued—I admit the certificate which has been put in to be in my handwriting, but it does not refer to the horse in question. (Mr. Jones said he should be able to contradict this by the testimony of three witnesses.) I had the horse referred to in the certificate now produced walked and trotted on rough ground and examined it thoroughly for nearly a quarter of an hour, and I still say that the horse mentioned in that certificate is sound.

Re-examined by Mr. Edlin—A horse is unsound when ossification begins, although lameness may not have commenced. A man named Fussell brought the horse to my yard on the 31st August last. Some man was with him. The horse brought by Fussell was four years old, and the one in question is now rising six years old. I think the horse in question is not a dark-brown cob. It is a horse. A horse is a cob if under 14 feet 3 inches. The horse in question is a brown, and not a very dark brown, and I have no doubt it is 15 hands high. The two horses are very unlike each other. The horse examined by me for Mr. Ward, on the 22d July had a broken knee, which would show for life; that I examined on the 31st August never had a broken knee.

Mr. Nathaniel Leigh, of Bristol, veterinary surgeon, examined by Mr. Edlin—I have been in practice as a veterinary surgeon for eighteen years. On the 22d June last, I went with the plaintiff to Mr. Neale's, to see the horse in question. I examined the horse, and it had then a broken knee and was shod with leather. Leathers are generally used to protect diseased horses. I examined the fore feet of the horse, and found them both diseased from ossified cartilages, of five or six months' standing at the least, or even more than that. The soles of the feet were convex instead of being concave. The disease would affect the action of the horse going down hill. The horse was lame at the time I saw it. As the disease progressed the lameness would increase. The horse would do work at first, but would be in pain—that pain would cause it to stumble, and make it very timid in going down hill. No doubt the broken knee was done by the horse going in pain.

Cross-examined by Mr. Jones—Can't state so closely as Mr. Kent, that ulceration is going on in the cuneiform bones. A horse having the ulceration described would, I should suppose, be very lame. In my opinion the horse had not the navicular disease. I should think it had disease of the coffin-bone. This is the first time I have told any one that the horse had that disease. Discovered no disease in the small bone of the pastern. Supposing the horse to have had ossified cartilages, navicular disease, and diseases of the small bones and coffin-bone, it would have been uncomfortable and a perfect cripple. With all those diseases it would have been a perfect cripple on the 31st March last. Leather shoes are sometimes used for horses that are sound. It is very common to use them for horses that have rather thin soles. Should call the horse a brown one. The injury to the knee is not likely to be much blemish. The hair may be grown in about six weeks.

Re-examined by Mr. Edlin—The horse's lameness down hill was occasioned by the diseased feet. The horse was about 15 hands. It might have had the navicular disease or not. Disease in the hocks would produce lameness according to the progress which the disease has made.

Mr. Edlin here intimated to the learned judge that he had another witness in court, *Mr. Brown*, professor of veterinary medicine, of the Royal Agricultural College, Cirencester, who was a perfectly unbiassed witness, and who had not yet examined the horse. The horse was then in Malmesbury, and he (the learned counsel) applied for an inspection of the horse by Mr. Brown. His honour said he thought there could be no possible objection to such a course, and Mr. Brown, accompanied by Mr. Ward and Mr. Neale, the present owner of the horse, accordingly adjourned to the stables of the "King's Arms" for that purpose. On their return, Mr. Brown said he had examined the horse, and had formed an opinion on the question at issue, but as some objection was raised by Mr. Neale to the horse being taken out of the stable, he (Mr. Brown) had not an opportunity of making so minute an examination as he could have wished.

His Honour remarked that the only object in the present case was to administer justice, and he really could not perceive why Mr. Neale should decline to accede to Mr. Brown's request, which appeared to him to be a most reasonable one.

Mr. Neale immediately acted upon his honour's suggestion, and after a second examination, and after putting the horse through his paces, Mr. Brown again returned into Court, and in answer to Mr. Edlin, stated as follows—I am a professor of veterinary medicine, practising at the Royal Agricultural College, Cirencester. I have this day examined a horse shown me by Mr. Ward. That horse is undoubtedly unsound at present. He has chronic inflammation of the vessels of both his fore feet, producing a little secretion of horn. They are all of a low form, indicative of a disease likely to continue for a long time. The disease is thoroughly incurable. It is difficult to state when the disease began to develope itself internally. It must have begun some months since. My impression is that the animal's feet were in the same state on the 31st of March last that they are now. The disease may exist, and yet the animal may occasionally not go lame. Animals with this disease frequently go sound for three or four months together. On the occurrence of any particular condition of road, or travelling down hill, or from extra work, it may become lame. From the facts sworn to of the horse going down hill and going timidly, I should infer that the disease did exist at that time. I observed no lameness in seeing the horse put through his paces. There is one small spot on the off knee of a broken knee. The age of the horse is five years off. There is an irregularity in the horse's mouth. Should say the horse is just under 15 hands. It is a dark-brown horse.

Cross-examined by Mr. Jones—My opinions are derived from observation. The changes are exceedingly slow in the diseases of the horny matter. I do not trust people's notions about lameness in horses, especially unprofessional persons, whose ideas on the point of unsoundness are very crude. The disease in the horse in question has probably been in existence twelve months. The horse has rather a convex sole, which is another proof of chronic inflammation. I think the convexity of the foot arises from disease. There are no such things as natural convex feet.

By the Judge—There is no doubt that the horse I saw has *not* ossification of the cartilages. Ossification is not a disease which may exist in June or July and not exist now. I felt the cartilages with my fingers, and found them perfectly elastic. I should conclude that the professional men who speak of ossified cartilages have not seen the horse in question.

Mr. Kent, one of the previous witnesses, was here again called by his honour, and in reply to questions put to him by the learned judge, said —I have seen the horse to-day. There is ossification going on in the cartilages. I can feel it. They are not ossified cartilages, but ossification is going on. The ossification is just rising to the ring of the hoof. The ossification above that is flexible.

Mr. Edlin here stated that since the last trial Mr. Limbrick, a most important witness, had died, and he now asked his honour to refer to his notes and to read the evidence of Mr. Limbrick.

Mr. Jones objected, remarking that he could shake Mr. Limbrick's evidence if it were possible that the witness could again be placed in the box, and that it would be extremely unfair to produce secondary evidence without giving him (Mr. Jones) an opportunity of cross-examining.

His Honour said, that if a witness happened to die, an Act of Parliament made the evidence admissible in criminal law, but he doubted whether any law permitted the evidence to be read in the present case.

Mr. Edlin said that Mr. Jones had an opportunity of cross-examining on the last occasion, and strongly urged that if a witness died before a new trial the evidence given on a former trial might be read. He (Mr. Edlin) was quite satisfied on the point, though he was not armed with authorities in support of his view.

His Honour, after referring to the law bearing on the subject, said all the authorities were in Mr. Edlin's favour, though he thought it a piece of bad law. The learned judge then read the evidence, which we gave in our report of the former trial, wherein it will be remembered Mr. Limbrick distinctly stated that in his opinion the horse in question was unsound in both fore feet from ossified cartilages.

This being the whole of the plaintiff's case, *Mr. Jones* proceeded to address the Court in an eloquent and forcible speech. The case, he said, resolved itself into two points—soundness and vice—and he should consult his own convenience as well as that of the jury by taking them separately. After complaining of the hardship which had been inflicted on his client in the present proceedings, he begged the jury to look with the greatest caution upon the evidence of the veterinary witnesses. Not a single witness agreed with each other, and where, he asked, was Mr. Barker, who was produced by the plaintiff on the last occasion? Mr. Barker then stated that there were no side-bones, and he (Mr. Jones) called upon the jury to infer from his absence that the plaintiff knew his evidence would be against him. The witness Mr. Kent was a most unfortunate man. The alterations which were made in the horse cured it of the five or six diseases which Mr. Kent had described, and made Mr. Kent more impartial in his certificate at Bristol than at Corsham. He therefore claimed Kent as his best witness. Mr. Leigh also stood wholly unsupported, and could hardly find out the same disease as Mr. Kent. Mr. Brown, too, had found out a disease which none of the others could discover; and he believed that if Mr. Brown had come into court an unbiassed and impartial witness, he would have given a certificate of soundness. Mr. Brown had stated that convexity of the foot arose from disease. Now he (Mr. Jones) would be able to show that the horse was foaled like it, and that the formation of the foot was always the same. As to the alleged shying, there was only the evidence of the plaintiff and Mr. Bailey, and he would ask the jury whether either of them ever possessed a horse that did not shy; but unless they were satisfied that the horse was habitually a shier, it would amount to nothing. If every man were to return a horse because it shied, the turnpike-road would be worn out with returned horses; and he submitted that the jury must have the strongest possible evidence of vice to return this horse on his client's hands. After some further remarks, and narrating the evidence which he should produce before them, and which would prove beyond all doubt that the horse was not only sound but perfectly free from vice, Mr. Jones concluded by stating that he never relied so firmly on a verdict as in the present case. The first witness called for the defence was—

Benjamin Curtis, the defendant, who, on being examined by Mr. Jones, stated as follows—I am a horse-dealer, and live at Hullavington. I exchanged another horse for the horse in question of Mr. Rumming. On the 31st March last the plaintiff came to my house, to buy this particular horse. He saw the horse run up and down, and said he liked him very well, and should like him put in harness. I put the horse in a gig, and told my man to drive where they liked. Plaintiff and the man were about a quarter of an hour away. Mr. Ward said when he came back that he liked the horse very well; he also said he fancied the horse shied a little. I said, "He never shied with me." Mr. Ward and Mr. Bailey, who was also present, then went to my house, and bought the horse at £37. Mr. Ward asked me for a warranty, which I gave him. Plaintiff wrote out the warranty himself, and I signed it. I was not at home when Mr. Ward's first letter arrived, which was the reason I did not answer it. When plaintiff came over to my house he said, "This horse shied nearly as bad as my own did." I told him the best thing he could do would be to keep him for a week and try him. I told him shyness was no unsoundness; he said it was. I asked him if there was any unsoundness? He said he thought not. He returned the horse with the letter on the 12th April. I sent the horse back the next morning. I also sent a message by my man, to say I would be there at ten o'clock. I went to Mr. Ward's with Mr. Scott, who examined the horse and pronounced it sound. He said it was not worth while for two neighbours to go to law, the best thing would be to let me get another horse. Mr. Ward agreed to do so. I told him there were no fairs for a fortnight or so, but as soon as I could get one I would bring it over to him. I heard nothing more of the horse till the 27th of April, when I received the notice which has been produced. I got no person to bid for the horse or to raise the price. The horse was in my possession from the 22d to the 31st of March. During the time it was in my possession it never went lame. In my opinion the horse is not unsound in any respect. The horse had no vice and was not a shier. I only rode him once, which was to Chippenham market. I took a young man named Fussell to Mr. Neale's house, who took the horse to Bristol. Fussell is an assistant of mine. I met the horse at Bristol, and went to the stable where Fussell had it. I did not accompany the horse to Mr. Kent's, but went within about two hundred yards of where Kent lives. Hitchcock, an innkeeper, went with Fussell. Saw both go to Mr. Kent's. The horse looked more like a cob than it did before. It was the same horse, and still shows the alteration made in him. There was a stain on the hind leg, which is not off.

Cross-examined by Mr. Edlin—I have carried on horse-dealing about five years. Was a cattle-dealer before then, and a gamekeeper before then. Went to prison for looking after the game. The gamekeeping ceased when poaching commenced. Fussell has been living with me about six weeks. He understands doctoring horses better than I do. I sent him to Mr. Kent's to get his conscientious opinion about it. The mane of the horse was put on the other side. I went to the "Bush" stables, at Bristol. Fussell has been a horse-dealer at Bristol. I have seen him about for many years. When the horse was tried Mr. Ward said it shied a little. It never shied with me. I never drove him in harness. I never heard that habitual shying in a horse was a vice.

Cross-examination continued—Mr. Neale was a perfect stranger to me at the time of the sale. Mr. Neale lent the horse to me to have him examined. Mr. Neale told me Mr. Kent had been down to Corsham to examine the horse. A man in Bristol told me that Mr. Kent had pronounced the horse unsound. I believe it was the man at the sign of the "Hatchet" who told me so. I don't know who cut the hair off the leg. Some liquid as well as dirt was used to discolour the skin of the horse. Horse-dealing is sometimes a good trade. Would do anything to sell an honest good horse.

Re-examined by Mr. Jones—Don't know what was put on the leg of the horse. I often buy horses of people whom I do not know.

By His Honour—I never coloured a horse.

John Thompson, a farrier, of Corsham, was next called by Mr. Jones—In my early days I lived in Hertfordshire, and carried on the business of a farrier for thirteen years; after that I lived at Exeter for twenty-one years. I have been out of business and have lived in the neighbourhood of Corsham since 1854. I began business in a small way, but finished largely. My attention has been drawn to the feet of horses. Mr. Belch, of Corsham, bred the horse in question. I saw the horse about three months after it was foaled. The horse was sold by Mr. Belch to Mr. Rumming. I am stepfather to Mr. Belch. I drove the horse one year and three months. I never found the horse unsound; never found him lame; have known the horse during the whole time that Rumming had it. Mr. Rumming used frequently to put the horse in my stable, which has brought the horse continually under my eye. I never saw the horse in the least degree lame. He had no vice to my knowledge. I have driven him round Nettleton parish, and I never saw any particular shyness; if the horse saw an object, it sometimes waived a little; it was the safest horse I ever rode. I have driven him by gipsy camps. The horse has a sound foot; it is a natural foot, but not a good foot; it has an enlargement on the coronet, which gives it a bad formation; that is what is called a thickening of the integument—that is not unsoundness. The horse ought to have a broad foot. I have not seen the horse since the day after it was sold at Chippenham. There was a difference of structure in the feet from the time I knew the horse. When I took the horse's shoes off, the day after the sale, I found two odd shoes. The shoe on the off fore foot was a very badly formed shoe, and quite sufficient to lame any horse, if driven for any length of time on the road. The shoe on the near foot was a much better-formed shoe, and the shoe was in a much better condition. The thickening of the integument was the same as when it was three months old. I felt the lateral cartilages, and there was no alteration in the structure. The horse was not unsound in any other respect.

Cross-examined by Mr. Edlin—Relinquished practice as a farrier since 1853. I have not driven the horse during the present year. Cannot say whether there is any inflammation of the feet at the present time. Never knew the horse make a desperate shy; it waived a little sometimes. I might have suspected that he would shy at the gipsies. Shyness is a fault or vice which generally decreases. I think shyness curable. The horse never came to a dead stop. The shoe did not cause lameness, but was sufficient to do so. The horse did not go lame.

Re-examined by Mr. Jones—If the horse had been galloped about on hard road the shoe would have been very likely to have caused lameness.

Frederick Brookholding Jones, of Chipping Sodbury, veterinary surgeon, examined by Mr. Jones—I have assisted my father, who is a veterinary surgeon, all my life. I have examined the horse in question. Such examination included the off fore leg. I well manipulated the part all round the coronet. In making that examination my attention was drawn to sidebones, but I found the disease did not exist in either leg. I produce specimens of a healthy foot, which I obtained from the Duke's kennels. The cartilages, as will be seen, are healthy and pliable. I produce another foot, showing the diseased sidebones. If the disease had been in existence five or six months, as stated, I should have found ossification. Supposing it had been in existence before the 31st of March last, it would have been in a developed state, and the foot would have presented to the touch what is seen in the foot which I last produced. There was no disease of the pastern-joint. The horse had not navicular disease. The coffin-bone of the horse in question was not diseased. The horse had not had spavin, and there was no disease of the foot at all. The horse had natural-formed flat feet and thin soles, which are more liable to bruise than when the sole is thicker. Had Mr. Kent's description of the diseases of the horse been correct, it would have been very lame. A horse with such diseases could not perform the ordinary work. The thickening of the integument could not be taken by a professional man for anything else.

Cross-examined by Mr. Edlin—Sidebones and ossification of cartilages are different names, but both mean the same thing. They are terms expressive of the same disease in the same state of disease. When complete, it can be called ossified cartilages. When ossification is complete, the sidebones can be felt. It is sometimes difficult to discover when ossification has commenced, and even in its progressive formation it is difficult to detect. The inflammation which Mr. Brown spoke of did not exist when I examined the horse, on the 27th of May last. I noticed the thickening of the integument. That thickening of the integument might not develop itself so as to exhibit disease in the horse. I put the horse through his paces. The horse was not a high stepping one, but it did not go lame, it went sound; he went as a horse naturally would with these feet.

Re-examined by Mr. Jones—Horses with these formed feet never step out as other horses do. If ossification had set in I should call it sidebones.

Herbert Horatio Heraud, examined by Mr. Jones—I am a veterinary surgeon, residing at Calne. I have been in practice twelve years. I attend to the Marquis of Lansdowne's stables. On the 21st of April last I examined the horse at Thingley, at Mr. Neale's. My attention was drawn to the feet. I very particularly examined him. I found it had not had sidebones, nor any symptoms of them. When a horse has sidebones there is lameness in its incipient state. I tried the horse in his paces on that day; it was perfectly sound. Suppose the disease to be in existence three or four months, I should have discovered it on the 13th of April last. If it had then had sidebones it must have flinched when I pressed the foot. I examined the hocks, which were perfectly sound. It had coarse, bony hocks. (At this stage of the evidence, witness, instead of confining himself to his statements, attempted to make a speech, when, at the suggestion of Mr. Edlin, his honour intervened, and cautioned Mr. Heraud against making too oratorical a display.)

Examination continued—I believe it is impossible for a flat-footed horse to have navicular disease. If the horse had the complication of diseases which had been described by Mr. Kent, it would have been dead from symptomatic fever some months ago. In all my experience I never found a horse with such a complication of diseases. I believe the horse is perfectly sound.

William Scott, of Chippenham, veterinary surgeon, examined by Mr. Jones—The horse in question has a large, thin foot, which is generally supposed to be a weak foot. I carefully examined the off fore foot, which is perfectly sound. I examined his hocks, which were also sound. I have once or twice seen the horse since my examination. The horse had no disease in the feet when I saw it last Saturday. There was not then any ossification in the cartilages. If the horse had had disease of sidebones three or four months previous to March last, it could not have escaped my attention on Saturday last. I was in court when Mr. Kent was examined, and heard his description of the diseases. Neither of them exists. A horse with such diseases could not perform ordinary work. I agree with Mr. Heraud about symptomatic fever. I never heard of such a complication of diseases in a foot. A horse with such diseases would suffer a good deal.

Cross-examined by Mr. Edlin—There is nothing at all the matter with the horse. I manipulated the parts well. The horse would naturally go tender and point if there were navicular disease. The horse went sound down hill. There was nothing which indicated pain of any sort whatever. Could detect ossification by pressure.

William Thomas Rumming, examined by Mr. Jones—I am a fa rmer living at Lacock. I exchanged horses about the 22d March last. Defendant took of me the horse in question. I had the horse in my custody about a year and a quarter. I bought it of Mr. Belch. During the time he was in my possession I always thought him a perfectly sound horse. Mr. Ward came to my house before he bought the horse of Curtis. I told him I thought it was perfectly sound. The horse had no disease of the hock. It had no viee. The horse was not called a shier.

Cross-examined by Mr. Edlin—I am not providing funds for this action. When returning home one night the horse in question jumped round at an umbrella. The horse was not accustomed to shy much, but waived about sometimes. It went very well down hill. I always change horses once a year. I never found the horse put his foot to the ground tenderly.

Re-examined by Mr. Jones—I have been used to horses all my life, and I don't think the horse in question would come under the head of shying horses.

Robert Neale, of Thingley, near Corsham, farmer. examined by Mr. Jones—I was at Chippenham market on the 28th of April last, when my attention was drawn by Mr. Belch to the horse in question, which I purchased. The horse has never been lame but on one occasion, when it threw a shoe as I was riding him. I returned the horse to be reshod, and it has gone sound and upright since. I saw the horse's knee was damaged the morning after it had happened. I have ridden and driven the horse myself. I drove him a journey of nineteen miles shortly after I had him. The horse is rather raw in his way, but since it has been in my possession it has shown no symptoms of vice. The horse has shied once or twice; on one occasion at some water in the road, but it is not in the habit of shying. I should not term him a bad shier. Consider him free from the vice of shying generally. In my experience I find horses all more or less shy.

Cross-examined by Mr. Edlin—The horse never shied viciously. It went rather raw, as if badly handled. The horse is continually at work. I attribute his shying in the road to a "puddle."

William Caudle, of Chippenham, was merely called by Mr. Jones to prove that he had been used to horses a good deal, and that the horse in question did not go lame on the occasion of being sold in the Chippenham market, on the 28th of April last.

Abraham Bethell, carpenter, of Nettleton, examined by Mr. Jones—I know a man named Thomas Holborow, who was in plaintiff's service. I saw Holborow take the horse out in the month of April last. He drove it just as fast as it could go. I saw him gallop it on the road two or three times. The roads are not very bad nor very good.

Cross-examined by Mr. Edlin—A queer place this. Had not been anywhere else in Malmesbury except to have a glass or two of beer. My "missis" keeps a beerhouse, and I suppose I am one of my wife's best customers.

Henry Fussell, examined by Mr. Jones—I am assistant to defendant. Was a horse-dealer myself till about twelve months ago. I know Mr. Neale; went to his house last Wednesday. Defendant was with me.

I took the cob-horse that night to St. George's, two miles this side of Bristol. Hitchcock and myself trimmed the rough hair off the horse's legs, and cut his tail and mane. We platted the mane on the off side with straw. We put some jipping on the horse's heel. I always carry a jipping-box with me. We did this the next morning. After which I took the horse, and drove it to Bristol with Hitchcock. I saw Curtis in Bristol. Curtis went part of the way to Mr. Kent's. Suppose he went far enough to see me go to Kent's. Hitchcock went with me to Mr. Kent's. I told Mr. Kent I had a brown cob-horse which I wanted him to examine. Mr. Kent had the horse brought out and the harness pulled off. Mr. Kent saw the horse run up and down the rough stones, and felt all four of his legs. I went up to Mr. Kent's house, and he there gave me the certificate produced.

Cross-examined by Mr. Edlin—I told Mr. Kent that a gentleman had looked at the horse, and would not be satisfied unless it were pronounced sound by a veterinary surgeon. A gentleman had really asked me that. I don't know who he was. I saw the gentleman on one side of the road near Bidson. He took a fancy to the horse. There was no one with me when I met this strange gentleman. If I had not met this gentleman I should have taken the horse. The gentleman did not give me the half-guinea to pay for the examination of the horse. I told Mr. Kent to examine the horse and I would give him the half-guinea. I never saw the gentleman before or since. I remain at Mr. Curtis's, and go home once a week. Was a horse-dealer eight years. Was a horse-dealer from my cradle, and my father before me. Have been in difficulties. My difficulties took me to prison for debt seven weeks. I combed the horse's mane and tail. Put no dirt on him, more than a bit of jipping. Have spoken to no one since I have been out of Court on the subject of this case. Don't know the reason why Curtis did not go to Mr. Kent's yard. Took Hitchcock with me to see that everything was straightforward and right. I was only once in difficulties. I petitioned the Court once, and that is the only time.

William Hitchcock, examined by Mr. Jones—I am an innkeeper, living at Pickwick, in the parish of Corsham. On Wednesday last I went from Corsham Station to Bristol. I and Fussell then went to Mr. Kent's with the horse in question. I knew the horse in Mr. Neale's possession, and have known it from a-week old.

Cross-examined by Mr. Edlin—I know nothing about the horse being disguised. I had nothing to do with the "jipping." I sometimes see the horse two or three times a week. The horse had a red mark on its off hind leg. When at Mr. Kent's the horse's tail and mane were both altered. It is a different horse altogether to when I knew him first. The horse is not looking so well as when Mr. Rumming had him. It is different in appearance. I never rode him. I saw Fussell at an inn in Bristol, where he had a horse and trap. Have known Fussell five or six years. Was in Mr. Kent's yard when he examined the horse. All the hair was trimmed. It was six weeks or two months before that I saw the horse. Mr. Neale's man was then on it.

This closed the defendant's case.

Mr. Jones said he should leave the evidence entirely to the jury. They had heard the evidence for the defence, and it was for them to say whether they would believe the evidence of his three veterinary surgeons and Mr. Thompson, all of whom had formed an opinion before the action was commenced, and who were therefore impartial and unbiassed, or whether they would believe the three veterinary gentlemen on the other side, who disagree with each other. He cautioned them not to be led away by the eloquence of Mr. Edlin, who would follow him, for he (Mr. Jones) would have them bear in mind that he (the learned counsel) was a man of astute intellect. It was very likely that the witness Fussell told an untruth when he went to Mr. Kent, but he (Mr. Jones) asked them (the jury) to believe that Curtis did not direct Fussell to do this, but that the horse was sent by the defendant for the sole and *bonâ fide* purpose of testing Mr. Kent's judgment and getting that gentleman's opinion (though he should state that the horse was sent by Curtis to Kent without his (Mr. Jones's) suggestion or advice). It would have been perfectly absurd to have taken the horse to Mr. Kent in his original state. It had, however, been proved that the defendant had sent down a respectable man in order to see that all was right, and he (Mr. Jones) would ask them, after the evidence that had been given on this point, whether there was the shadow of a doubt in their minds that the horse which Mr. Kent pronounced sound was the same horse which he (Kent) had sworn to have such a complication of diseases, which in their experience they must have known never to have existed? He (Mr. Jones) appealed to their common sense whether the horse could have the five diseases which had been enumerated, and whether they could still believe it possible that a horse with those diseases could do an ordinary day's work. He (Mr. Jones) left the case in their hands, fully expecting and relying on a verdict in favour of his client.

Mr. Edlin, after complimenting Mr. Jones, who in his opinion was as competent as any counsel to conduct a case, and who during the present trial had not only exercised judgment but an admirable temper and the manners of a gentleman, said he should have a very ill opinion of the jury if he (Mr. Edlin) did present facts and arguments before them which would mislead them in arriving at a proper verdict. He (the learned counsel), notwithstanding the fatigue and inability which he had felt during the trial, had found the utmost attention on the part of the jury, and whatever might be the result of their verdict, he thanked them for the manner in which they had performed their duties. The learned counsel then proceeded to view the real bearings of the case, at the same time complaining that his client's case had been somewhat prejudiced by questions being put concerning facts which could not be proved. He (Mr. Edlin) always abstained from such a course, as he sometimes found it difficult even for judges to eliminate from their minds that which was strictly not evidence. It was true that they (the jury) had to meet a case of very conflicting evidence. Much had been said by Mr. Jones as to the plaintiff's witnesses not agreeing, but Mr. Jones seemed to forget that this was a fact which was against him. He (the learned counsel) submitted that it looked very suspicious when scientific witnesses could make their evidence agree in the same way as two and two made four. The point aimed at was unsoundness, and if the plaintiff's witnesses arrived at that point by different roads, their evidence, he contended, was of the more value. The learned counsel, after analysing the medical evidence, and showing that the defendant's witnesses could not be put in competition with the plaintiff's, asked the jury whether they could for one moment think of giving a verdict for men who carried the "jipping-box" about with them. Who would believe the story related by Fussell, when credibly placed in competition with Mr. Kent, who stated that the horse examined by him the other day was only four years old, whereas the horse in question was rising six? It was no doubt a trick to get rid of Mr. Kent's evidence that day, but it was a most disreputable proceeding, and one which would not have been resorted to if the defendant had any confidence whatever in his own case. It was not the first time that a couple of jockeys had played a similar trick; but here was Mr. Kent, a respectable old man, who could not have many more years to live, and surely they (the jury) would believe him in preference to a man who carried the "jipping-pot" at the present time. Further than this, he (the counsel) would press upon their minds the conduct of the plaintiff, who from the first and even before any veterinary surgeon had been called in, expressed his doubts to the defendant relative to the horse, by letter, as early as the 8th of April last. One fact was worth a thousand arguments, and he thought this some proof that the unsoundness existed on the 31st March last. After reviewing the evidence which had been adduced on the ground of shying, and stating that he had most conclusively proved a clear case on this point, not only from the plaintiff's letters, but also from the evidence of the plaintiff and Bailey, as well as from the testimony of defendant's own witnesses Thompson and Neale, the learned counsel concluded an eloquent and touching address by appealing to the jury for a verdict which he was certainly entitled to on one or other of the issues.

His Honour summed up the evidence to the jury in the most careful and logical manner, remarking that the defendant had been foolish enough to endanger his case by a trick which made him (the judge) very suspicious. What confidence could they (the jury) have in a man who unblushingly confessed to a falsehood? His (the judge's) advice, therefore, was to put out of question the evidence of the witness Fussell. At the same time he would, however, urge the jury to be careful not to let a topic of that kind interfere with other grounds. If the jury thought the horse proved unsound (and it rested with the plaintiff to make that out to their satisfaction), they must return a verdict for the plaintiff; but if they thought the horse not proved unsound, then they must decide that point against the plaintiff. As to the second charge, that the horse was not free from vice, he would state that a horse, to be possessed of vice, must be an habitual shyer. After recapitulating the evidence on this point, his honour said he would not express himself so strongly upon this part of the case, but if they (the jury) thought the plaintiff has made out to their satisfaction either unsoundness or shyness, they must give him a verdict; but if they should be of opinion that he had failed on both points, or had left the matter in reasonable doubt, then it would be their duty to decide in favour of the defendant.

The jury then retired, and after being locked up for about an hour, returned into Court with a verdict for the plaintiff. The hearing of the case commenced at half-past ten o'clock in the morning, and the proceedings did not terminate till half-past eight in the evening, during the whole of which time the greatest interest was manifested.—*Wilts and Gloucestershire Standard.*

OBITUARY.

We regret to announce the death of Mr. Thomas Turner, M.R.C.V.S., which occurred on Monday, December 19th, 1859. The event taking place so late in the month, precludes our making any lengthened comments; but our readers will remember that he had for many years carried on an extensive practice in association with his brother, Mr. James Turner, and, on the obtainment of the Charter, was nominated the first President of the Royal College of Veterinary Surgeons.

In our next number we hope to be able to give some account of his professional life.

ARMY APPOINTMENTS.

VETERINARY DEPARTMENT.

War Office, Pall Mall, *Nov.* 4, 1859.

To be Veterinary Surgeons of the First Class, under the provisions of the Royal warrant of the 1st of July, 1859.

Vet. Surg. John Legrew, 2d Life Guards.
Vet. Surg. J. W. Gloag, Military Train.
Vet. Surg. Charles Curtis Brett, Cavalry Depôt, Maidstone.
Vet. Surg. Richard J. Gedaliah Hurford, 3d D. Guards.
Vet. Surg. Matthew Poett, Military Train.
Vet. Surg. James George Phillips, 10th Light Dragoons.
Vet. Surg. Thomas Hurford, 12th Light Dragoons.
Vet. Surg. John Byrne, Royal Horse Guards.
Vet. Surg. John Kingsley, Cape Mounted Rifles.
Vet. Surg. Thomas Jex, 1st Life Guards.
Vet. Surg. Edward Simpson Grey, 8th Light Dragoons.
Vet. Surg. F. Delany, 1st Dragoon Guards.
Vet. Surg. William C. Lord, 5th Light Dragoons.
Vet. Surg. B. C. R. Gardiner, 3d Light Dragoons.
Vet. Surg. William Thacker, 15th Light Dragoons.

To be Staff Veterinary Surgeons.

Vet. Surg. of the First Class J. W. Gloag, from the Military Train.

Vet. Surg. of the First Class Matthew Poett, from the Military Train.

Vet. Surg. of the First Class James George Phillips, from the 10th Light Dragoons.

Vet. Surg. of the First Class Thomas Hurford, from the 12th Light Dragoons.

War Office, Pall Mall, *Dec.* 2.

12th Light Dragoons—Veterinary Surgeon Charles Steel, from the Royal Artillery, to be Veterinary Surgeon, vice Hurford, promoted; Dec. 2.

17th Light Dragoons—Acting Veterinary Surgeon John Ferris to be Veterinary Surgeon, vice Partridge, appointed to the Royal Artillery; Feb. 17, 1858.

Royal Artillery—Veterinary Surgeon William Partridge, from the 17th Light Dragoons, to be Vet. Surg.; Dec. 2.

London Gazette.

*** The *Gazette* of December 20 makes the promotion of the First-Class Veterinary Surgeons to Staff Veterinary Surgeons, to date from November 4, and not July 1, 1859.

ERRATA, No. 384.

Through an inadvertence, at page 685, line 10, the word *plastic* is inserted for *aplastic*. It will be seen that this materially alters the sense intended to be conveyed.

At page 701, sixth line from the bottom, the characters omitted are, āā ʒ.

THE

VETERINARIAN.

VOL. XXXIII. No. 386. FEBRUARY, 1860. Fourth Series. No. 62.

Communications and Cases.

AN ESSAY ON SECRETION, WITH SOME OF THE CIRCUMSTANCES WHICH MODIFY THAT PROCESS IN ANIMALS.

By Henry Corby, M.R.C.V.S., late Demonstrator of Anatomy at the Royal Veterinary College.

Read before the Members of the Veterinary Medical Association, during the session 1858-9, *and published at the request of the Council.*

(*Continued from page* 14.)

Having thus sketched the structure of secreting organs and the composition of their secretions, we may attempt to give an answer to the question previously adverted to—Do these secretions pre-exist in the blood, or are they formed in the glands?

So far as the structure of the glands themselves is concerned, there seems to be no reason for denying the possibility of the formation within them of new compounds not existent in the blood carried to those organs, the active agents being cells, which by their growth form the various secretions. We also know that in the vegetable, cells do effect a transformation of the materials with which they are supplied into other compounds. But is it necessary to assert that they do possess this power, or can we detect the different elements of the various secretions within the blood? In respect of the urinary secretion, positive evidence has been obtained of the existence of both urea and hippuric acid in healthy blood; of course only in small quantities, because they are removed by the kidneys as fast as formed, so long as they retain their normal structure and functions; but let their secretory function be suspended, and at once there will be an accumulation of these principles in the blood.

The kidneys of dogs have been removed and ligatures placed upon the renal arteries, with a view to the solution of this question, and in every case urea has been found to accumulate in the blood. Further, disease of the kidneys, in the human subject, destroying their secretory power, leads to the same result; and physicians are able to trace many of the symptoms associated with renal affections to the poisonous effects produced by this accumulation of urea. These facts seem to me to be conclusive as to the pre-existence of the materials of the urinary secretion within the circulating fluid, and similar facts can be adduced with reference to the secretion from the liver, although the only element of the bile which has yet been detected in healthy blood is the cholesterine. But the accumulation of the biliary secretion in the blood, in cases of suspended activity of the liver, is every day to be observed, it being indicated by the tint communicated to the various tissues by the colouring matter of this secretion.

Viewing this fact, and in the absence of any reasonable ground for the assertion that the gland-cells of the liver possess a power denied to those of the kidney, I conclude that the bile pre-exists in the blood, and is but separated therefrom by, and not manufactured in, the liver.

If necessary, I could advance similar arguments with reference to all the other secretions; but I think that it would only be a waste of your time; and therefore I shall simply state that their composition offers no ground for objection to this theory, and that we may fairly conclude that they are all formed upon one plan—all the materials existing in the blood, from whence they are removed by the secreting-cells of the glands.

This conclusion seems to be opposed to the theory of Liebig as to the uses of the bile, to which I have before adverted; for if it thus exists in the blood, there can be no necessity for its reabsorption after it has been removed therefrom by the action of the liver. But if this burning up during respiration be its principal purpose, why is it secreted in such a quantity during fœtal life, when respiration is not carried on, as is the case?

But while thus questioning the accuracy of Liebig's assertion, it must be admitted that bile is a fluid which is readily reabsorbed into the blood, if from any cause its passage out of the body be checked or prevented; when it produces jaundice, with the mischief attendant thereon.

Before we can say anything of the circumstances which sometimes modify the secreting process, we must first define, as well as we are able, the causes by which it is brought about, and then we shall be ready to understand its modifications.

From what has been already stated, it follows, that in order to the performance of any act of secretion there must be, first, the material to be secreted within the blood; secondly, living cells, which by their growth shall remove from the blood those parts of that fluid which are to form the secretion; thirdly, the blood and the secreting cells must be brought into connexion the one with the other; and then finally, the cells having taken from the blood the elements of the secretion, it must be freed either by the rupture or liquefaction of the cell-walls, or else by exudation through the walls, the cells themselves remaining intact.

We are now come to the last part of our subject, viz.:

The consideration of some of the circumstances which modify the secreting process.—The former part of this essay has occupied so great a length as to prevent me doing justice to this division of my subject. Instead, therefore, of entering fully into its consideration, I propose to submit to you a few facts, and my opinions on them.

So far as I can see, the only circumstances by which any secreting process can be modified, consist—First, in the alteration, either by way of increase or diminution, of the quantity of that material in the blood which serves to constitute or make the secretion; secondly, in its alteration in quality, either by addition thereto, or removal therefrom, of certain elements; thirdly, in the production of a changed condition of the secreting glands or gland-cells; or else, fourthly, in the alteration of the supply of blood to the gland, and the rapidity of the circulation within it.

Some of these modifying circumstances arise within the organism, and result from either healthy or morbid changes going on there. Take, for example, the secretions of bile and urine, both of which are materially diminished by inaction and increased by exercise, in consequence of the production, by exertion of the muscular and nervous tissues, of materials which constitute these secretions; the nitrogenous parts of the disintegrated tissues being more especially carried off in the urinary secretion; and the hydro-carbonaceous parts in that of the liver.

From this cause, these two secretions are intimately related the one to the other. Taking albumen as representing the composition of the muscular tissue, we find that either of these secretions taken alone would only remove part of the products of its disintegration; while their joint composition so nearly resembles that of albumen, that we may fairly conclude that its elements would be entirely removed from the body by their joint agency.

The nature of the food will also exert an important modifying influence upon the secretions, by the same process of altering the properties of the blood, thus necessarily changing the character of the secretions drawn from that fluid.

Then, further, by virtue of the influence of the nervous system upon the vessels conveying blood to the various secreting organs, and distributing the blood through them, we may have at one time a rapid or at another a slow secretion, or even an entire suspension of the secretory process; having in the one case a large quantity of blood within the vessels of the gland, and in the other a quantity insufficient for the due performance of its function.

This I believe to be the only way in which the secretory processes are under nervous influence; for, as I have endeavoured to show you, the act of secretion is dependent upon the growth of cells, and this process of cell growth does not depend for its continuance upon nervous activity; therefore there is no necessity for supposing, as some of the older physiologists used to do, that a kind of galvanic current conveyed by the nerves is necessary for the due performance of the secretory action.

You will now be able to understand how it is that inflammation of any gland is able to put a stop to its secretory function: for you are aware, that in inflammation you have a suspension of the circulation in some of the vessels, and consequently the secreting cells cannot withdraw the necessary materials for the formation of the secretion from the blood.

But as it is seldom the case that all the vessels are blocked up, you may have one portion of the gland still able to secrete, and thus only a partial suspension of its function takes place.

You will also see how it is that inflammation may destroy for ever the secretory power of a gland, either by blocking up with fibrinous exudations the small ramifications and vesicular terminations of its ducts, or by so altering their structure as to prevent the reformation of the secreting cells.

There now remain two other modifying causes to be considered. First, the power which one gland has to secrete a fluid that normally should be separated from the blood by some other secreting organ; and secondly, the power which we possess of artificially modifying these processes.

The explanation of the first of these, which I think most consonant with all the facts of the case, is this; that if two glands separate from the blood similar or identical materials, then an accumulation of these materials in the blood, consequent upon the suppression of one secretion, will be followed by an increased activity of the other: but that if the material so accumulated in the blood be of a different character to that removed by the other glandular organ, then it possesses no power to separate it from that fluid, and it can only escape by other organs, in consequence of its solution in the water of the blood, when the watery part of any secretion may become charged herewith. In this way it is that the urine, which always separates a large quantity of water from the blood, becomes charged with biliary matter, when the function of the liver is suspended.

In reference to the second, I would observe that we can modify any secretion by the administration of a substance which, when in the blood, is separated therefrom by the gland forming the secretion; and if the material which we have thus added to the blood be in great quantity, or possess any irritating properties, a large volume of blood will be caused to pass through the vessels of the gland, and thus the quantity of the secretion will be temporarily increased.

There are one or two passages in Simon's 'Lectures on Pathology,' which seem to me to place this subject in a very clear light. You will find them at page 234 et seq.

Mercury, when exhibited as a medicine, is said to possess the power of increasing all the secretions by exerting such an influence on the blood as to cause the formation of those materials of which they are constituted, and that in more than their usual quantity. It is also an increaser of the secretion of bile, passing out of the system in great part through the liver.

The compounds of Antimony also are said to increase considerably the formation of urea by virtue of their action upon the blood.

But with these two exceptions it appears to me that the only power of modifying the secreting processes with which we are yet acquainted, consists in the production of a greater vascularity than is natural, and consequently an increase *at first* in all the constituents of the secretion; but, after a short time, simply an increase of its watery parts; which depends upon an exudation from the vessels in consequence of the large quantity of blood present in the gland.

I am aware that a great deal more might be said on this part of my subject, but I have not time to enter thereon.

This essay has during the writing of it assumed a somewhat different form to that which I had originally intended; but, imperfect as it is, I must leave it with you, hoping that it will not be altogether without some advantage to you, even if it be only to provoke in you a desire more fully to investigate the subject for yourselves, the importance of which no one will attempt to deny, whether it be viewed physiologically or pathologically.

MEMOIRS OF A VETERINARY SURGEON.

THOUGHTS IN THE SICK BOX.

By Thos. Greaves, M.R.C.V.S., Manchester.

(*Continued from* p. 20.)

It must not be thought, from what I have advanced, that I leave my patient to the effects of nature, in the ordinary acceptation of the expression. But this I do; I take care neither to counteract her own method of cure, nor substitute another for hers.

So far from sanctioning inactivity on the part of the practitioner, I maintain that an intelligent reliance upon nature implies that throughout the whole progress of disease, a most watchful observance of all the phenomena presented is demanded of him, so as boldly and promptly to withdraw every obstacle that may interfere with the proper course of cure, and at the same time he must rigidly fulfil all the conditions which sound physiology points out, to remove disordered or perverted action from an organ. Practical experience has convinced me that we can often render the most salutary assistance, yea, even be the means of saving a patient's life, without administering one particle of medicine of any kind whatever.

I implicitly believe that all morbid actions take place according to fixed and discoverable laws;—cause and effect. If a certain cause be permitted to exert its influence for a certain time, and damage an organ to a certain extent, then an equivalent or preponderating influence of an opposite or restorative character, must be brought to bear upon it, so as to shorten the duration of its stages, to diminish its intensity, and finally to remove it altogether. For this purpose, the conditions and circumstances must be widely different from those required when in health. *Those conditions best adapted to perpetuate health, are not suitable to these diseases.*

The temperature of the stable best suited to the horse's constitution in health is about 60° Fah.; but a different temperature is now loudly called for; in short, is absolutely requisite for his recovery, in order to overcome that concentration of nervous force which has gathered in and around the lungs. For this purpose, he must breathe an atmosphere, the temperature of which, as I have found from careful observation, should be from 40° to 45° Fah. Twenty-five years' practice, has convinced me that this is the temperature most conducive to the end we have in view;—this we shall find equal to the task that has to be performed. In the first place, the excess of nervous force must be dispersed to other parts of the system, and this method will accomplish it. We shall thus readily relieve the lungs, by employing an influence that will calm down these excited organs, like oil thrown upon troubled waters.

But although we cannot call the lungs back to rest and quiet instantaneously; yet, as the inherent power of nature is always faithful to her engagements, and especially so in these cases, we shall meet with that pristine elasticity which will resuscitate all the required energies for recovery, and soon behold her silently but surely overcoming in the furious conflict. I know nothing that is so heart-cheering, or so grateful to the feelings of the practitioner, as to witness how beautifully, yet how decisively, nature rises above this elementary strife. She seems as it were to tranquilise the fury of the storm, while the enemy retreats, and every organ reassumes its wonted functions. We shall find the pulse gradually sink six or twelve or even twenty beats in a minute during the period of twenty-four hours, and every other symptom to diminish in the same proportion; therefore, on this account, I say again, change the location of your patient at once, at your first visit, into the most favorable place possible. I subordinate all other considerations to this, and then we shall soon find that nature is her own restorer, and often without our boasted medical aid she will slowly but effectually right herself.

Do I hear some of my readers exclaim, What absurd twaddle this is, to place such blind reliance upon nature! But I would ask, does it not rather imply the highest degree of intellectual attainment, that of a conscious knowledge of an efficient power? Is it absurd to place reliance upon nature—reliance upon God, who deals out to us every breath of air we inhale; who is the very source, the central spring from whom we derive life itself; who says that not a sparrow falleth to the ground without his special notice? Is it absurd to place blind reliance upon nature, in the husbandman who casts his seed into the earth, and there leaves it—and where, without his aid, all-powerful nature causes it to germinate and bring forth fruit? Does not all this display full, perfect, unwavering confidence in the resources and ability of nature? Is it absurd to place blind reliance upon nature in the surgeon, who, in setting a broken bone, places the divided ends together with the greatest care and as correctly as he can, then envelopes it firmly in splints and adhesive bandages, and leaves the rest to nature? All he does is to hold the ends mechanically together, whilst nature performs the cure. Can he, with all his boasted skill and science, unite the broken bone, and ignore nature? No, a thousand times, no! It is nature's own peculiar handiwork; an inscrutable process delegated alone to vitality; an act of life peculiarly her own, and in which all our talent is wholly inoperative. But then, incontrovertible as these illustrations of the power of nature are, I maintain, they are not one iota more a proof of nature's power than what she can display, and is ever ready to perform, in restoring healthy functions to those important and vital organs, the lungs. All she asks from us in the one case she asks from us in the other.

Under no circumstances, therefore, in these cases, neglect this important feature in practice; namely, at once to place the patient's head in another position. Turn him right round, and secure his head to the door, so that his NOSTRILS may have *full, free,* and *direct access* to the *fresh, cold, external air.* I have a strong conviction that cold air is the *finest sedative we possess.* I object strongly to even the lower half of the box door being closed in serious cases of this nature. Employ a swing-gate, made of rod iron seven-eighths of an inch thick, with spaces between the rods of three inches, and *tie the animal's head there.* The upper half of the box door may be made the same; but one thing above all others, see to it that *his nostrils have free access horizontally* to the fresh cold air. I again say, I subordinate all other considerations to this. Oh, that I could write, so as to convince all who read, of the value of this. Had I the power of persuasion, I would use it here. Could I be permitted to hold converse with each practiioner of veterinary medicine for only one minute, me-hinks I would gently seize him by the arm and looking him earnestly in the face, say, I am very desirous to engrave one fact upon your memory ; it is this, whenever you have a case of this kind placed under your care, and are really in earnest about the recovery of your patient—and who is not? secure for him on your first visit direct horizontal access to the fresh, cold, external air. Next to this, ensure warm ears and extremities, and then give a quart of cold water every half hour so as to cool his dry and heated mouth. If thou dost nothing else thou hast by these means set his system upon the high road to the recovery of health.

MEDICINES.

Under this head I have no secrets to communicate to my reader. I employ only the most simple agents, such as a mild diuretic and a gentle sedative. But I will tell the practitioner what he must not do. Never by any chance give aloes, even if it be only one or two drachms. When your patient has been ill for three or four days, and off his food, it will either produce super-purgation in him, or else it will become absorbed into the system and act as a poison, and in either case the consequences are dangerous in the extreme. If the bowels are sluggish, give him an enema occasionally; place rock-salt for him to lick, give a free allowance of water, and put before him a pail half-full of bran or hay tea. If the breathing does not abate in a reasonable time, I apply mustard to the sides, and insert a good large rowel in front of the chest.

CLOTHING.

This is an important part of the treatment. I always take care that the ears, legs, feet and body are kept warm. I stimulate the ears with a little of the blistering oil, well rubbing it inside and outside, from the point to two or three inches downward. This will keep them warm for several days. I attribute much to this little plan of treatment. In bandaging the legs, see that they are placed well upon the feet, no space being left uncovered between the hoof and bandage. They need not be tight, but if there is a great disposition to coldness, two or even three sets of flannel bandages must be used, or hay bands may be applied above the knees and hocks. The legs must be well hand-rubbed before bandaging them. Place two or three good rugs over his body, and a thick hood over his head and neck. If, for all this, he is still blowing and the pulse keeps up, let him continue to breathe the cool air, at 40° or 45° Fah. unless he is shaking, then let him breathe warmer air, and give him a diffusible stimulant. After this, it is frequently the case—say in half an hour—that a reaction takes place, and the whole body becomes over-heated; and unless this circumstance be observed, and some of the clothing removed, the excitement increases to such an extent as to cause serious injury. This may be, and in fact frequently is, mistaken for increase of the disease: but it is not so, it is simply the result of smothered skin; for, remove the hood, also some of the clothing and the bandages, and we shall find the pulse and breathing will soon settle down again. Sometimes the pulse keeps up to 60 for several days when every other unfavorable symptom is gradually disappearing. This you need not be alarmed at, as it is merely weakness; the inhalation of cool air, and a little more time will set this to rights.

By scrupulously observing the treatment I have laid down, I hesitate not to say that the lives of many horses will be preserved, and their natural term of usefulness, and consequent remuneration, prolonged beyond what is now usually the case.

Some one, however, may ask the question, How can you supply your patient with cold air at 45° Fah. in the sultry summer months when the atmosphere is at 80° to 90° Fah.? This is one of the things I have yet to comment upon.

(*To be continued.*)

TUMOUR ON THE POSTERIOR BORDER OF THE SUPERIOR CORNU OF THE OS HYOIDES, AND SCIRRHOUS THICKENING AT THE BASE OF THE EPIGLOTTIS, INTERFERING WITH RESPIRATION.

By William Shipley, M.R.C.V.S., Yarmouth.

Dear Sir,—I have taken the liberty of forwarding to you a morbid specimen, consisting of the tongue and larynx of a gray mare. You will see that there is a tumour on the os hyoides, and ulceration at the anterior part of the base of the epiglottis.

The history of the case is briefly this: About two months since, I was called to see a gray mare, used for posting purposes, suffering from rather a distressing cough, which was purely laryngeal, and accompanied with sonorous breathing. I at first thought it a case of common sore-throat, but was soon convinced it was of a chronic nature. I gave a little laxative medicine, and ordered her to have rest and a mash diet; when, after a few days, her cough was less frequent, and she went to work again in about a week, but still the sonorous breathing remained. I diagnosed the case as one having some morbid growth in the vicinity of the larynx, which was probably a tumour, and that the chances were she would become useless. I also thought that possibly she might be the subject of melanosis. Eventually, I severely blistered the throat, but the animal continued to get worse, and was yesterday destroyed. She was about twelve years old.

I need say no more, as you will see the parts. I send them more from the peculiar position of the tumour than anything else. Every other organ was perfectly healthy.

Trusting it will not be altogether devoid of interest to you,

I remain,

Yours respectfully.

To Assistant-Professor VARNELL.

OBSERVATIONS BY MR. VARNELL.

THE case referred to in the above letter is one of considerable interest, inasmuch as the symptoms during the life of the animal were ambiguous. And, although Mr. Shipley sufficiently diagnosed the case so as to justify him in having the mare destroyed, yet, its true pathology, or the cause which gave rise to the disease, was not known. I, therefore, think, as the causes which impede free respiration ought to be as fully understood as possible, that this case is one of sufficient importance to merit a place in the pages of the *Veterinarian.*

The parts forwarded for my inspection, consisted of the tongue, larynx, and os hyoides; and it will be regretted, when the description of the disease with which these parts were affected, is read, that Mr. Shipley was not able to furnish us with an account of the symptoms which existed previous to his first seeing the mare. I dare say, however, that he had never before been called upon to attend the animal for this affection, or he would have mentioned it.

The nature of the lesions of the parts above alluded to is as follows: On the posterior border of the left superior cornu of the os hyoides, there existed a large irregularly-shaped tumour, projecting in an inward and backward direction. It was four inches in length from its attachment to the bone to its posterior extremity, and about the same distance from the upper to the lower border. From the side to side it was about three inches. Its surface was somewhat uneven and moderately dense to the feel. I made a section through it, in a line from behind forwards, which was its greatest diameter, and found that it chiefly consisted of dense fibrinous tissue; but in the centre there were numerous irregularly formed spaces, each containing thick inspissated pus, about the consistence of cheese. No other peculiarity, worthy of notice, could I detect, belonging especially to the tumour.

I was next led to examine the bone to which the tumour was attached, and found the part which was embraced by the base of the tumour to be extensively diseased, evidently from an injury; but how inflicted it would of course be difficult to say. The result was a throwing out of a quantity of osseous matter which had become formed into several nodular projections on its inner surface and posterior border.

About two inches and a half below this, the bone was a little enlarged and spongy in texture, as though it had at some time been injured and partly repaired, but had since become broken. Most likely this was done on removing it from the head after the mare was destroyed.

The root of the tongue and base of the epiglottis, were considerably thickened, very dense in structure, and the upper surface much ulcerated.

On making a section through the diseased mass and pressing it, cheese-like matter exuded from numerous small openings. The hyo-epiglottidean muscle had nearly disappeared, and its place was occupied by a fibrinous deposition, which from its comparative unyielding nature, and the lost power of the above muscle to contract, the epiglottis was so far fixed as to partially close the glottis; the opening of which was further diminished by the pressure imparted to the left arytenoid cartilage by the tumour.

Such is a brief outline of the morbid specimen.

The most important point for consideration in this case is, the cause which gave rise, in the first instance, to the affection. To the practitioner of veterinary medicine this is of considerable interest, for he has often great difficulty in obtaining, from those in whose charge the patients are placed, the required information, so as to form a correct diagnosis. I therefore think that the recording of all cases of an uncommon kind cannot fail, in some measure, in directing the mind to circumstances which otherwise might be overlooked; and should suggest certain inquiries, and also the interpretation of such symptoms as might present themselves. For instance, in the above case, no one would have supposed that the difficulty in breathing arose primarily from an injury done to the os hyoides; but such I believe was the fact. There is no evidence of its being caused by external violence, as there would most likely have been some abrasions or marks of some kind on the skin, opposite the seat of injury. We do not learn from Mr. Shipley that such existed. I therefore incline to the opinion that the injury to the bone was the result of force applied from within the mouth. It might have been produced when rasping the teeth; the rasp being used by some one who, regardless of the structures at the posterior part of this cavity, or the mischief he might inflict upon them, ignorantly forced it backwards. Or it might have been caused by the giving of a ball. Instances have been known of individuals placing a ball on the end of a large stick, and thrusting it to the back of the mouth, in their opinion down the throat.

Now, supposing the injury to have been inflicted by a cause similar to either of the above, most likely inflammation was induced, followed by suppuration; but, instead of the pus escaping, it became confined in the areolar interspaces, thus forming a number of abscesses, the walls of which became condensed, and by further effusion considerably thickened, and in this way the tumour was formed.

With regard to the thickening of the base of the epiglottis and root of the tongue, we have before conjectured how this might have occurred.

The peculiarity and difficulty of breathing, which led Mr. Shipley to think that a tumour was the impediment to the normal performance of that function, was caused by the pressure of the enlargement upon the lateral part of the arytenoid cartilage, and by the fixed condition of the epiglottis.

SUPPOSED INSTANCE OF SECOND IMPREGNATION IN A MARE.

By G. Evans, M.R.C.V.S., Bridgnorth.

About the end of April, or beginning of May, 1857, a mare belonging to Mr. Lane, of Farlow, was covered by a horse. She took him again *twice*, about six weeks intervening between each time, and was therefore expected to foal in July, 1858.

On the 22d of April, 1858, she was taken suddenly ill, and I was sent for to examine her. When I arrived, I found that she had been delivered of two foals; one was alive, and full grown, evidently the result of the *first* copulation; the other had just died, perhaps while being born. It, however, was so young, that I have no doubt of its being the result of the *third* copulation.

I offer no comment on this.

SUDDEN FRACTURE OF THE HUMERUS OF A HORSE.

By W. Field, Jun., M.R.C.V.S., London.

The following case being a rather unusual one, I think it may interest some of your readers, and therefore forward it for insertion in the next number of your Journal.

The subject was a good-looking, thorough-bred, bay gelding, upwards of sixteen hands high, and about ten years old.

He had carried me through a run of about twelve miles with her Majesty's staghounds; after which I fed him, and then started on my way home, a distance of about ten miles.

The horse trotted along the road until within about half a mile of his destination, when he blundered forward, but did not fall. I slipped off his back, and found the humerus of the off fore-leg fractured. With great difficulty he was got to his stable, where he was destroyed.

The question is—How did the accident happen? The road was perfectly smooth; no ruts or loose stones existed, and the horse did not even scratch his knees or fetlock joints when he stumbled, although he very nearly came down.

Could the bone have been fractured during the run, without its becoming displaced, until after the horse had travelled so great a distance as nine miles, at a trot along a hard road? Or did the horse cross his legs, and in the violent effort to recover himself, snap the bone?

I shall be glad to hear the opinion of your professional readers on the subject.

HYDROPS UTERI IN A HEIFER.

By Jos. Freeman, M.R.C.V.S., Keyingham, near Hull.

During the past summer I was requested to attend a two-year-old heifer, which the owner supposed was near the time of parturition. When I saw her she appeared to be in the greatest agony, having also some signs of parturition coming on. I however examined her, and ascertained there was no calf existing, but that the uterus was full of fluid.

The owner informed me that she had been to the bull two months previous. I at once determined on performing an operation, and introduced into the vagina a common trochar, puncturing the *os uteri*, and leaving the canula in, when about ten quarts of an offensive yellow fluid was evacuated. A little tepid water was then injected into the uterus, followed up by a mild astringent, and the animal was much relieved. However, in the course of a week the organ refilled. I again evacuated its contents, and injected a more active astringent, when in a few days the most favorable results followed. The animal is now doing well, and quite fat.

During the last fifteen years of my father's practice, some ten or twelve cases like this have come under his notice; and, with the exception of two, they have all recovered. What is most singular is, they were all white coloured; and some of the owners have declared, that the heifers never had any connection with a bull.

I confess myself to be at a loss to account for this dropsical condition of the uterus.

EFFUSION INTO THE THECA VERTEBRALIS CAUSING PARALYSIS IN A HORSE.

By A. Bickford, M.R.C.V.S., Totness.

On the 15th of September, my attention was called by a gentleman living in the neighbourhood of this place, to an aged bay gelding, that had been ill two days. During that time he had been under the treatment of a farrier.

On the morning of the 13th the animal had, with another horse, been drawing a plough up to twelve o'clock. At that hour he was taken from work, being then apparently in perfect health. At two o'clock he was again put to work, and in the first two rounds he was observed to be unsteady in his gait, and ultimately he fell on his side. After a short time he was enabled to rise, and walked into an adjoining grass field, but he was again speedily compelled to resume the recumbent position.

Two days after this attack I saw him, he having been during the interval exposed to the inclemency of the weather. He had evidently struggled a good deal, but was unable to get up, and had lost the control of the right hind-quarter more particularly.

As soon as I had examined him, I informed the owner that the case was one of *inflammation of the membranes covering the spinal cord*, and that I expected that more or less effusion had taken place. However, as he wished to have him treated, a blister was applied to the skin, from the withers to the haunch. Seven drachms of aloes were also given, and he was taken on a slide to a place of shelter, when hot rugs were placed over him.

The physic acted well, as did the blister.

During the night he got upon his legs without assistance, but only remained up about two hours. His appetite, during the first three days, was unimpaired.

On the 19th the disease had evidently extended to the brain; the paralysis was more general; he was likewise less conscious, and when food was offered to him he snapped at it in a peculiar manner. Seeing no hope of an ultimate cure, and to put an end to his sufferings, I advised the owner to have the horse destroyed; and for the purpose of satisfying both him and myself that the seat of the disease was where I had stated it to be, I proposed to institute a post-mortem examination. He having acquiesced, the following is the description of the parts. The whole of the abdominal and thoracic viscera appeared to have been healthy. The pericardial sac contained about a pint of fluid. A few hours before the death of the horse, I had noticed an intermittency of the pulse to exist. On exposing the spinal cord, from the brain to its extremity, the membranes covering it were found to be distended with fluid; and on dividing them, a quantity of clear serum—I should say about five or six ounces—trickled away in a stream.

When I first saw the case the pulse was strong, and numbered sixty in the minute. From the commencement I thought the case a hopeless one, inasmuch as the disease having been allowed to go on uncontrolled for forty-eight hours, effusion to a considerable extent had doubtlessly taken place.

The symptoms in this case appeared to me to be rather peculiar. Those cases of paralysis that have previously come under my notice have been generally traceable to some known cause, as strains in leaping, pulling heavy loads, &c.; The pulsations of the heart not having been materially increased in force or in frequency; nor did the animals give evidence of much pain: pure and simple paralysis being alone present.

In this case, the disease was traceable to no known cause. It was apparently an idiopathic affection. At first the paralysis was confined to the right hind-quarter; but there was a convulsive twitching of all the other voluntary muscles. The animal was frequently making the most strenuous efforts to rise, until the inflammation had extended along the whole course of the membranes; and even then, although the effusion was so great, and the paralysis so general, the horse was evidently suffering great pain.

CHRONIC DISEASE OF THE BLADDER OF A COW.

By W. D. Bray, V.S., Ulverston.

I have forwarded to you, per rail, an abnormal specimen of the bladder, together with the uterus of a cow.

My attention not being called to the case until after the animal had been slaughtered, I am not able to furnish you with a complete history of the case.

The subject was a half-bred short-horn heifer, two years old, the property of Mr. Tusson, of Blearsby. Upon making inquiries, I find the disease appeared slightly about twelve months since. The peculiar symptom then evinced was, a somewhat frequent desire to urinate, followed by copious discharges of urine. This gradually increasing, induced the owner to fatten her. The urine now became scanty, and often voided, until about two months since, when the micturition returned to such an extent, that an involuntary flow of urine constantly took place, whether the animal was standing or lying.

She was slaughtered on the 28th ult., after walking eleven miles on the preceding day. The thoracic and abdominal viscera were perfectly healthy, and no congestion had taken place in the kidneys. The labia pudendi were slightly reddened from irritation. The beast had fattened well.

You will perceive I have dissected down the urethra into the small remaining cavity of the hypertrophied bladder.

Should you think the case of sufficient interest to appear in the *Veterinarian,* your pathological description would be highly appreciated by myself, and I have no doubt by many other readers of that invaluable journal.

[In consequence of the vagina having been cut off immediately behind the labia pudendi, and the meatus urinarius destroyed, we are unable to give so full an account of the specimen as we could wish. The bladder, at its fundus, was very much thickened, and its mucous membrane elevated in the form of small nodules. On cutting through this substance, the submucous tissue was found to be infiltrated with pus here and there, but which existed only in a very small quantity. The still remaining portion of the bladder was greatly diminished in size, but its coats appeared to be unchanged by disease. The attached generative organs were healthy.]

ON ULCERATIVE DISEASE OF THE HOCK-JOINT.

By "Hippiatrist."

In the May number of your Journal a case is related of this disease, connected with spavin and other ossifications of the hock-joint; and as I have had lately cases of the like disease unconnected with either of the above affections, in which the symptoms, and especially the gait, have been so characteristic and marked from spavin, &c., I have thought a few lines on the subject might not be deemed uninteresting to your readers.

I have observed in this disease that the animal evinces pain when the foot touches the ground, and conseqently he brings the sound leg forward as quickly as possible, so as to receive the weight, thus producing an action or limp, very similar to that which exists in a pricked foot. This is best seen when he is made to turn over in the stall. His customary position when at rest is, the affected leg is brought back with the toe only resting on the ground. But, on the other hand, in spavin the lameness is evinced upon flexing the hock, giving more or less the appearance of stringhalt for the first few strides, which is caused, I suppose, by the obstruction to the play of the inner division of the biceps tendon of the flexor metatarsi, the slender tendon of the flexor accessorius, or the flexor pedis.

I have also observed that old horses are more subject to this disease than younger ones are. Perhaps this arises from the less degree of elasticity of the ligaments of the joint.

The treatment I have found successful is perfect rest, conjoined with the application of extract of belladonna, dissolved in iodized glycerine, over the affected part.

Facts and Observations.

ADVANTAGES OF THE MYLABRIS CICHORII OVER THE CANTHARIS VESICATORIA.

At a recent meeting of the Pharmaceutical Society, Professor Bentley exhibited a number of beetles which had been found among a sample of Cantharides. Also, a few of these last-named that had been caught in Norfolk, during the past year, observing that their appearance in England was not uncommon, nevertheless it was always confined to the three Eastern counties, Norfolk, Suffolk, and Essex. In 1837, they were met with in considerable numbers in Suffolk and Essex. Although the colour of these two beetles is alike, their forms differ considerably, the one being oblong and tapering, the other (*melolonthœ vitis?*) being larger and square, while it is said to possess no vesicating properties. But, as observed by Dr. Redwood, a person unacquainted with this fact would receive the sample without discovering the adulteration.

Our object in thus alluding to the mixture of other beetles, accidental or otherwise, with the true blistering one, is not only to put the members of the profession on their guard so that they may not be deceived, but also to direct their attention to the following communication received from Mr. B. Cartledge, M.R.C.V.S., Sheffield.

My Dear Sir.—Since you first sent me for trial, some of the Mylabris Cichorü, which is now four years ago, I have ceased to employ Cantharides as a blister.

In my opinion there is no comparison between the two vesicants, and an extensive and varied practice has, I think, given me a fair opportunity of forming a judgment in the matter.

The advantages possessed by the Mylabris over the Cantharis are as follow :—

1. The action of the former is quicker and more decided.
2. The vesicles produced are more numerous.
3. They cause less pain.
4. The swelling of the parts sooner subsides.
5. Cantharides are inadmissible in certain diseases, on account of the absorption of their active principle by the kidneys: not so the Mylabris.
6. The Mylabris are cheaper than Cantharides.

The *Oleum Mylabris,* I make as follows :—

Mylab. Cichor. in fine powder	1 part,
Ol. Olivæ	26 parts.

Digest in a water bath for three hours, then filter for use.

I never use any other form of blister than this; but, if desired, an *Unguentum Mylabris* might of course be made. I however find that the oil is more easily applied, particularly in cold weather, and where dependence has to be placed on a groom for its proper application, which is frequently the case, this is not to be lost sight of.

I am, yours, &c.

To Professor Morton.

EXTENSION OF THE CATTLE PLAGUE.

Recent accounts from Galicia, state that the Rinderpest is again raging to a fearful extent in many parts of that country, causing the destruction of hundreds of Cattle. Its extension towards the Prussian frontier from Austro-Poland, is creating great anxiety, and the authorities have ordered, among other things, that all cattle coming from the Austrian dominionsshall be subjected to a quarantine oftwenty-one days.

DEODORIZATION OF SEWAGE AND OTHER WATER BY IRON AND ITS OXIDES.

In our last number we alluded to the use of the sesquichloride of iron for this purpose, as recommended to the Metropolitan Board of Works by Drs. Hoffman and Frankland.

When it is known that the estimated value of London sewage alone, as manure, is £3796 per diem, or £1,385,540 a year, surely some means should be devised to prevent this running away as waste matter; nay, worse than waste, since it is allowed to become prejudicial to health and life, and the river Thames is by it converted into a mere tidal ditch.

Ordinary metallic iron, it appears, also possesses the property of removing from water all organic impurities contained in it, causing their precipitation by contact; and filters are now being made of this metal for domestic use.

We remember having drank water that had been kept for seven years in an iron tank, and it was perfectly fresh and good.

M. Kiehlman has lately ascertained that the hydrated oxide of iron is a most effectual decoloriser, from the oxygen thereof being liberated and acting upon the colouring principle, thus causing its destruction by eremacausis or slow combustion. In the same way, he conjectures, the rotting of the wood in our ships, &c., is brought about by the use of iron nails, and that spontaneous combustion is effected by the same means, the oxide of iron being the communicator of oxygen to the inflammable materials.

The Editor of *the Chemical News,* in which periodical M. Kiehlman's paper appears, has therefore supposed that the oxide of iron might be a valuable agent in the purification of water also.

In a subsequent number of the same journal, Mr. J. Horsley states that he has found the peroxide of manganese, an invaluable agent, both as a decoloriser and deodorant: and if a more powerful one were required, it would be found in a mixture of this, and the chloride of lime, in the proportion of three-fourths manganese and one-fourth lime, a compound which has cheapness to recommend it as well as efficacy.

ACTION OF ALCOHOL UPON THE ANIMAL ECONOMY.

According to the usually-received opinion, alcohol introduced into the circulation by absorption from the alimentary canal, becomes rapidly destroyed by the combustion with the oxygen of respiration. Carbonic acid and water may be the immediate results; or, as is more generally admitted, the alchohol passes though a series of transformations, presenting derivatives more and more oxygenated, as aldehyde, acetic acid, oxalic acid, and finally, carbonic acid. The results of a series of experiments instituted by MM. Duroy, Lallemand, and Perrin, point to different conclusions. According to these, alcohol is not destroyed in the blood, since it may be found in all liquids found there; and, moreover, it is eliminated by certain channels, as the lungs, the skin, and especially the kidneys. They conclude—1. That alcohol is not an alimentary substance, it acting only as a modifier of the nervous system; 2. It is neither destroyed nor transformed in the economy; 3. It becomes especially concentrated in the liver and in the brain. 4. These facts explain the production of certain organic and functional changes in the liver, brain, and kidneys.—*Gaz. Méd.* No. 46.

SULPHURIC ETHER SUBSTITUTED FOR CHLOROFORM AT LYONS.

At Lyons, the second city in France, sulphuric ether has almost universally superseded chloroform, both in hospital and private practice; and, as the result of a recent discussion at the Medical Society of that town, the following resolutions were passed unanimously: "1. Sulphuric ether employed as an anæsthetic is less dangerous than chloroform; no accident, indeed, having followed its exclusive and abundant employment at Lyons during eight years. 2. Anæsthesia may be as constantly and as completely induced by it as by chloroform. 3. If ether gives rise to inconveniences which are not produced to the same extent by chloroform, these are of little consequence as compared with the dangers inherent to the use of the latter. 4. Ether should, therefore, be preferred to chloroform." It was proposed that the fact of using chloroform should be stigmatised as imprudent; but the Society declined taking this step, contenting itself with declaring that ether fulfils the same indications as chloroform without giving rise to the same dangers.—*Medical News.*

ON ELIMINATION OF LEAD FROM THE SYSTEM.

By Dr. Bacon.

For some years past I have had occasion to make many analyses of the urine in cases of chronic lead-poisoning. Some points which have attracted my attention may have a practical interest. It is not known in what state of combination absorbed lead is locked up in the tissues. An organic compound of albumen with oxide or chloride of lead may be formed, or a double compound of lead with chloride of potassium or sodium, as was long since maintained by Mialhe. Various compounds of lead taken into the stomach, except perhaps the sulphide, are decomposed and dissolved by the alkaline compounds normally present in the alimentary canal; and a recent analysis by Professor Würtz shows that a leaden bullet, that had been for many years embedded in a cyst in the lung, was corroded, much diminished in weight, and surrounded by a crust of chloride, free from sulphate or phosphate. In that case lead was found in the substance of the lungs and the diaphragm. Absorbed lead is diffused generally through the system, but not uniformly. The spleen contains the largest proportion, and next to that, the liver. Lead also occurs in the urine, which seems to be the chief channel of elimination. When once deposited in the tissues it is very slowly removed, and the symptoms continue for many months after exposure to the cause of lead-poisoning has ceased. Still there is no doubt that in time it will be eliminated spontaneously. In cases where I have analysed the urine previous to treatment, but after removal from the source of poison, lead has rarely been present.

Of late years iodide of potassium has been much used as a means of eliminating absorbed lead, and most of my analyses have been made in cases under this treatment. Melsens maintains that large amounts of lead were removed in the form of iodide of lead, easily soluble in iodide of potassium, which is well known to pass off readily by the urine. In the cases that have come under my notice, repeated analyses, made at various periods after the use of the iodide was commenced, and under large or small doses, have never detected more than a very small proportion of lead. Usually, it is more easily discovered after than before taking the iodide; but sometimes none at all can be detected, when the symptoms are even well-marked. As the processes employed allow of the detection of exceedingly minute quantities of the metal, the conclusion cannot be avoided that, in cases of chronic lead-poisoning the process of elimination is very slow, and a long time must be required to remove any considerable deposit from the tissues. . . . It is evident that iodide of potassium, the most energetic agent known for removing absorbed lead from the system, is far less efficient in this respect than is generally believed.—*Boston Journal*, June, p. 429.

EXPERIMENTS ON RESPIRATION.

Dr. Edward Smith has lately read a paper before the Chemical Society, giving the results of some experiments by him on respiration. He was anxious to ascertain the average amount of carbonic acid gas and watery vapour expired, and how the formation of these were affected by food, fasting, &c. And he concludes that there is a class of foods to which the term "excito-respiratory" may be applied. These contain nearly all the nitrogenous articles of diet, with sugar, coffee, and particularly tea. The most remarkable among the non-excitants are fat and starchy substances. Ardent spirits also increase the amount of carbonic acid, with the exception of brandy, which seems to lessen it, by diminishing the activity of the respiratory process.

HORSES, SHEEP, AND CATTLE POISONED.

We regret to state that Mr. Singlehurst, farmer, of Firbeck, near Roche Abbey, has sustained a most serious loss by reason of thirty-three sheep, three horses, a pony, and two pigs, having been poisoned at his farm at that place. On Wednesday morning, December 21st, the farm servants discovered a large number of the stock were dead; and from the fact that a most violent storm of thunder and lightning had passed over the district early the same morning—there being no other accountable cause for death—the loss was attributed to the whole having been struck by the electric fluid. The appearance of the carcases led to this belief. Some other sheep having, however, since died, as well as several pigs, and many others suffered in a most extraordinary manner, Mr. Singlehurst was led to believe that death had not been caused, as was at first supposed, by electricity; and an investigation which has fully demonstrated the accuracy of this view was made. The whole number has been proved beyond doubt to have died from poison, but how administered is unknown. It has been stated in another journal that Mr. Singlehurst recently received from Liverpool, a quantity of broken rape cake for manure, and by some oversight or neglect this rape-cake, which is impregnated with mineral poison, had been mixed with the food given to the sheep and beasts upon the farm; but this is quite incorrect, the cake having been purchased by Mr. Singlehurst's son, in Liverpool, and no poison having been in the same warehouse. The case, therefore, is involved in impenetrable mystery. Mr. Singlehurst has received a letter, bearing the London post-mark, expressing the writer's joy at the loss, and wishing it may be doubled; but who the writer is, or what has prompted to this diabolical malice, is beyond all conception by the sufferer.

HORSES POISONED BY ARSENIC.

Mr. Taylor Pateman, farmer, of Uffington, near Stamford, has sustained a serious loss. His team of six horses has been invariably admired. To keep them in condition alterative powders were given from time to time. A mash containing, as was thought, the usual quantity of powder, was given to the working horses on Thursday night, the 29th ult.; but on the contents of the bucket being again offered to them the next morning, they refused to partake of what had been prepared for them: and it soon became apparent that they were suffering from illness. An investigation proved that arsenic by mistake had been given in the mash instead of the alterative powder. Mr. Swan, veterinary surgeon, was sent for, and he applied the necessary remedies; but it is feared that not one of the six team and three young horses that partook of the poison will recover from its effects: two died on Monday, one on Tuesday, and another on Wednesday. The mash offered on Friday, and not eaten by the horses, was thrown away; some of this was partaken of by a beast, which is also suffering from its effects. Not one of the working horses was worth less than £45.

THE VETERINARIAN, FEBRUARY 1, 1860.

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

THE RELATIONSHIP THAT EXISTS BETWEEN AGRICULTURE, CHEMISTRY, AND VETERINARY MEDICINE.

It is only of late years that the mutual dependence which, different sections of the community have upon each other in the pursuit of their several callings, has really been made manifest. This has principally resulted from the progress which has taken place in the sciences. A golden chain seems to blend all together in one harmonious whole; and each comes to the other's aid, either in the way of explanation or of support.

Especially do we see the existence of this in reference to chemistry and agriculture. The time was when it was little thought requisite on the part of the tiller of the soil that he should become acquainted with its chemical constituents, the mutual relationship they bear to each other, and the changes that obtain on their being commingled. Far less did it appear to him necessary that he should be conversant with the nature of the ashes of plants, and from these to derive a knowledge of the land most conducive to the growth of certain vegetables in it; and that unless the elements of these pre-existed there, they could receive no nourishment, and therefore, would not grow. Some crude notions prevailed in his mind that it was from the air, the water, and the earth, vegetation resulted; the *how*, it was for science to demonstrate. It may be that there yet much remains to be ascertained respecting the way in which this is brought about. Mysteries still exist, and ever will, in the arcana of Nature, which the ken of men is unable to fathom. Nevertheless, there are some facts so patent, some truths so palpable, that he who runs may read them, and a non-observance of them will assuredly end in disappointment and loss. While on the other hand, their application will make "the desert blossom like the rose," by doubling the amount of produce; thus amply rewarding the toil, both mental and physical, of the labourer.

The great end of the vegetable kingdom is to prepare principles for a higher order of beings; it therefore stands midway between the mineral and the animal kingdoms, although "it is hard to sever the link that binds Prometheus to the rock." By the growing vegetable, effete matters that would otherwise be noxious are taken up, and by assimilation rendered useful as sustenance, or otherwise, to man and beast. The elements of all these substances are derived from without, hence their origin can be easily traced. Thus, from putrescence we derive fragrance and beauty, and from death life and health.

It is not, however, alone in its healthy state, that the agriculturist has to view the yield of his broad acres. From causes at present not sufficiently investigated, but probably arising from the very means resorted to by him for bringing about the results alluded to, disease is often produced in his crops. A structural organic change is brought about in the vegetable, either from a redundancy of some of the constituents of the soil, or from a diminished supply, or it may be that the growing plant has taken up some foreign agent which has proved prejudicial, and, being partaken of by animals, they become affected by it.

And here we come to another link in the chain of science. The laws of physiology and pathology are now brought to bear upon the inquiry; in other words, Medicine is called into requisition, and the educated veterinary surgeon is sought for to apply those principles which he has made his study, so that these effects may be removed. It follows, therefore, that *he* should be conversant with agriculture and chemistry, so far, at least, as their general principles are concerned, while the last-named division—medicine—he should make his particular study, as this constitutes his true vocation.

It is in this way the mutual relationship that exists between man and man in their several positions in life may be traced out; so that one cannot say to the other, "I have no need of you." In this way, too, is shown the necessity of an extended and a scientific education on the part of each.

We have been directed to the consideration of this subject from having received "A Lecture, delivered by Mr. J. Jekyll, M.R.C.V.S., before the Agricultural Society of Louth, on the chemical changes which are effected in the soil by atmospheric action, and by the growth of the usual agricultural crops." And copies of 'The Spirit of the Times,' from New York, United States, containing elaborate articles 'On Chemistry in its application to Agriculture and Physiology,' by Mr. A. S. Copeman, V.S., of Utica. From both of these we intend giving some extracts, and cannot but rejoice in knowing that there are among us those who, actuated by a right spirit, labour with an earnest zeal to maintain a junction so important and so valuable, and in every sense so profitable, and withal so natural, as that of veterinary medicine and agriculture.

It is with the former of these we have at present to do. From the latter we shall cull freely hereafter.

After a short apologetic preface, in which Mr. Jekyll says—

"If the more studious attention of but one mind is aroused to a more careful inquiry into the *why* and *wherefore* of the varied Agricultural phenomena which are constantly presented for his investigation, my object is attained; for the better we understand the causes which produce the effects we witness, the more successful Agricultural pursuits must become. A knowledge of the so-called Nature's Laws, gives new direction—new life to our thoughts, and imparts to our actions certainty and vigour. The Laws of Nature are our willing and faithful servants, or our unconscious foes, as we understand and use, or misinterpret and neglect them."

He then proceeds to subdivide the *first* part of his subject in the following categorical manner. What is soil? What the effects of frost and changes of temperature? What the effects of rain and light? And, lastly, of absorption from the atmosphere.

The elements constituting the soil are given both in reference to their chemical nature and their uses, as well as their sources or origin. In like manner, the other questions are considered by him, in all of which much familiarity with the subject is evinced by him, especially as regards its practical application.

The *second* division contains "the chemical changes effected in the soil by the growth of the usual agricultural crops."

Plants are divided by him into,

1. Silica plants, as wheat, oats, barley, and rice; in which silica forms more than 50 per cent. of their ash.

2. Lime plants; as peas, beans, clover, lucerne, and the potato-herb or top; in the ash of which there is more than 50 per cent. of lime.

3. Potash plants; as turnips, beet-root, and potato tubers; some of which have 70 and others more than 80 per cent. of alkaline salts in their ash.

The following analyses made by chemists of repute, showing the per centage of silica, lime, and potash presented in the ash, render the distinction clear.

	Salts of Potash and Soda.	*Salts of Lime and Magnesia.*	*Silica.*
SILICA PLANTS.			
Oat-straw with Corn	34.00	4·00	62·00
Wheat-straw	22.00	7·20	61·05
Barley-straw with Corn	19.00	25·70	55·03
Rye-straw	18.65	16·52	63·89
LIME PLANTS.			
Pea-straw	27·82	63·74	7·81
Bean-straw	34·00	54·51	6·78
Clover	39·20	56·00	4·90
Potato-herb	4·20	59·40	36·40
POTASH PLANTS.			
Turnips	81 60	18·40	...
Beet-root	88·00	12·00	...
Potato-tubers	85·81	14·19	...

"After looking over these figures, we find that all our common Agricultural plants require nearly the same constituents for their growth, differing however, very much, in the *relative* quantity of each; and, by reference to the analysis of sterile soil, we find that our crops will not now grow in the absence of these chemical salts; and, further, the analysis of fertile soil, proves they will grow when those same salts are present in an available form. A correct analysis of healthy, well-matured plants grown on any soil shows their invariable presence, and in the same kind of plants in nearly uniform proportions. The blood and tissues of animals hold in combination the same salts; without them the tissues could not exist, therefore they are essential to the well-being of the animal world. The animal derives his food from the vegetable, and with it the necessary chemical salts; hence we may, from the above facts, assume that the vegetable world could not exist, without the presence of the salts of lime, potash, &c. If, then, such are really the facts, it must follow that, as every ton of vegetable produces extracts and carries from the soil many pounds weight of chemical salts, that soil must be poorer by exactly the amount removed.

We have, in this, the answer which chemical science gives to the practical question—How is it that repeated cropping, without manuring, impoverishes, and ultimately exhausts, our land? Thus, as crop after crop is carried off the land, the proportion of available chemical salts, remaining in the soil, is gradually reduced, until a state approaching sterility is reached."

Mr. Jekyll then proceeds to show how different crops exhaust the soil, and the importance of a rotation of crops.

"One kind of crop requires a heavy amount of soluble silica, while some other crop requires little or none of that compound. By taking a crop not requiring silica, time is given for its accumulation in the soil. Some plants rob the land of its nitrogen, others increase it. Some gain their support from the surface-soil, while others strike deep into the sub-soil, and draw from it a rich store of mineral wealth, which can be returned to the land as manure, to supply those which feed in surface-soil only. One class of agricultural plants requires for their well-being an excess of silica; a second an excess of the salts of lime and magnesia; while a third will not flourish without an extra amount of the salts of the alkalies. Thus, by alternating the several kinds of crops, land is maintained in a productive condition *for a greater length of time at less cost*. But while this is clear, is it not equally and unmistakably evident that land must ultimately be more entirely exhausted by this system, unless all manurial ingredients are added in the same proportion as that in which they are removed by the different crops? Yes! to maintain land in its original fertility, every manurial element or compound—nitrogen, phosphorus, lime, &c.,—removed in a crop, must be restored in *some form*. Every sack of corn, pound of beef, mutton, or bone, truss of hay or straw, carried off the farm, reduces the productive capabilities of that land by exactly the amount of the nitrogen, phosphorus, potash,

&c., which has been extracted from the soil by those agricultural productions; and every load of manurial matter returned to the farm restores productiveness in exact proportion to the amount of these chemical substances which it contains. It matters not from what source is the nitrogen, lime, potash, or phosphorus, so long as these substances are in an available form, or readily become so in the soil. But they must be returned to the soil, or sterility will sooner or later overtake the best land ever cropped."

The following table of the chemical composition of fertile and barren soils is given by Mr. Jekyll.

	1. *Barren Land.*	2. *Barren Peat.*	3. *Good Black Sandy Mould.*	4. *Good Loam.*
Water	2·0	4·55	3·42	2·47
Organic Matter	1·80	89·14	9·30	9·11
Phosphoric Acid	—	—	0·31	0·27
Sulphuric Acid	—	—	0·11	0·14
Potash	—	A trace	2·23	2·73
Soda	—	—	1·98	1·39
Lime	·60	1·15	1·34	2·27
Magnesia	—	·17	0·96	1·05
Alumina	·80	·58	10·25	17·69
Silica	92·50	4·18	67·29	58·14
Chlorine	—	—	0·68	0·54
Oxide of Iron	2·84	0·23	2·13	4·20
Totals	100·00	100·00	100·00	100·00

The practical worth and clearness of reasoning in the above extracts must be our apology for their length. We are of opinion that veterinary surgeons, as a class, ought not to be altogether ignorant of these things. At the beginning we stated that an altered condition of the vegetable will be often productive of disease in the animal, and the first of these very frequently arises from the nature of the soil in which it is grown. This being ascertained, we may thus arrive at a knowledge of the cause of the affection existing in the animal, which being removed, the effect necessarily ceases.

We need not say how many disorders have their origin in improper diet. Perhaps they are by far the greater number existing in our Nosology.

Extracts from British and Foreign Journals.

REPORTED OUTBREAK OF PLEURO-PNEUMONIA AMONG THE CATTLE IN THE VICINITY OF MELBOURNE, AUSTRALIA.

(*Continued from p.* 710 *of last Volume.*)

[We are quite sure that no apology is needed from us for the introduction of these lengthened extracts from the *Melbourne Argus*, on this important subject.

We are indebted to Mr. Miscamble, M.R.C.V.S., for the publication containing the account of the outbreak of this disease.]

"Sir,—Assuming that an account of the *post-mortem* appearances of the above destructive disease may prove interesting to your numerous cattle-owning readers and others, I beg to hand you at foot the notes taken at a *post-mortem* examination made by me yesterday, when, at the request of Mr. Brock, one of the Committee appointed by certain members of the Port Phillip Farmers' Society assembled at D. Campbell, Esq.'s, I, in the presence of the owner, Mr. Boadle, Mr. Brock, Mr. Creighton, my friend Mr. Gibton, M.R.C.V.S., and others, chose for examination four of the cattle, comprising two which seemed worst affected, one which was said to have recovered from the disease three months ago, and one which had been destroyed the previous evening for Mr. Skilling, and left for my further inspection.

"I have to state that the result of my examination leaves no doubt in my mind that the disease among these cattle is the above-named malady; and I am confirmed in my opinion from the analogy between the appearances in these cases, and in those which I attended some years ago in the North of England, on the estate of Mr. Lowther, Westward Park, near Wigton, Cumberland.

"I am, Sir, your obedient servant,

"JOHN MISCAMBLE, M.R.C.V.S.

"Melbourne, *Sept.* 16, 1859."

To the Editor of the Argus.

"Memoranda of Notes taken at *Post-mortem* Examination of four head of Cattle, said to be affected with Pleuro-pneumonia, on Mr. Boadle's farm, Darebin Creek, Plenty-road, September, 15, 1859.

"Case 1.—The animal destroyed the previous evening for Mr. Skilling's inspection. A cow, some three or four months gone with calf, which had been pasturing with the rest of the dairy cattle, had been ill some ten days, and was then supposed to be near her death. Appearances.—The left lung was hepatized throughout one-third its inferior portion, and the coats of the vessels, both arterial and venous, ramifying throughout its structure, were distinctly separated from each other by effusion; the other portion of the same lung, as well as that on the right side of the chest, was congested, with red serous effusion in its parenchymatous structure. The pleuræ costalis and pulmonalis throughout the left side of the thoracic cavity had considerable-sized patches of adherent lymph. The pleura on the right or opposite side was but slightly covered with lymph. The pleura itself on the left side was congested, coloured apparently from the red particles of the blood being effused, and was easily torn from its attachments. That on the right side did not present so marked appearances. The mucous membrane of the air passages, commencing at the epiglottis, extending throughout the trachea, was congested, and of a uniform brown colour; in its continuation into the bronchi it became lighter, but equally congested. The bronchial passages were more or less filled with frothy mucus of a very tenacious character, which, approaching their individual termini, became mechanically obstructed from adjacent effusion of red serum, coagulated blood, &c.—the constituencies of a hepatized lung. The heart and its appendages. The former was small, soft, flabby, and wanting in that red hue observed in the healthy organ. Its serous covering, extending internally on the pericardium, had a slight blush of inflammation, and that part of it on the right ventricle had a large patch of rough adhesive lymph, while that externally, more particularly surrounding the two auricles and aorta, was covered with thick layers of straw-coloured lymph. The thoracic side of the diaphragm bore extensive marks of similar lymphatic effusion. The digestive organs generally were in a normal condition, except the liver and spleen, the latter of which was of a dark tarry consistency. In this case, notwithstanding the severity of the disease indicated by these appearances, the animal was not only not in an emaciated state, but, on the contrary, was in tolerable condition.

"Case 2. — This case was selected as one of the worst affected. He was in an emaciated condition. A working-bullock, about ten years old. Appearances.—The left lung was wholly hepatized, and in bulk occupied a space three times its natural size; the coats of the vessels were in the same condition as those described in the first case. The right lung, as in the first case, was slightly inflamed. The left pleura had similar lymphatic effusions attaching the lung to the pleura costalis in its entirety. The lymph was in considerable quantities, and of a consistency easily broken down by the finger. The pleura costalis on the right side was slightly covered with separated patches of lymph. The trachea same as first case. The heart, its serous covering and pericardium, similar to first case. The abdominal viscera were normal, except the liver, which was unusually small in proportion to the size of the animal. The spleen was as in the first case.

"Case 3.—This was the worst case of all. A seven-year-old milch cow, with all the appearances of Case No. 2, but in a more aggravated form, even to having the right lung hepatized in its centre, the impervious structure of which was about six inches by eight inches in its dimensions. The left lung was so large as almost completely to fill its cavity, with the exception of the portion between it and the diaphragm, which was filled with about two gallons of serum mixed with red particles of blood, and was firmly attached to the diaphragm throughout a considerable extent. The heart and its appendages were the same as the others, excepting on the serous membrane. On the apex of the heart were projecting bands of lymph hanging towards others of a similar nature from the adjacent like structure of the pericardium, threatening (were union possible) to arrest the action of the heart.

"Case 4.—This last case was one said to have recovered from the disease three months ago, but which was stated not to have been in a thriving state previously to her illness. A vast number of tubercles were formed on the lungs and pleuræ, pendulously attached by serous membranes, while others were embedded in the structure of the lung. Similar deposits were found in other parts of the body of the same size—viz., from the size of a walnut to a goose egg, flattened and highly organised, as blood-vessels were seen ramifying through two-thirds of their structure. The left side was more numerously studded with them than the right. Between that portion of the lungs called the superior mediastinum was a tumour about the size of a large soup-basin, filled with about a quart of cheesy-like matter, which was easily emptied from its sac. The structure of this cyst was well organized, and tough as any annular or bursal structure in the body. The air passages showed a uniform blush of brown colouring matter. The heart was small, flabby, and pale, as in all the other cases. The serous membrane of the whole of the thoracic viscera showed previous disease, from its thick and white glistening appearance. The abdominal viscera were much the same as the last case.

To the Editor of the Argus.

"Sir,—I observe in your issue of yesterday an account of a meeting held in Melbourne, at which a Committee was appointed to inquire whether it is true that the cattle of this colony have shown symptoms of pleuro-pneumonia. I sincerely hope that the minutest inquiry may fail to prove that it exists here in an epidemic form, though, perhaps, isolated cases may be found. Having had a large number of cases under my care and treatment, I beg, with your permission, to offer a few remarks upon the leading characteristics of this disease, and the means of ascertaining whether it is really amongst our cattle or not.

"First, then, I beg to observe, the signs of this complaint after death are so plain and unmistakable, that the public mind may soon be satisfied whether or not it prevails to any serious extent. When death has resulted from pleuro-pneumonia, the pathological signs are, as I said, plain and unmistakable, and may be familiarly stated in a few words—rotten lungs, and the chest full of stinking fluid. Death arises from effusion in the cavity in the chest; and the lungs are more or less destroyed. This is in those virulent and speedily fatal cases, which seem to resist all kinds of treatment. But the same disease has prevailed at home in a milder form to a very great extent. It is no uncommon thing when a beast is slaughtered by the butcher to find the lungs adhering firmly to the walls of the chest. And this proves both that the disease has dx isted (most likely quite unperceived) and undergone a natural cure, of which this adhesion if the result. This occurs in the finest oxen ever slaughtered, and which have never during life given the slightest perceptible symptom of being affected. I would suggest, therefore, that the abattoirs of the colony be visited; that the chests and lungs of the slaughtered animals be examined by competent persons, and we shall soon know whether or not pleuro-pneumonia exists among our herds. The insidious nature of the disease, its painless character, the difficulty of detecting it in the living animal until all hope of successful treatment has vanished, will, I believe, render such pathological observations of the greatest use. If the traces of it are not found amongst the slaughtered fat cattle, then the herds are free; if its signs are found extensively amongst them, though not yet discovered in the living herd, then stockmasters must pay that unremitting and constant attention to them without which it is utterly impossible to discover it in its curable stages.

"This brings me to the symptoms during life. They are, I regret to say, often very obscure, and only to be discovered in many cases by the closest and most rigid scrutiny. That this disease exists for days, weeks, or even perhaps months, before manifesting its fatal symptoms, I have not the least doubt. The reason why this is the case, and why it is not observed, is the entirely painless nature of the disease. The animal gives no apparent sign of sickness until the lungs are so far affected as to make the breathing difficult. To catch this symptom on its first appearance, then, should be our first object, and by closely looking out for that amongst suspected stock we shall find some or all of the following: — slight fever occasionally, perhaps, not continuous; muzzle hot and dry; excrement darker than usual, and having a coating of slime; hide-bound, staring coat, variable pulse, and breathing more or less laboured. I have observed this last symptom in stalled cattle more readily by visiting them late at night, which I account for by the vitiated atmosphere (from numbers being confined together) acting upon a lung already diseased and irritable. In grazing cattle most of these signs will be difficult to discover; but if they are to be detected at all in time for successful treatment, it will only be by most careful and unremitting observation; and this point cannot be too earnestly impressed upon the attention of all stockmasters.

"In conclusion, I would just observe that should pleuro-pneumonia break out here, I should expect it to be worst amongst the thorough-bred imported cattle—both more prevalent and more fatal; whilst I should predict that amongst the ordinary stock of this colony it will neither be very fatal nor very difficult to cure. At home, in my experience, it was rare to save a well-bred short-horn; whilst a low-bred Irish cow would generally recover.

"Should it be necessary, I may, perhaps, with your permission, indicate the means to be adopted for the prevention and management of this formidable disease.

"I am, Sir, your obedient servant,

"W. B. S."

GEELONG; *September* 16.

FURTHER RESEARCHES ON THE COAGULATION OF THE BLOOD.

By JOSEPH LISTER, Esq., F.R.C.S. Eng. and Edinb.

IN a previous volume, vol XXXI, p. 454 *et seq.*, will be found some remarks by Mr. Lister, "on the causes of the coagulation of the blood, in diseases of the blood-vessels, taken from the 'Edinburgh Journal of Medicine.' The following, extracted from the last number of the same journal, will be read with much interest, inasmuch as it was thought that the immediate cause of the coagulation of the blood had been at length discovered in the escape of ammonia, or its carbonate from it. It is now, however, considered that this does not fully and satisfactorily explain the phenomenon.

At the meeting of the Medico-Chirurgical Society of Edinburgh, held on the 16th ult., a communication was made by Mr. Lister to the following effect:

"Mr. President,—I take this opportunity of demonstrating what appears to be a point of considerable importance with reference to the coagulation of the blood,—a subject to which my attention has been again directed by the recurrence of that period of the Session in which the fundamental principles of pathology are discussed in a course of surgical lectures.

"I may remind the Fellows of this Society that, in a paper which I had the honour to read before them the Session before last,* I brought forward facts which seemed to prove that the ammonia theory does not apply to blood within the vessels of a living animal. That theory, as my hearers are doubtless aware, asserts that the fluidity of the blood depends upon the presence of a certain amount of free ammonia holding the fibrine in solution, and that coagulation is the necessary result of the escape of the volatile alkali. But it was shown in the paper referred to, that the blood, in man and other mam-

* Vide 'Edinburgh Medical Journal,' April, 1858.

malia, though coagulating soon after death in the heart and great venous trunks, remains fluid for days in vessels of smaller size, and this under circumstances affording free opportunity for the escape of ammonia; and, on the other hand, that when a portion of a vessel, either in an amputated limb or in a living animal, is treated in a manner calculated to destroy its vital properties, the blood coagulates in the injured part, but retains its fluidity elsewhere, although there is no greater opportunity for the escape of ammonia in the one case than in the other. A striking instance of the difference between the natural receptacles of the blood and ordinary matter in their relations to the vital fluid happened to come under my notice this morning in an arm which I amputated last evening at the shoulder-joint, on account of injury inflicted by machinery. On examining the limb, which had lain undisturbed since the operation, I saw that the axillary vein, which was patulous at the part where it had been divided by the knife, contained some blood at a distance of about half-an-inch from the open orifice; and having squeezed out a few drops, found that it was perfectly fluid, but yielded threads of fibrine when the point of a needle was drawn through it some minutes after emission. The blood had been for upwards of twelve hours freely exposed to the air, but being situated in an injured part of a blood-vessel, had remained free from coagulation.*

"Further, in the opening meeting of last Session I demonstrated another important principle, viz.—That ordinary solid matter, unlike atmospheric air, induces coagulation of blood in its vicinity when introduced within the living vessels. Having inserted a piece of clean silver wire for a considerable distance into one of the veins of an amputated sheep's foot, I slit up the vessel after a short time had elapsed, when I exhibited a coagulum extending along the whole length of the foreign body, whereas a mere wound of the vein failed to induce a clot, except immediately at the spot where the injury had been inflicted. It was obvious that the introduction of the wire could not affect the amount of ammonia in the blood; and from this and many other facts to which I need not here allude, I was led to the opinion, that as regards what takes place within the living vessels, the ammonia theory might practically be left entirely out of consideration.

"What I have to show this evening will, I think, prove that even for blood outside the body, the ammonia theory, what-

* For some of these facts see 'Philosophical Transactions,' for 1855, pp. 673, et seq.

ever degree of truth it may contain, is very far indeed from representing the whole truth.

"One of the most remarkable circumstances connected with blood that has been shed from the vessels is, that it refuses to coagulate below a temperature of 40° Fahr. or thereabouts. This is explained by Dr. Richardson, on the hypothesis that the low temperature prevents the evolution of ammonia,* while the rapidity with which coagulation takes place at high temperatures, seems to him satisfactorily accounted for by the increased volatility exhibited by the ammonia under such circumstances. I was myself at first disposed to accept this interpretation; but subsequent reflection led me to think that, to say the least, it required confirmation. It occurred to me, that if it were true that the fluidity of blood below 40° was due to free ammonia retained in it, coagulation would take place immediately, in spite of the cold, if the alkali were neutralised by the addition of acid, provided the fibrine were not impaired in its coagulating property by the reagent employed. In order to ascertain whether this result would really follow, I poured blood freshly shed from a sheep into vessels surrounded by ice-cold water, and by this means succeeded in keeping some portions of it fluid for a considerable time, and found that it continued liquid notwithstanding the addition of dilute acetic acid in what I suppose must be sufficient quantity to overcome the feeble alkalinity of the blood, while the acidulated specimen retained the property of coagulating very rapidly when raised in temperature. But on attempting to discover whether this blood was really acid in reaction, I found that its red colour entirely vitiated the indications of both litmus and turmeric; and even the serum obtained after contraction of the clot was too much tinged to admit of the satisfactory application of the test paper.

"Being thus baffled in my experiments with the sheep, I had recourse to the horse, in which the red corpuscles subside with peculiar rapidity in the plasma, giving rise to the buffy coat well known to occur in the blood of that animal in the state of health, so that the opportunity would be presented of obtaining liquor sanguinis free from red corpuscles, to which the tests could be applied without risk of fallacy. Accordingly, yesterday afternoon, a horse having been placed at my disposal by my friend Mr. Gamgee, of the New Vete-

* See Dr. Richardson's 'Astley Cooper Prize Essay,' p. 303, where a fact is mentioned, indicating that no ammonia was given off at 34° Fahr. from a specimen of blood which had been artificially ammoniated, and which at 96° afforded distinct evidence of evolution of the alkali.

rinary College, I tied into the right jugular vein, one end of a piece of vulcanized India-rubber tube, four yards in length the greater part of which was coiled up in a freezing mixture and some of the blood, having been allowed to remain for a while in the tube, was shed into vessels standing in ice-cold water. Its temperature on first escaping into the air was 39½° Fahr., and having been since kept in the cold, it is still only partially coagulated at the present time (twenty-nine hours after it was shed). At first, however, it appeared as if we were likely to fail, the blood of this horse being a rare exception to the general rule, in exhibiting for a long time no appearance of the "sizy" layer. But after it had stood for about two hours, I succeeded in removing from the surface, by means of a glass tube, a sufficient amount of liquor sanguinis for the performance of an experiment, taking care that the glass into which it was shed, and the tube, were both near the freezing point. To half a drachm of this plasma, I now added one minim and a half of moderately dilute acetic acid, which had the effect of rendering it distinctly acid, as indicated by its communicating a red tint to litmus, and restoring the colour of turmeric paper which had been reddened by dipping it in the portion of the liquor sanguinis which had not been acidulated. I kept the specimen in ice-cold water till this evening. For a long time it remained perfectly fluid, except the formation of a little soft coagulum at the surface, just as in the unacidulated blood; but a few drops placed in a watch-glass and brought into a warmer atmosphere, coagulated in about the same time as the blood that first flowed from the tube, a soft clot forming in about a quarter of an hour. Even at the expiration of twenty-four hours, a portion of what remained in the cold was still fluid, though faintly acid, but set into a pretty firm clot on being removed into a warmer situation.

["Mr. Lister now proceeded to perform a similar experiment before the Society. A glass containing some liquor sanguinis of the horse's blood shed twenty-nine hours before, was taken out of the mixture of ice and water in which it stood, and the contents were seen to be still to a considerable extent fluid, although acidulated with acetic acid two hours previously. A portion of the liquid was poured into a watch-glass, and, having been shown to be acid by litmus paper, was set aside to coagulate, and about a quarter of an hour later was exhibited as a soft clot. Mr. Lister then continued—]

"From these facts it is obvious that the ammonia theory utterly fails to explain the influence of temperature on coagulation. The circumstance that the liquor sanguinis was acid in this experiment, is clear proof that it contained no free ammonia whatever; yet the acidulated plasma was affected by cold and heat, just like ordinary blood. It remained fluid near the freezing point, although the ammonia it originally contained must have entered into combination and lost its reputed power of dissolving the fibrine, and it coagulated when warmed, though the ammonia, fixed by the acid, must have been incapable of evolution. If the author of the ammonia theory were asked to explain why this horse's blood took a quarter of an hour to coagulate, he would no doubt reply that it must have contained a large amount of ammonia, requiring all this time to escape. But we have seen that the acid liquor sanguinis, though possessing no free ammonia at all, took as long to clot. There can, therefore, I think, be little question but that the slowness of coagulation in the horse, compared with the rapidity of the process in the sheep, and the variations met with in the period in the human species, depend not on the amount of ammonia present in the blood, but on differences in its other constituents, and, speaking generally, that the theory which attributes the coagulation of the blood to the escape of ammonia is fallacious.*—*Edin. Medical Journal.*

* "Since the above communication was made, I have seen for the first time the able essay of Dr. E. Brücke, which competed for the Astley Cooper Prize (see 'Med. Chir. Review,' vol. xix); and I find that the principle which he advocates—viz., that the fluidity of the blood within the living body depends upon an action of the walls of the vessels upon it—is supported by many facts which he has observed in the chelonian reptile, very similar to what I have made out in mammalia. Thus, he found that the blood remained fluid in the heart of the turtle for days after death, and for several hours after he had blown air through the veins of the neck, so as to make a foamy mixture in the cavities of the organ. He also found, as had been previously ascertained by Virchow and others, that after the introduction of mercury into the heart the blood coagulated about the globules of the metal, but not elsewhere, and this he regarded as an example of the influence of ordinary matter in inducing coagulation in its vicinity. He also succeeded with the following very striking experiment, which would not answer with mammalia: He drew blood into a cup from the veins of a living turtle, and injected it into the empty heart of another turtle just killed, and found that the blood remained fluid for several hours in its new situation, instead of coagulating in a few minutes as when retained in a cup.—J. L."

WOORARA POISON IN TETANUS.

In France, experiments are being continued with the above agent for the cure of tetanus, but it seems without corresponding success. In two cases recently, in which the poison has been given internally, and also injected into the cellular tissue, it appears to have produced no beneficial effect whatever. The poison had been tried on animals previously, and found to be very active.

It is stated, in a work lately published by M. Reynoso—

"There is a true and false woorara; the two are very different, but extremely difficult to distinguish from each other. The true woorara presents, moreover, several species. This substance is, therefore, not always obtained of the same strength; it comes from different countries, and is extracted from one or several plants, which contain one identical principle, the character of which is to cause death when injected into the blood, and to be innocuous when taken into the stomach.

"There is, however, one sort of woorara which acts on the gastric mucous membrane of certain animals, at given ages; which circumstance would tend to show that much difference exists in some samples of woorara.

"It is well known that it is not always prepared from the same plants, nor from plants of the same nature. It has even been shown by M. Chombrook, that one kind of woorara is obtained from a great number of plants, almost as great as the number of ingredients entering into diascordium or theriacum.

"Amongst the plants used are some strychneæ, but the rest have not as yet been determined botanically. It is doubtful whether snake poison is mixed with it.

"Gunelli is the first who, in 1758, insisted upon the innocuous nature of woorara when taken into the stomach. Lacondamine and Humboldt corroborated his statements. Man can eat with impunity animals killed by woorara. Death by the poison occurs generally by paralysis of the motor nerves.

"It is of importance to try the woorara in various manners before administering it to a patient, and to ascertain whether it produces no poisonous effects when introduced into the stomach, and also whether it paralyses motor nerves without affecting the nerves of sensibility. These precautions are indispensable, for there is a kind of woorara which may kill by gastric absorption.

"As to the occasional inefficacy of the poison when inoculated, the experiment of M. Dequise may be mentioned. This surgeon had been given, by a traveller, a quiver full of arrows said to be poisoned with woorara. He found, however, on trying them upon a dog, that they produced no effect. If we consider the woorara as an extract, such a result need create no surprise, as extracts are very liable to change."

ON THE CHEMICAL CONSTITUTION OF CARTILAGE.

"Two distinct cartilaginous tissues are recognised in the animal world. The first constitutes the cartilage which forms the basis of the bones, *i. e.* which on being incrusted with carbonate and phosphate of lime, forms the bony structures of the animal organism; this species is sometimes known as *collagenous*. The second, known as *hyalin cartilage* or *chondrogenous cartilage* is never transformed into bone. Up to the present time chondrogenous cartilage and collagenous cartilage have been looked upon as two distinct chemical varieties of the cartilaginous tissue. The collagenous cartilage obtained by the action of hydrochloric acid upon bones appear, in fact, to differ essentially from chondrogenous cartilage, which constitutes the hyalin cartilaginous tissue, or that cartilaginous tissue which is not yet penetrated with calcareous matter. The latter gives all the reactions which characterise *chondrine;* it is precipitated from its solutions by acetic acid, by acetate of lead, by alum, and by chloride of iron, whilst the former is not precipitated by these chemical agents, but only by tannic acid and corrosive sublimate.

"Dr. Friedleben does not deny these facts, but asserts that they are not sufficient to permit us to separate the two tissues as distinct varieties. These chemical differences result, according to the author, from the mode of preparation of the substances, and not from a primordial difference in the cartilaginous tissues. In fact, the chrondogenous tissue submitted for some time to the action of hydrochloric acid no longer gives the reactions of *chondrine,* but those which characterise *gelatine,* the basis of the collagenous tissues, in the same manner as the collagenous cartilage extracted from bones by hydrochloric acid. From this ingenious discovery it results that all the cartilaginous tissues of the animal economy present an identical constitution in a chemical point of view. It is well to add that some time ago, M. Schultze showed that caustic potash possessed the property of transforming chrondrogenous tissues (chondrine) into collagenous cartilage (gelatine.)"—*The Chemical News.*

Translations and Reviews of Continental Veterinary Journals.

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

Journal des Vétérinaires du Midi, for August, 1859.

ON THE ADVANTAGES AND DISADVANTAGES OF THE INOCULATION OF SHEEP.

By M. Lafosse, Clinical Professor.

The object of the inoculation for variola in sheep was to ascertain its prophylactic and also benign character, as compared with the actual disease.

The observations which led to the belief that variola, whether arising from inoculation or natural causes only subjected an individual to one attack of the disease, and also when it resulted from inoculation it was more benign than when the attack was spontaneous, have been generally accepted.

The first of these observations has, however, been declared false by Rochelubin, a veterinary surgeon of great repute; nevertheless, the second attacks are very exceptional, and therefore do not nullify the general rule of the immunity obtained by inoculation. As to the question whether inoculation produces a disease less fatal than the natural form of the affection generally, seems to be undecided.

As to the general advantages of inoculation, there are as yet no statistics which give accurately the mortality of the variola ovina. M. Delafond, in a memoir, in which his sympathies with inoculation are too manifest to be doubted, states the mortality in France to amount, without distinction of age or locality, to from twenty to forty per cent. In Prussia, on the contrary, it was found in 1823, that out of 51,981 sheep attacked, the mortality was only seven per cent. What is the reason of this difference? Are we to presume that in France the statistics are taken indifferently on imported and indigenous, or acclimated sheep?

It is well known that among sheep imported from Algeria, when attacked by this malady, the mortality is frightful. It would, therefore, be no wonder if the loss were greater from the malady in these departments where the importation of foreign breeds to cross with the indigenous breed takes place.

In consulting the archives of the Haute-Garronne, we find that in the years 1852 to 1857, 1306 sheep were attacked with variola, and eighty died, which is about six per cent.

It is also remarked that in certain years the mortality is not more than two per cent., while in others it amounts to forty per cent.

The same difficulty exists in the results furnished respectively in inoculation. M. Delafond gives a mortality of three per cent on 10,416 sheep, these belonging to flocks already invaded by the malady. But he affirms that in the severest epizootics, the mortality from inoculation performed on healthy sheep, in flocks where the malady already appeared was only one per cent. These results are the more surprising, as they are in direct contradiction to what is stated by the majority of other observers, who almost all agree that variola is fatal in proportion to its intensity and extent, and that the virus inoculated in this case, whatever may be the source from whence it has been obtained, is always more dangerous than when the epizootic is milder.

On the other hand, there are statistics of a later date which upset these of M. Delafond. M. Mariage, veterinary surgeon, of Bouchain, has observed a mortality of seventeen per cent. among 2984 sheep inoculated in 1846 in the North of France; which is higher than that of the malady itself in the French breed of sheep, which was only six per cent. in the same number attacked.

It is found that the results obtained by M. Guillaume, veterinary surgeon, of Issondon, are greatly in favour of inoculation, inasmuch as in the years 1822 and 1824, in 9443 sheep inoculated, which formed part of twenty-seven flocks, in which the malady had broken out, fourteen only died; which was one in 674; while, in the same flocks which were attacked by the malady, the mortality amounted to ten per cent.

One advantage from inoculation is, that it shortens the duration of the disease. It should, therefore, only be recommended when the flocks are already attacked by the malady.

In imitation of vaccination, it has been recommended to inoculate lambs some little time after their birth, as a hygienic measure. To appreciate the value of this, it is essential to appeal to statistics. M. Lebel quotes an instance in which 508 lambs were inoculated, and the loss was twenty. In Austria, in 8000 cases not one died. At Brabancais', out of 1000 lambs inoculated 100 died. In another case 550 were inoculated, and not one died. The total number of the lambs inoculated was 10,108; the mortality 121, the average being less than one per cent.

France possesses at least 30,000,000 of sheep, three fourths of which are ewes, from which about 15,000,000 of lambs are produced per annum. If these were all inoculated, and supposing the mortality to be as before-named, it would be a loss of 150,000 head of sheep yearly, which would amount to 3,000,000 in twenty years. Is it to be presumed that the malady itself would be more destructive in that time than this, or cause so severe a loss?

The conclusions of the author are, that a general inoculation, in times of epizootic variola, being resorted to for all the lambs, without distinction, would be a measure calculated to do more harm than good, even if it were proved that the malady only occurred once in the life of the individual. Neither is it proved that the inoculation has in any way lessened the mortality in those flocks where the malady had already made its appearance at the time it was put into practice.

Further, that evidently the only advantage is, that by inoculation the progress of the malady is accelerated, thereby shortening the period of sequestration; and that other sanitary measures resorted to for this malady are, to say the least, inconvenient and onerous to the proprietor, as well as contrary to the industry and the supply of food to the nation.

POLL-EVIL COMPLICATED WITH CARIES OF THE CERVICAL LIGAMENT.

Oct. 12th.—A gelding was brought to the infirmary of the school, having a tumour on the poll.

The information given was, that the tumour had been opened soon after its appearance, and a seton passed through it. A great quantity of pus had escaped, but the tumour had not diminished in size.

The animal carried its head low; was in an extreme state of debility; the poll was tumefied, hard, hot, and painful; there were two openings in it, one on the right side, the other on the left, through which a seton had evidently been passed under the cervical ligament; these openings discharged an abundance of bloody grumous pus, having a fœtid odour, which indicated a complication of the ligament.

The deduction from these observations was the necessity of laying open the tumour, so as to give exit to the pus; but, before resorting to the operation, the inflammation had to be abated. This was done by the application of a linseed-meal poultice; the sinuses were also injected with camphorated brandy.

This treatment was continued until the 16th, by which time the tumour was reduced in size, and the movements of the head much freer; but the pus was still grumous, and the fœtid odour of caries still existed. The operation was therefore proceeded with without any farther delay. All being prepared, the animal was cast, and a deep incision made across the large and small complexus muscles; also, at the same time, enlarging two sinuses, which extended on each side to the occipital protuberance. This was followed by an abundant hæmorrhage, caused by the division of some of the muscular arteries, which had to be secured by ligature. The bleeding being stopped by this means, it was found that the diseased parts, which were now laid bare, were covered by a fungous coating, underneath which was a fibrous tissue, which was the cause of the persistence of the fistula. After having excised this foreign product, the whole of the wound was cauterized with liquid caustic, and the opening filled with pledgets of tow, saturated with a diluted solution of the same. The edges of the wound were dressed with empyreumatic oil, and the course of the pus with lard.

On the 17th this dressing was renewed, and after having removed large lumps of clotted blood from the bottom of the wound, a fistula, which extended backwards, along the cervical ligament on the left side, was seen. As the patient had only been operated on the previous day, the laying open of this sinus was not made, and the wound only dressed with camphorated spirits of wine.

This was continued till the 20th of the month, when a counter-opening was made, and the whole of the sinus laid open. A portion of the cervical ligament was discovered to be carious. All the foul products, which were here very abundant, being removed, the parts were cauterized as before.

On the 25th there was a marked amelioration of the symptoms; the animal was able to raise its head, the tumefaction was much reduced, portions of the ligament had come away with the pus, and the case went on favorably till the

28th, when a tumour was perceived to have formed on the right side of the ligament. This led to the supposition that caries had extended to that side also. On probing it a fistula was found, which extended backwards, the ligament was here also affected, and it was necessary to perform another operation, in which this fistula was laid open to the bottom; and after having arrested the bleeding, which was very copious, from a division of the muscular branches of arteries, the whole of that portion of the ligament which was diseased was removed. The operation terminated, the wound was dressed as before with the diluted liquid caustic. Nothing particular occurred up to the 9th of November, when an abundant suppuration was established, and from that time no other complication supervened. The wounds rapidly healed, and the animal was discharged on the 6th of December.

This case shows that the cervical ligament may be cut without any fear, and that this is not only advantageous for removing the parts affected with caries, but also by lessening the friction of parts, which greatly opposes the healing process.

ULCERATION OF THE SHEATH OF THE OX.

This affection has been studied in all its phases by Professor Lafosse, of which a full account is given in the *Journal des Veterinaires du Midi*, for 1849, p. 49.

This affection is of frequent occurrence in the ox; and if it be not treated at the very beginning, the consequences are likely to become serious; for, if the urethra be once obstructed by the discharge and the matted hair, they cause a dangerous retention of urine, and even, as has happened in some cases, this leads to a rupture of the bladder.

To remove the matted hair, and well cleanse the parts by injections, is the first thing indicated; but to effect a perfect cure it is necessary to slit the sheath up, so as to lay the seat of the disease bare, after which the cure is easy.

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

REPORT OF MEETING AND ANNIVERSARY DINNER.

The sixth General Meeting of the West of Scotland Medical Association was held in the Tontine Hotel, Trongate, Glasgow, 30th December, 1859.

MR. WILLIAM COCKBURN, President of the Society, in the chair.

PRESENT:—Messrs. W. Cockburn, W. Anderson, J. Anderson, A. Robinson, J. McCall, Herriot, Pettigrew, R. Lang, J. Howatt, Sharpe, R. Mitchell, Dobbie, Dunlop, McKirdy, Wilson, Moir, and several Students.

The minutes of the previous meeting having been read and confirmed, the Secretary read notes of apology from Professor Dick, and Messrs. Steele, Warfolk, Bryce, Marshall, and Stewart.

Mr. McCall apologised for the absence of Mr. Strangeways, and intimated, in his name, that he was willing to assist the Society so far as he was able, either with pecuniary aid or literary contributions.

Mr. W. Anderson proposed, and *Mr. Robinson* seconded, that the Secretary read a list of the names of those members who had paid both their subscription and entry-money. This being done,

Mr. Sharp proposed, and *Mr. W. Anderson* seconded, the election of Mr. Robert Pettigrew as a member of the Society; which was unanimously agreed to.

Mr. Moir proposed, and *Mr. Robinson* seconded, the election of Mr. Herriot as a member of the Association. Mr. Herriot declined accepting it for the present, stating he would communicate his intentions at the next General Meeting.

It was proposed by *Mr. W. Anderson*, seconded by *Mr. McKirdy*, and agreed to, that, for the future, all members shall, as originally proposed, be admitted by ballot only. He also stated he had no doubt but those members of the profession who had not yet joined the Society, would, at some future date, solicit their admission as a great favour.

It was proposed by *Mr. McCall*, seconded by *Mr. Robinson*, and agreed to, that the Secretary should, at the first General Meeting of the year, intimate to the members of the Society that the yearly subscriptions were due.

It was proposed by *Mr. W. Anderson,* seconded by *Mr. Dunlop,* and agreed to, that the names of those who had at the first meeting signed their names as members of the Society, and who had failed to pay their entry-money, should be erased from the list; and if at any future time they should wish to become members of the Society, that they be proposed and balloted for in the usual manner.

Mr. Robinson said, that as the Society was in such a flourishing state, with every prospect of continuing so, and with a little exertion on the part of the members, capable of great extension, he would propose that the Rules of the Society be revised, printed, and circulated among the members. Mr. W. Anderson seconded the motion.

Mr. McKirdy proposed, as an amendment, that the revised rules be brought before the next General Meeting of the Society for their approval before being printed and circulated.

Mr. Dunlop seconded the amendment, when *Mr. Robinson* withdrew his motion, and the amendment was agreed to.

No further business being brought before the meeting, the Chairman introduced the subject chosen for discussion, viz.: CASTRATION.

After enumerating the various methods resorted to for the performance of that operation; he stated the different modes he had himself adopted; and, in conclusion, said that he had resorted to the method of compression, by means of the caustic clams, as the most safe and easy way of performing it.

Mr. W. Anderson hoped that if any person present had been unfortunate in the performance of the operation of castration, he would state the same, and also what he considered was the cause. He likewise stated that in using the caustic clams, if the cremaster muscle was divided, the end of the cord hung too far down, and an enlargement was very apt to take place from effusion, which often required the operation, in a manner, to be performed over again, so as to get the enlarged part of the cord removed.

Mr. Herriot stated that he was in the habit of using the caustic clams for a great number of years, and he got on well enough until he used screws in the end of the clams, and applied, as he considered, too much pressure; at least that was the only way in which he could account for the number of deaths that took place; for, after he resorted to the old method of tying the clams, he was as fortunate as he used to be before the application of the screws.

Much discussion took place on the use of caustic with the clams, and the results of several experiments showed that the operation could be performed as well without the caustic as with it, only the clams required to stay on for twelve hours longer.

After the various methods of castration had been commented on, *Mr. Moir* said he hoped that if any person had castrated a horse with Scrotal Hernia, not having observed its existence till after the removal of the clams, that he would state the case, with the means resorted to for the treatment, and the results.

Mr. Herriot gave the description of such a case, in which, after taking off the clams, the animal appeared to be all right; he therefore left, but was soon after sent for, to see the animal, it being reported that the bowels were hanging a long way out of the scrotum. By the time he reached the place, Mr. Dollar, of Kilsyth, had returned the intestine in the following manner: he had taken a clean sheet, tied it over the animal's loins, after being brought underneath the belly, to support the gut and keep it clean; he then threw the animal down, got the intestine returned through the ring, put a few stitches through the scrotum, and they had no more trouble with the case.

Mr. Pettigrew also related a similar case; a few other cases were mentioned, but these were the only successful ones.

Several cases were described, in which the blood, by coagulation, appeared as if there was a protrusion of the intestines, but which, on examination, proved not to be so, and the swelling was easily removed.

Mr. McKirdy related a case that came under his observation, in which the protrusion was as large as a man's head.

Mr. J. Anderson stated that he had seen several cases of that description, where the protrusions varied from the size of a hen's egg to that of an ordinary testicle, in the operation of castration by torsion; the cause of which was, after cutting through the scrotum, he made the incision through the more immediate coverings of the testicle, a little to one side, and smaller than the incision in the scrotum, which thus formed a pouch, that became filled with air and blood, and, descending through the external opening, it had all the appearance of an inflamed intestine. The best way to prevent such an occurrence, was to make a good large incision, well forward, and right through the coverings to the testicle at one cut; as there is a danger, if the incision be too small, of the wound healing too rapidly, and retaining some irritating substance, which often causes the formation of an abscess.

CHARLES MOIR,
Hon. Secretary.

After the discussion, the members adjourned to the Dining Hall.

Owing to the indisposition of Mr. Cockburn, Mr. Alexander Robinson was called to the chair.

The cloth having been removed, the Chairman expressed his sense of the great honour they had conferred upon him in putting him in the position he then occupied, and his extreme sorrow for the indisposition of their worthy president, Mr. Cockburn, who certainly would have done the duties of the chair much more to their satisfaction than he could do. He was sure that that gentleman had the sympathy of all present.

After the usual loyal and patriotic toasts had been given, he said: "The next toast handed to me is, 'The West of Scotland Veterinary Medical Association.' This toast is worthy of some previous reflection, which I am sorry I have not had an opportunity of giving it. The Society has been got up by the unwearied exertions of Mr. W. Anderson, with the support of a few others. That gentleman, however, spared neither time nor expense in the promotion of it. He always held forth the argument of once obtaining a meeting, and that then there would be no fear of getting the society formed; and now, since it has reached its present position, it only remains with us to give it our every support, so as to keep it together in good working order. I think that most of us have already found great benefit and pleasure in attending its meetings, and I am proud to say that we have had precedence voluntarily given to us in the pages of the *Veterinarian*, by our contemporaries in the great metropolis; and since we have attained this, let us be united in keeping it; and I trust that no veterinary surgeon in the West of Scotland, who seeks success and reputation, or has at heart the interests of his profession, will keep back from adding his mite to the furtherance of the object contemplated by the Society

"The Society is certainly a step in the right direction. It opens up for us a beautiful field of research and improvement, and it will unquestionably be the means of extending our usefulness, and of enhancing our pecuniary interests; while it will also tend much to improve the general condition of the lower animals, as well as the status of our profession, the interest of the agriculturist, and the prosperity of the community at large.

"Much could be said of the advantages likely to accrue from our attendance at its meetings; in fact, more than I am able to say. They afford the means of communicating to each other any cases of importance or interest that may have occurred; and by the interchange of opinions and ideas, we obtain more confidence in our future practice, and are better fitted for the discharge of our professional duties; they also create a bond of union amongst us that will act for the general good of our profession, and induce a friendly feeling, the one towards the other, that should ever subsist, and which is so desirable. This I put much stress on. The foundation stone has been laid of what I may call a great building, which I hope will continue to progress and never be finished; and I have no doubt we shall receive the commendations of generations yet to come, for having deposited the nucleus of what I expect will yet be a great and invaluable institution.

"Thanking you, gentlemen, for your attention to these few remarks on such an important subject, I beg to give for your acceptance, 'Prosperity to the West of Scotland Veterinary Medical Association, may it advance and live for ever.'"

Mr. Moir replied to the toast of the "Army and Navy" in very appropriate terms, touching upon the stirring times we now live in, and proposed, in a very able manner, "Prosperity to the Veterinary Institutions."

Mr. McCall returned thanks, and said: "In responding to the toast with which you have coupled my name, I feel a pride and satisfaction which I am unable adequately to express.

"It might naturally be expected that, having so lately filled a chair in one of those institutions, I should be prepared satisfactorily to represent them; but unless I was individually to characterise them, I fear that partiality, and that too with justice, might be laid to my charge. Moreover it is not necessary, and would be foreign to the toast, which is solely 'Prosperity to the Veterinary Institutions.'

"Mr. Moir has somewhat anticipated me in his remarks, but with the sum and substance thereof I for one entirely concur. Science, in all its phases (if I may be allowed the expression), is fast progressing; and I think if we look around us, and call to recollection that little more than half a century ago, the institutions whose cause I here represent could almost be said not to have existed—I say that, under these circumstances, I think we have every reason to congratulate ourselves upon the advancement we, too, have made in veterinary science.

"It is true, theory is at all times the monster creature of our own imaginations, and the theory of to-day is often justly the folly of to-morrow; notwithstanding all this, who can read the articles which occasionally emanate from the pens of the professors and alumini of the various veterinary institutions, without being struck, and that forcibly too, with the depth of penetration and zeal in quest of knowledge.

"The value of veterinary institutions requires no comment, and although as yet veterinary science lacks that *status* in public estimation which is awarded to its sister science, the medical, still it must be apparent to you all that the day is not far distant when, to say the least, their equality shall more nearly approximate.

"The day was when the self-dubbed veterinary surgeon was deemed fit company only for the horsekeeper, but the day now is when the veterinary surgeon is fit company for any gentleman, be he medical, legal, mercantile, or otherwise. And to what influence, or combination of influences, are we to attribute this? Why solely to education and the college tuition of the veterinary institutions I here so imperfectly represent.

"Regarding the differences which at present exist betwixt 'the powers that be;' had this point not been touched upon, I would have passed the matter over in silence, but this I now cannot do. I am, however, neither inclined nor prepared to say at whose door the burden of these differences should be laid, and perhaps it might be as well to say that there are faults on all sides. But let this be as it may, one thing I hold is self-evident, that without one great recognised head, around which we can all rally, we are likely to split, and thus injure the cause whose advancement and promulgation I am certain we have all at heart.

"Let us hope, then, that the day is not far distant when this head shall be universally admitted, and when the colleges which at present, or which may hereafter exist, shall be bound to obey the laws, and submit to the decisions awarded.

"And now, gentlemen, in conclusion, accept my thanks for the great honour you have conferred on me by linking my name with the veterinary institutions of this and other countries, and for the enthusiastic manner in which you have drunk my health."

Mr. W. Anderson then rose and said, "I have a toast to propose, and it is one I feel confident you will all give a hearty response to. It is the health of our president, Mr. Cockburn. I am sorry that he was obliged to leave us so early, from ill health. I assure you, gentlemen, his coming to Glasgow gave me great pleasure. I had heard much said respecting his character and gentlemanly manners before his coming, and I am proud to say that my experience of him, professionally and socially, has proved him to be deserving of that good name."

Mr. Moir proposed "The health of the Chairman," on whom he pronounced a high eulogium, as a warm friend and a distinguished ornament of the West of Scotland Veterinary Medical Association.

The Chairman, in replying, said, "I do not regret what little I have been able to do for the Society. In looking around me, and seeing such a full and respectable meeting, I feel that I am amply paid for anything I have done. I am proud to see it progressing so rapidly, and I beg to thank you for the kind manner in which you have proposed and responded to my health."

Mr. W. Anderson proposed as a toast, "Success to the veterinary students."

Mr. A. Pottie, veterinary student, returned thanks.

Several other healths and toasts were proposed and responded to, and the remainder of the evening was spent in much harmony.

Review.

Quid sit pulchrum, quid turpe, quid utile, quid non.—Hor.

The Horse. By William Youatt. With a treatise on Draught. A new Edition, revised and enlarged, by E. N. Gabriel, M.R.C.S. and M.R.C.V.S., Secretary to the Royal College of Veterinary Surgeons. London, Longman, Green, Longman, and Roberts. 1859.

We consider it altogether uncalled for to enter upon an elaborate review of the above work. It has been too long before the public to need it. It was the first of a series published under the superintendence of the Society for the Diffusion of Useful Knowledge, designated "The Farmer's Series." To the late Mr. Youatt was intrusted the writing of the first edition, and well did he execute his task. So well indeed that a second was soon called for, which his fertile pen enriched with such a considerable increase of matter as almost to make the work a new one.

The possession of the copyright, since his death, having fallen into other hands, and another edition being demanded, Mr. Gabriel, M.R.C.S. and V.S., was solicited to undertake the duties of Editor thereof.

From the rapidity with which the work has passed through its several editions, perhaps the differences to be seen between the second and the third, are not so marked as those between the first and the second edition. Nevertheless, in the present one will be found much new matter, while that which has become obsolete has been withdrawn; the object Mr. Gabriel has kept in view being the bringing up of the work to the present state of Veterinary medicine; in which of late years considerable advances have taken place. It is true there are parts we could have wished had been more fully dwelt upon; but it is always difficult to give to a popular work a form in strict accordance with the requirements of Science. One feature we highly approve of—that of throwing the subject-matter of the foot notes into the body of the work. We have always felt in our readings that the perusal of notes materially interferes with our comprehension of the subject, by checking the flow or continuance of thought. This may be an idiosyncracy.

At the present day, since it is a topic almost universally dwelt upon, so it is quite legitimate that the system of horse-training, as advocated by Mr. Rarey, should find a place in these pages. This, with dentition in the horse, is new; as also are some comments on the disease designated roaring, and a few others.

On the whole, while we are inclined to think that, although the scientifically educated member of the profession will not often refer to the "The Horse" for information, yet a perusal of the work may even to him prove of service. He will glean something from it; while, to those for whom it is especially intended, it cannot fail to be of the greatest use.

Of course, we enter not into the consideration of the question—Is it wise for members of the profession to write for the non-professional public? since each has a right to entertain his own opinion upon it, and to act accordingly. The fears of those objectors, who are apprehensive that the general public will be told too much, and thus each will become "his own horse-doctor," may perhaps be quelled by observing that the professional man in his writings must of necessity denounce as quackery all modes of treatment that are not founded upon right principles; consequently, in the end, the man of education will be alone sought for, and the value of Veterinary Science become duly appreciated.

Veterinary Jurisprudence.

THE LATE HORSE CASE.

The case Ward *v.* Curtis, reported in the *Veterinarian* of last month, taken from the *Wilts and Gloucestershire Standard,* having excited an unusual amount of interest, on account of the wide difference of opinion exhibited by the veterinary surgeons who were called as witnesses, a disinterested and experienced veterinary surgeon, Mr. Thomas D. Broad, of Bath, was requested to examine the horse in question, that gentleman being in the habit, it is said, of examining a great many horses as to soundness, in the course of the year. Mr. Broad says he cannot conceive how Messrs. Kent and Leigh could make such statements in reference to the horse's fore-feet, as there is not the slightest appearance of ossified cartilages, or disease of the pastern bones, or of the navicular joint. They are not good strong feet, and they are rather flat (not convex, as stated by some of the witnesses,) and thin-crusted, requiring more care in the shoeing than feet of stronger growth, but they cannot fairly be termed unsound. Such feet never require any cutting. The shoeing-smith's knife is a very frequent cause of lameness. The following certificate gives the result of Mr. Broad's examination :—

Veterinary Establishment,
Broad street, Bath; Nov. 17, 1859.

This is to certify, that I have this day examined at Mr. Neale's of Thingley, near Corsham, a 5-year-old off brown cob gelding, with a white near hind heel, height nearly 15 hands, a slight blemish on the off knee, and an irregularity of one of the incisor teeth in the upper jaw. The fore feet are rather flat, but not in any respects diseased, or such as might be termed unsound. The hocks are enlarged, especially the off, and are what are termed diseased or spavined hocks, and constituting unsoundness, although there is not any lameness, or any apparent interference with the action of the hocks. This certificate refers to the horse respecting which there has been two County Court trials, at Malmesbury.

THOS. D. BROAD.

THE LAW OF AUCTION.

The case of "Cleobury v. Tattersall," tried at the last Hertford Assizes, and fully reported in the *Times*' columns of July 23d last, and in which a verdict was found for the plaintiff, who acted as his own attorney, has just been concluded, defendants having paid the damages and costs. It is now therefore settled that a horse may be returned for not answering the description in the printed particulars of sale. The case of "Warlow v. Harrison," decided a few days since in the Court of Error, from the Queen's Bench, has decided that when horses are advertised to be sold without reserve, the owner or his agent cannot buy them in, but that the last *bonâ fide* bidder is the purchaser, and as such can maintain an action against the auctioneer for the specific chattel sold. (See last vol., p. 547.)

GUILDHALL.

CHARGE OF DEFRAUDING THE LORD CHIEF JUSTICE.

Joseph Bullock, described as a servant, of 133, Warwick-street, Pimlico, was brought up charged, according to the police sheet, with having obtained a sum of £42, of Sir Alexander E. Cockburn, the Lord Chief Justice, by falsely representing a horse which he sold to be sound, and to be the property of a Mr. Prentice.

Louis Dufour, butler to Sir Alexander E. Cockburn, was in attendance to support the charge.

Alderman Hale—Is this a horse case?

Mr. Martin (chief clerk)—This is a case, Sir, in which it would be better to allow the matter to stand over, and call upon the defendant to enter into his own recognisances to appear on a future day.

Mr. Buchanan—I attend on behalf of the defendant.

Mr. Martin—This is a case of a warranty. What do you propose to do in the matter?

Mr. Buchanan—I submit that this court has no jurisdiction.

Mr. Martin then read the warranty, which stated that the horse in question was a bay gelding, quiet in single or double harness, a good hunter, and quite sound. The veterinary surgeon's certificate, which was also read, stated that the bay gelding was a confirmed roarer. It had a splint in the near fore leg, an enlargement on the near hock, and it was generally unsound.

Mr. Buchanan—It is clear it is merely a matter of pounds, shillings, and pence.

Alderman Hale—Well, Mr. Martin, what can we do in this matter?

Mr. Martin—Perhaps you will let the matter stand over, and take the defendant's recognisances to appear.

Alderman Hale—But if we have no jurisdiction, how can we do that?

Mr. Buchanan—I am quite willing that the defendant should enter into his recognisances if the Court desires it, and, in the mean time, I believe the case will be arranged. The defendant sold this horse for his master, and he only obeyed his instructions in the matter.

Alderman Hale—Well, Mr. Buchanan, I have no doubt you will advise your client to do what is right.

Mr. Buchanan—I certainly shall advise the defendant to return the money.

Mr. Dufour—I am quite willing to accede to the course suggested by Mr. Buchanan.

The defendant was then discharged on the understanding that he should enter into recognisances to appear on Thursday, but that form was shortly after dispensed with by the defendant's repaying the amount he was charged with obtaining under the circumstances above mentioned.

War Office, Pall Mall, *Dec.* 30, 1859.

10th Light Dragoons.—Veterinary Surgeon William Thacker, from the 15th Dragoons, to be Veterinary Surgeon, vice Phillips, promoted.

15th Light Dragoons.—Acting Veterinary Surgeon Martin Mence to be Veterinary Surgeon, vice Thacker, appointed to the 10th Light Dragoons.

Royal Artillery.—Acting Veterinary Surgeon Henry Hussey to be Veterinary Surgeon.

OBITUARY.

In our last number we did little more than record the death of Mr. Thomas Turner. The event occurred late in the month, and it was not until some days afterwards that we were informed of it. But it must not be that one who for several years held so prominent a position amongst us, and the energies of whose active mind were ever devoted to his profession, should be allowed to pass away thus briefly noticed, and his memory be unhonoured by us.

Mr. Thomas Turner obtained the diploma of the Royal Veterinary College in January, 1826. He was a thorough horseman, and devoted to the chase; nevertheless, he was such a man of business, that with all his love for field sports, he never allowed them to interfere with his professional duties, or to detract from the required attention to his patients. His light weight and his compact form admirably fitted him for the saddle.

In the earlier meetings of the Veterinary Medical Association, when faction had done its worst, and what was intended for evil had resulted in good, he and his brother, Mr. James Turner, were among the first members of the profession who joined in the debates, thus giving to the then pupils at the College the benefit of their experience. From this contact of mind with mind, this free intercourse between the aspirant and those engaged in practice, doubtless much good arose. The time, however, came when, from causes too numerous to be mentioned here, these unions were discontinued, which has ever since caused much regret.

On the obtainment of the Charter of Incorporation of Veterinary Surgeons, in 1844, Mr. Turner was nominated by the Crown its first president, and earnestly did he devote his time and talents to the fulfilment of the duties of that responsible position, concentrating all his thoughts thereon.

Many errors were committed at the beginning by the Council, but these, in all probability, arose from the novelty of the circumstances in which the profession was placed, rather than from any intention to interfere with established rights. They were the actings of an overwrought zeal for the possession of an anticipated good—real or imaginary—which had been long withheld. They were errors of the head rather than of the heart.

The office of president was held for several years in succession by him: and this, too, in the opinion of many persons, was an error; for it was thought it would have been better that on others the duties of the office should have periodically devolved, so that new views might have been called forth; since differences of opinion will ever obtain among the members of a community, and fortunately, in this land of liberty, we are free both to express our opinions and to carry them out, provided others are not injured thereby.

But in this Mr. Turner surely was not to blame. It, in fact, was a high honour conferred upon him; or rather a succession of honours, of which he might have been justly proud; and doubtless the Council, the majority of whom must have from time to time re-elected him to office, considered that they had just grounds for acting as they did.

His health at length failing, Mr. Turner confined himself to his private practice, at Croydon, where he died, December 21st, 1859, in the sixtieth year of his age.

Thus have we cursorily reviewed his professional life as far as we are conversant with it. Doubtless there are those who were more intimately associated with him than we were, who can fill up the outline we have given. We are permitted to add the following. It is from the pen of Mr. William Field, senior, than whom perhaps few in the profession had a better opportunity of judging of the abilities of Mr. Turner: "During his life his energy was untiring, and none more anxiously laboured for the benefit of the profession than he, while his general amiability and great integrity of conduct will ever be appreciated by his veterinary brethren."

"His body is buried in peace, but his name liveth for evermore."

We have also to record the death of Mr. Isaac Worthington, M.R.C.V.S., Manchester, on the 15th January, 1860, aged thirty-three years. His diploma bears date April 27th, 1848.

Likewise of Mr. James Sewell, late of St. Albans; of whom we hope to give some particulars in our next number.

Thus, the spoiler Death is removing the young, the middle-aged, and the old, from among us, leaving their places to be filled up by others; and thus it ever has been. Some of us still left perhaps may say,

"I am not now
That what I have been—and my visions flit
Less palpably before me—and the glow
Which in my spirit dwells, is flutt'ring, faint, and low."

ERRATA IN NO. 385.

Page 2, line 25, *for* council *read* counsel.
" 38, *for* upon *read* over.

THE

VETERINARIAN.

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Communications and Cases.

ON VALERIANIC ACID, AND THE VALERIANATES.

VALERIANIC, or VALERIC ACID, is one of those organic principles which, although found in the vegetable kingdom, has been also formed by the chemist in his laboratory.

The name is derived from this acid being known to exist in the root of the common valerian (*Valeriana officinalis*), and from which it may be obtained by distilling water off it, as long as the solution reddens litmus, when it is to be neutralized by means of ammonia, or the carbonate of soda or potassa. By evaporation a saline compound results, which is to be distilled with sulphuric acid, diluted with half its weight of water. The distillate, according to Brande, separates into two layers, the uppermost of which is a saturated aqueous solution of valeric acid, and the lowermost an oily hydrate of the acid. This oily hydrate is removed, and being distilled, the first portion that passes over is aqueous, but when the boiling point attains 346°, the pure hydrated acid is obtained unmixed with water.

The composition of this acid is $C_{10}H_9O_3+HO$.

It is also met with in other vegetables, as in the root of the angelica (*Angelica archangelica*), and the bark of the guelder-rose (*Viburnum opulus*). It may likewise exist in some other plants, as it "is generated," Fownes says, "by the spontaneous decomposition of azotized substances, animal and vegetable, and is produced in many chemical reactions in which oxidizing agents are employed."

The following mode of preparing this acid artificially is thus given by Brande:

"*Hydrate of oxide of amyle* (oil of potato-spirit) is mixed in a flask, with ten parts of a mixture of equal weights of quicklime and caustic potassa. As soon as the immediate action, which is attended by increase of temperature, is over, the flask is carefully heated in a fusible metal or oil-bath, first to 340°, and then to 445°, when hydrogen is evolved, and *valerate of potassa* formed. As soon as the disengagement of hydrogen ceases, the flask is closed and allowed to cool. Water is then quickly poured upon the mass in the flask, taking care to prevent the access of air. Dilute sulphuric acid is now added, and the mixture submitted to distillation. The distillate is saturated by carbonate of potassa, and the resulting *valerate* decomposed either by phosphoric or sulphuric acid, which, when distilled, first yields water, and then the hydrated valeric acid passes over."

If potato-oil be distilled with a mixture of sulphuric acid and bichromate of potassa, a *valerate of the oxide of amyle* passes over, to which potassa being added, it becomes decomposed, yielding hydrate of the oxide of amyle and valerate of potassa, which is to be treated in the same as the above.

Fownes states, that "if an open jar be set in a plate containing a little water, and having beneath it a capsule with heated platinum - black, upon which potato-oil is slowly dropped in such quantity as to be absorbed by the powder, the sides of the jar become speedily moistened with an acid liquid, which collects in the plate, and may be easily examined. This liquid, saturated with baryta water, evaporated to dryness, and the product distilled with solution of phosphoric acid, yields valeric acid."

The production of this acid has its analogue in the discovery made by Dumas, that when quicklime and potassa are moistened with alcohol—*hydrated oxide of ethyle*—and subjected to a gentle heat, out of contact of air, hydrogen gas is evolved, and acetic acid formed. Wood-spirit—*hydrated oxide of methyle*—similarly treated, yields hydrogen and *formate* of potassa; and if potato-spirit—*hydrated oxide of amyle*—be employed instead of these, we have hydrogen and *valeric acid* as the result, the last-named acid being identical with that obtained from the vegetable. Hydrated valeric or valerianic acid is described by Trommsdorff as being a colourless liquid, smelling intensely of valerian, and of a sour, pungent, and nauseous taste, leaving a sense of sweetness and a white spot upon the tongue. Its specific gravity is 0·944. It boils at 270°, and the density of its vapour is 3·55. It dissolves in all proportions in alcohol and ether, and in acetic acid of sp. gr. 1·017. It does not congeal at 0°. It is soluble in about thirty parts of water at 55°; but it may contain 20 per cent. of water, without losing its oily appearance.

Valeric acid is capable of combining with the metallic oxides and other bases, forming salts—*valerates*—which are anhydrous and have a sweetish taste. Some of them are crystalline, others amorphous. They vary in their solubility in water, but most of them dissolve in alcohol. By the stronger acids they are decomposed, the valeric acid separating as a perhydrate.

Some have thought that this acid constitutes the active principle of valerian. Others, with a greater show of reason, consider it to be formed by the oxidation of valerol, the least volatile of the two oils found in the root. If so it is a product, not an educt.

Physiological action.—Valerian is stated to excite the cerebro-spinal system, and as its influence has been observed to be marked over morbid states of the system, it has been designated a *nervino-alterative.* It is well known to have a peculiar effect upon cats, which manifest a great fondness for it, and these becoming, it is supposed, intoxicated by it, they roll themselves over it in playfulness, accompanied with some degree of excitement. Besides being a nervous excitant, it is also an antispasmodic.

The *use* of this root has met with many supporters and many opponents. In Germany it appears to be more esteemed than in this country, its action here being considered very variable. It has been given in cases of *epilepsy*, *chorea*, and other spasmodic affections, with occasional success. Its forms, as recommended for the human subject, are the infusion, the tincture, the compound tincture, which is perhaps the best, and the extract of valerian.

It having been considered that the acid before adverted to was the active principle of this drug, an opinion now questioned, and as it was found to be capable of uniting with metallic oxides, so it was thought that the compounds thus obtained would necessarily possess properties like their constituents.

Among the salts employed are the valerianates of zinc and of iron, both being procured from the valerianate of soda.

The first of these was introduced into medicine by Prince Louis Lucien Bonaparte; and as there is much fashion in physic, so from its having had a noble advocate it became, and still is, largely used. Its action is supposed to be like that of valerian and zinc combined. It is therefore an antispasmodic and tonic, and is resorted to for neuralgic affections. It has also been applied as an astringent and sedative, in the form of lotion, in cases of chronic conjunctivitis.

Pereira says, it is an anhydrous salt, crystallizing in snow-white, pearly plates; has a faint odour of valerianic acid, and a metallic, astringent taste, combined with that of the acid; soluble in 160 parts of cold water, and in sixty parts of alcohol. Ether also takes up small portions of the salt. The hydrated salt is more soluble, requiring only forty-four parts of water to dissolve it. Its composition is $ZnO,\overline{Va}$, or, if hydrated, $ZnO,\overline{Va},12HO$.

According to the same authority, valerianate of zinc is often adulterated, butyrate of zinc being substituted for it, as well as the acetate of zinc, these being flavoured with the oil of valerian.

Valerianate of Iron is likewise obtained from valerianate of soda, by the action of the sulphate of iron upon it, or rather the persulphate; its composition, according to Wittstein is, $3FeO3,7\overline{Va},2HO$.

"Prepared according to the Dublin College," says Pereira, "it is a tile-red, loose, amorphous powder, with a faint odour and taste of valerianic acid. When heated it fuses, then evolves its acid, and is converted into a sesquioxide of iron. At a temperature of 212°, it gives out part of its acid. It is nearly insoluble in water; it does not intermix well with cold water, but repels it like lycopodium; and boiling water gradually extracts the acid from it. It dissolves in acids and in alcohol."

This salt, like that of zinc, appears to be frequently adulterated; the citrate and tartrate of iron, scented with a few drops of the oil of valerian, being sold for it. These, however, are known by their solubility in water, and insolubility in spirit.

Although it has been thought that, from the insolubility of valerianate of iron in water, its disagreeable odour, and liability to adulteration, it will be little resorted to in medicine, yet we should be inclined to view it as the most available of these compounds for veterinary purposes, since it would be acted upon by the acid of the *succus gastricus;* and if so be there are any beneficial effects resulting from the use of valerianic acid, when it is combined with iron, the action of which is well known, we should anticipate a twofold good to result. We are, however, free to confess that we know nothing practically of the action of the valerianates on the system. But, perhaps, after this some of our readers may be induced to give them a trial.

The dose of either salt, we presume, may be from half a drachm to a drachm.

ŒDEMA SUCCEEDING UPON STRANGLES.

By J. Tombs, M.R.C.V.S., Stratford-on-Avon.

August 14th, 1859.—A brown horse, four years old, belonging to a gentleman, and which had been the subject of strangles, but was so far recovered as to be put to work, came under my care. When I saw him the pulse was 80; the respiration quick; the tunica conjunctiva reddened, and the Schneiderian membrane of a purple colour. The face and head were much swollen, particularly the lips. The absorbent glands about the thighs and belly were likewise enlarged, as were also the submaxillary glands. He had no appetite, and was disposed to keep in a recumbent position.

15th.—The pulse now numbers 100. The mucous membranes are even darker in colour than yesterday. The breathing at times is tranquil, but at others distressingly laborious, showing that congestion of the lungs is present. When down he does not roll about as if in pain.

I gave large quantities of brandy (even to the extent of half a pint at a time). Other stimulants were also administered, and in consequence of the pulmonary congestion, counter-irritants were used to the chest.

16th.—He is worse to-day. The breathing is very laboured and painful. The pulse 120. He refuses all food, and walks round the box until he falls from prostration. The swellings of the head and glands have, however, disappeared to a great extent, but the mucous membranes are black and putrid. He died at night.

Post-mortem.—The lining membrane of the nasal cavities is black and gangrenous. Lungs congested, and the air-passages extensively diseased. The subcutaneous cellular tissue, and also that between many of the muscles, is glutted with black blood. Effusion of serum exists about the extremities. The whole of the intestines have patches of effusion between their coats. Their villous coat is thickened, and black in colour. The omentum in places is likewise gorged with black blood. This case appears to me to be one of general œdema, depending on a contaminated condition of the blood. It is possible that it may in part depend on the horse having been put to work too early after his attack of strangles.

INJURY OF THE VAGINA AND RECTUM OF A MARE.

By the Same.

On the 18th of September last I was requested to attend a bay mare (in foal), belonging to Mr. Brooks, of Shenninton. She was quite well the previous evening, when turned out to grass, but on the wagoner going to his horses on the following morning, he observed that the mare had bled a great deal, and was lying down. The blood was coagulated. When I saw her she was uneasy, pawing, and looking backwards towards her flank. Pulse very quick and soft. No appetite.

Upon examination *per vaginam*, I found that the passage was injured in two places, just above the neck of the bladder and contiguous to the rectum, from which the blood had escaped. Sometimes an intermission in the severity of the symptoms took place, which continued for a few hours at a time. The hæmorrhage had ceased entirely on the second day after the injury.

On the 29th the mare aborted an apparently healthy fœtus, and I was in great hopes she would have been relieved, but about the 4th of October the pulse increased in frequency, and the respiration became very laboured. She died on the 10th of October.

Post-mortem examination.—The vagina and rectum were thickened, and the latter was found to be adhering to the sacrum. Both the anus and the interior of rectum were diseased. Effusion had also taken place into the cellular tissue connecting the viscera of the pelvic cavity. The anus, several days before the mare died, had lost its contractile power, and was so open as to expose the inside of the intestine. The rectum likewise did not act towards the last, and consequently the fæces accumulated, and were only expelled by violent contractions of the abdominal muscles. The parts were evidently wounded by some means, but how is quite a mystery.

RUPTURE OF THE ŒSOPHAGUS.

By the Same.

On the 29th September, 1859, I was called to attend a brown horse, four years old, belonging to a farmer, which had been under treatment for strangles. The leading symptoms were a pendulous head, with swelling on each side of the neck. On opening the mouth the fœtor from the fauces was intolerable. Everything that he took came back through the nostrils. The pulse was quick and weak, and the mucous membranes of the nasal cavity of a livid hue.

On inquiry, I found that a ball had been given him three days before with a pointed stick, and that a swelling of the throat took place very soon after.

Prognosis unfavorable, being satisfied that the œsophagus was ruptured, and that some ingesta had escaped at the aperture, causing the swelling. He died on the 30th.

Post-mortem.—The upper part of the œsophagus was found to be in a putrid condition, and its coats to have given way for a considerable distance below the pharynx. The thoracic portion of the tube was, however, but little affected. A large quantity of ingesta had escaped, and was lying in the surrounding cellular tissue and among the muscles of the neck.

I could not find the precise spot where the injury was first inflicted, in consequence of the highly decomposed state of the œsophagus. The stomach was empty.

RUPTURED STOMACH.

By the Same.

A BREWER'S horse, four years old, which had had the strangles, was turned into a field of new clover, while it was very wet. On the following day, October 11th, he was purged violently, for which opiates were given. I saw him at 11 a.m. on October 12th. He was still purging. The pulse was 50. He ate but little, yet seemed not to suffer from pain.

At 6 p.m. he became much worse. The pulse rose to 120, and was indistinct at the jaw. Great distension of abdomen was present, and the lungs were so much compressed that he could hardly breathe. At 10 p.m. he died.

Post-mortem examination.—Lungs highly congested, chiefly from pressure of the contents of the abdomen. The colon and other bowels greatly distended with gas. The stomach was ruptured about its middle, as was also the diaphragm contiguous to that part of the stomach. Some of the contents of the stomach had escaped, both into the thorax and abdomen. The villous coat of the organ was much inflamed in patches, and on its upper part several abscesses had formed. Two were as large as an egg. They contained thick matter, which had evidently been formed some time since. It is singular that the ingesta, which was still within the stomach was dry, more especially as the horse took, during his illness, large quantities of gruel, which would seem to have passed directly into the duodenum. Within the large intestines a coffee-coloured fluid was found.

DEATH FROM AN ABSCESS IN THE SUB-MUCOUS TISSUE OF THE POSTERIOR PART OF THE TRACHEA.

By Clement Stevenson, M.R.C.V.S., Newcastle-upon-Tyne.

The subject of the following case was a gray cart-horse, the property of Mr. John Davidson, miller, of this town. My attention was first directed to him on the 1st of September last, when it was observed that he was suffering from a frequent and distressing cough, accompanied with a slight loss of appetite and other indications of ill-health. The pulse and respiration were, however, but little affected. I had him put into a well-ventilated box, and applied a mustard cataplasm to the neck, over the whole course of the trachea, and gave him a moderate dose of sedative medicine.

September 3d.—Since last report he has fed better; the pulse is now scarcely disturbed, the cough is relieved, as is also the respiration. On the evening, however, of this day I was hastily sent for, when I found my patient apparently dying from apnœa. He was pawing violently with his fore feet, and almost continually coughing, by which large quantities of mucus were discharged from both the nostrils and mouth. The noise which accompanied these efforts was occasionally quite shrill, and could be heard at a considerable distance. Great tenderness was likewise evinced on the slightest pressure beingapplied to the trachea or larynx. He was disinclined to move, but still would seize upon food as if affected with a voracious appetite.

With great difficulty I performed the operation of tracheotomy, but which relieved him so little that I came to thenatural conclusion that the obstruction, whatever it might be, was situated in the lower portion of the trachea, and that the case would consequently prove fatal. The treatment from this time consisted in keeping the patient as quiet as possible, and freeing the nostrils and mouth, and also the tracheotomy tube, from the mucus, so as to relieve the breathing. He continued to suffer for about thirty hours, when death took place.

Post-mortem examination.—On exposing the thoracic viscera, no structural change was observed, nor could anything abnormal be seen by an external examination of the trachea. I proceeded consequently to lay open the trachea by a longitudinal incision on its anterior surface through its entire length, which at once disclosed the cause of death. Upon the internal and posterior part of the tube, commencing at about twenty-two inches from the larynx, an abscess had formed, which measured nine inches long by two and a half broad. It contained a large quantity of thin, light-coloured pus, and completely filled up the portion of the trachea in which it was situated. I next made a longitudinal incision through the whole of the *posterior* surface of the trachea, and found that the mucous and submucous tissues were here thickened throughout, and in some places to as much as an inch in thickness. The cut surface had a dark, mottled, and tuberculated appearance, the latter of which I found to be referable to small portions of lymph, arranged in regular order, each piece corresponding to a ring of the trachea. This lymph was in different stages of change, some portions being firm and having a bright red margin, others resembled pieces of adipose tissue, while some were softened and beginning to degenerate into pus. Around the whole of the parts the tissue was infiltrated with serum. I ought, however, to state that it was only by a microscopical examination that the true characters of the deposit could be ascertained.

Reflection on the case has led me to conclude that acute inflammation had at first been present in the mucous membrane; that effusion of lymph had followed, and which, as is generally the case in mucous membranes, had degenerated into pus; and that, even if I had been able to diagnose or even to empty the abscess by means of a trocar, death would have followed; for, in addition to the large diseased surface that would still have been left, other abscesses were found to be in the process of formation.

There are two other points to which I would wish to draw attention—first, to the mild character of the symptoms, from the commencement of the illness up to the evening of the third day; and secondly, to the circumstance that the disease was all situated at the *posterior* portion of the trachea.

OBSERVATIONS ON THE CASE.

By Assistant-Professor VARNELL.

The preceding case is, in my opinion, well worth recording, for, as I have previously stated in the pages of the *Veterinarian,* all abnormities which interfere with the important function of *respiration* should, as far as possible, be investigated, and more especially those which are of an unusual character. Similar cases to the one in question have come under our notice; yet it must nevertheless be admitted, that they are by no means common. The records of such cases also cannot fail to assist us in our diagnosis of others which are complicated in their character. If the practice of giving publicity to unusual cases were adopted to a greater extent than it is by members of our profession, not only would a great mutual benefit be derived by all, but it may be said that the members thereby would become, as it were, one large family, a result highly desirable and much to be wished.

Individually I feel to be under an obligation to Mr. Stephenson, and also to other friends in the profession for occasionally giving me the benefit of their experience, and for sending me the histories of some of their more interesting cases.

In the museum of the College there are two preparations of portions of the trachea of horses, in which similar abscesses existed to the one described by Mr. Stevenson. In one of them, however, the abscess had opened into the passage by ulceration of the mucous membrane.

A few days since, while some of the pupils were engaged in dissecting the air-passages of an aged horse, they discovered an abscess in the posterior part of the trachea, between the transverse muscle and the back part of the tube, extending nearly to half its entire length. This doubtless caused great difficulty in breathing, but to what extent I do not know, not having seen the horse alive.

Mr. Stephenson does not state, and I think most likely he was not aware of, the cause which gave rise to the abscess in his case, neither am I aware that the cause is positively known which produced the disease in either of the specimens contained in our museum. I believe, however, that the disease is thought to have been caused by external violence to the front part of the neck, and I can readily understand that such might have been the case. Other causes also may be in operation which would produce suppurative action. It is quite consistent, in my opinion, to suppose that, in cases of sore throat, when the mucous membrane, as well as the other structures of the trachea, are inflamed, effusion from the engorged vessels, which ramify in the areolar tissue existing between the transverse trachealis muscle and the inner surface of the cartilaginous rings, would take place, and that this might degenerate into pus, thereby forming the nucleus of a large abscess. Nor do I see why an abscess may not be formed in such a locality at the time the horse is affected with "*strangles*." We are well aware that accumulations of pus often take place in different parts of the body in this disease, although the usual site for an abscess is between the rami of the lower jaw. The great difficulty of breathing, which was present in the latter stages of Mr. Stephenson's case, induced him, it appears, to perform tracheotomy; and although it afforded no relief, it was nevertheless the only thing which he could have resorted to under such circumstances. Perhaps by carefully auscultating the trachea throughout its length, the seat of the impediment might have been discovered; and if so, the operation would doubtless have been abandoned. The situation of the abscess, as shown by the post-mortem examination, clearly proves that the case was a hopeless one from the first.

POISONING BY SAVIN.

By Alfred Fuller, M.R.C.V.S.

In the evening of December 20th, 1859, my attendance was requested at the farm of Mr. M. Shepperson, in consequence of a four-year-old mare having died very suddenly, and another being very ill.

Upon arrival I found my patient—another four-year-old mare—quite prostrate, and seemingly *in articulo mortis.* I therefore declined to adopt any treatment, but directed my attention to the other horses, which at present had not been observed to be ailing. These I found giving indications of disturbed health; and in the course of a short time the following symptoms were present, to a greater or less extent, in most of them: A heavy, languid appearance; tucked-up flank; appetite not much impaired, but an inability of gathering the food and swallowing it. An increased secretion of saliva existed, and which, as the disease progressed, continually dropped from the mouth; intense thirst; respiration accelerated and laboured; slight cough, and tenderness on pressure to the throat; pulse quick, and very feeble; fæces hard, and coated with pale-coloured mucus; urine scanty and high-coloured, with flinching, on pressure being applied to the spine; occasional trembling of some part or other of the frame, generally at first one of the limbs; pupils much dilated, with loss of the impression of the stimulus of light; temperature of the extremities variable; patches of cold perspiration upon the body; mouth clean, and bowels costive. These symptoms continued from a few hours to four or five days, before the animal became prostrated, after which he seldom lived more than from twelve to thirty-six hours.

Post-mortem examination.—The muscles had the appearance of having been parboiled.

The stomach.—The cuticular coat appeared normal, but the villous was highly inflamed, and covered with a great quantity of mucus.

Intestines.—The duodenum was highly inflamed, and also the jejunum in patches. The ileum, anterior part, was of a normal colour, but containing a large quantity of fluid and mucus. The posterior part was very much thickened, contracted, and highly inflamed.

The cæcum was full of straw-coloured fluid; its mucous coat was thickened, highly inflamed, and easily detached. In some instances this intestine was found to be quite empty, and contracted to one fourth its usual size.

The colon was full of dry, undigested food; its coats were contracted, much thickened, and easily separated.

The rectum thickened and inflamed.

Spleen.—Normal.

Liver.—Enlarged and congested.

Kidneys.—Cortical structure, pale and soft. Medullary structure, soft and easily lacerated.

Bladder.—Distended with high-coloured urine, having a very offensive smell; coats slightly congested.

Tongue.—The upper surface was covered by a thick fur and scales of epithelial cells. The mucous follicles were also enlarged, and very dark in colour.

The pharynx and œsophagus were highly inflamed in patches.

Larynx.—The lining membrane was much inflamed and of a black colour.

The trachea contained a quantity of frothy mucus, and the lining membrane was highly inflamed.

Lungs.—Congested.

Heart.—Flabby; the base covered by spots of extravasated blood.

REMARKS.—I was somewhat at a loss to account for the symptoms, but stated to the proprietor that I believed the animals to be labouring under the influence of a narcotic poison. The man attending the horses was strictly questioned, but he stoutly denied having administered anything. Shortly afterwards, I again questioned him, as to his having given savin, but he still denied it, when a search was instituted, and a bottle nearly full of fluid was found in the stable. Upon being shown this, with the promise of pardon, he confessed to have poured boiling water upon savin, and which he had occasionally sprinkled on the food, commencing this practice about ten days previous to the death of the first animal.

I observed that the younger horses became first affected, and died in a few hours after the first appearance of illness, whilst those about seven or eight years old, having a strong, vigorous constitution, withstood the disease longest.

The first impression of the poison is doubtless upon the nervous system, which is much depressed. This I opine to be the cause of death, as in those cases which were affected only a few hours previous to death, the stomach, intestines, &c., were in almost a normal state. Still savin must be a most powerful irritant, as is shown by the intense inflammation of the alimentary canal in those cases which bore up against the effects of the agent for some days.

The number of horses which became seriously affected was ten. Six of which died within five days after they became affected, and another in about ten days: one, although alive, is still unable to stand unsupported; two are convalescent.

My treatment consisted of the administration of oleaginous aperients and enemas. Large quantities of the former were requisite to overcome the torpid state of the bowels. Counter-irritation was applied to the throat and abdomen. These remedies were followed by mild, stimulating tonics, conjoining highly nutritious food, as flax-seed, mashes, scalded oats, &c.

Appended, is a copy of a letter which I received from Mr. Deck, chemist, of Cambridge, to whom the viscera, with their contents, were sent for examination.

"King's Parade, Cambridge; *Jan.* 7th, 1860.

"Sir,—Upon a careful analysis of the horse's viscera you sent me, I can find no traces of any mineral poison. I have tried all the various tests for arsenic, sublimate and antimony, but can obtain no traces of either. I have, however, obtained a very acrid vegetable poison, which I have no doubt was the cause of death. A grain or two was sufficient to destroy a cat, with all the symptoms described in your letter. The *post-mortem appearances* also corresponded with those of the horse.

"I should judge, from the appearance of the horse's stomach and intestines, that the poison is of an *acrid-narcotic nature,* but, from the decomposed state of the tissues, it is quite impossible to say what the poison is; indeed, very few vegetable poisons can be defined after being absorbed into the system.

"The *post-mortem* appearances and symptoms are almost conclusive in themselves.

"I remain, Sir,
"Yours truly,
"Arthur Deck.
"*Analytical Chemist.*

"*To Mr. A. Fuller.*"

[In our last number we stated that the savin, of which Mr. Fuller had sent us a specimen, was the variegated leafed savin (*Juniperis sabina, foliis variegatis*). At least it resembled no other variety we could find in the collection at the Royal Botanical Gardens.

Savin is a powerful stimulant, its action depending on the presence of a volatile oil, which is very acrid. We have before adverted to the therapeutic influence of this plant (*see* vol. xxviii, p. 401). We may, however, be permitted to observe that, although its effects as an emmenagogue appear to be well established, it is very commonly resorted to as a vermifuge for the lower animals, and serious consequences have occasionally resulted from its incautious use. We remember to have been consulted several years since, in some cases of sudden indisposition of a team of horses belonging to an opulent brewer. One of the animals had died after a short illness at a distance from home, and the others reached home only with the greatest difficulty, in consequence of their prostrated condition. An examination at once convinced us that a special cause was in operation, and, by the instructions of the owner, the lock was forcibly removed from the corn-bin of the carter who had the charge of the animals, when a large quantity of fresh savin was found, some of which he admitted having given to the horses, and thus caused their attack. The exhibition of active aperients proved successful in saving the lives of the other three horses. The reason assigned by the man was that he had used the savin in order to improve the appearance of their coats.]

VETERINARY OBSTETRICS.

A MARE DESTROYED FROM DIFFICULT FOALING.

By Alexander Lawson, M.R.C.V.S., Bolton.

Gentlemen,—In the November number of the *Veterinarian* an article appeared under this head, the author of which, after detailing the case and inviting your comments and remarks thereon, asks certain questions relating to obstetrics in the lower animals. I have looked, but in vain, with much interest through the succeeding numbers of your Journal for some comments, either from yourselves or experienced practitioners resident in breeding districts. Being deeply impressed with the importance of the subject, and believing that "*obstetrics*" is *the* branch of veterinary science upon which the profession generally, from peculiar circumstances, and not from any fault, is, to use a common expression, "worst up," I venture to offer a few remarks upon it, but more in anticipation of eliciting information from others than with a hope that any new light will thereby be thrown on it. I have just said that I consider this "*the* branch of veterinary science on which the profession generally lack practical knowlege," the reasons for which appear to me to be—

1st. That to enable the practitioner to undertake cases of "foaling" or "calving" in a proper manner, he must have had actual practice therein, for no amount of reading or oral teaching will make him expert, although these means are most certainly not to be slighted.

2d. That, unlike the practitioner in human medicine, who is called in to every birth, we are only sent for in very extreme cases of protracted labour, arising chiefly from either malpresentation of the fœtus or malformation of the pelvis of the mother.

3d. That practitioners in large towns, otherwise in extensive practice, may not average above one case of this description in twelve months, and then are not often called in till the persons on the spot, and possibly three or four of their neighbours, supposed to be skilled in such matters, have laboured for hours with the hope of overcoming the difficulty. But to the case in point, and to answer the queries as best I can.

When the fore legs protrude without the head, my practice is to fasten a cord, having a running noose, around each pastern, and next to push back the feet. By this means you have the feet at command, and can bring them forward at any time; the main point being to get the head into its proper position. The search for the head must then be made, and much manipulation will often be required even to detect its precise position; and even when this is ascertained, it can perhaps only be reached with the tips of your fingers. Having made this discovery—if feeling a thing you cannot see can be so called—you must next direct your efforts to the getting hold of the muzzle, so as to bring the head a little round. This being accomplished, you may then insert a hook at the symphysis of the lower jaw, and draw gently at it, for the union of the two sides being incomplete, it will not stand the application of much force. If this proceeding only serves to bring the head a little nearer the mouth of the uterus, so as to allow of the practitioner placing his forefinger in the orbit, it will have effected its end. The next step is to introduce a blunt, flat-pointed hook into each orbital cavity. The hooks I use for the purpose have a shank of about four or five inches long, with an eye at the end, to which a cord is attached. Pull firmly at these hooks, and having also got the feet up by means of the cords attached to them, let these be advanced just in front of the muzzle.

The principal force must be applied to the head, for if otherwise, the elbow-joints of the limbs are drawn down against the lower portion of the pelvis, and thus impede progress. Pull steadily at the hooks in the sockets of the eyes, and also, but more gently, with that in the lower jaw, get the muzzle in sight, and very shortly your work will be done.

Delivery in such cases is hard work and a dirty job, but I will not say a thankless one, for, if successfully accomplished, the practitioner is sure to receive his due meed of credit. If the patient be a cow, the goodwife of the house, moved by, not only the pecuniary saving which has been effected, but also by the relief given to her favorite "Crummie," is ready to say all sorts of pleasing things of the veterinary surgeon, and, "on hospitable thoughts intent," places before him, ungrudgingly, an abundance of the best things her cupboard affords, to which, after his arduous task—if like me—he will do ample justice.

I consider the removal of the legs by the knees to be worse than useless, as thereby the pasterns are lost as attachments for the cords, and no additional facilities are given for getting the head into position, which is the great desideratum. To remove the legs by the shoulder-blades is far better, but this is often easier said than done. I prefer persevering in the search after the head.

To insert a hook at the back of the neck of the foal and apply force, you might pull the mare out of the stable, or tear the parts to which the hook was attached, but would never bring away the foal. So much pulling, when you find all resistance and no yielding, can be productive of nothing but injury. With the head in a proper position, you may still require a considerable amount of force to extract the fœtus, but you will find a gradual yielding at nearly every pull which is made.

I have not seen, or heard of any "instruments for diminishing the capacity of the head." There may be such. My great difficulty has always been in placing the head right, not in getting it through the pelvis.

If the uterine action is so strong as to interfere with the manipulations of the operator, one to two ounces of Tinct. Opii may be administered.

The saving of the parent is the great object, the foal, or calf, as the case may be, being, in a majority of cases, dead before delivery. I have, however, removed a calf, which lived and did well, by placing hooks in the orbits, and without doing much injury to the eyes, or anything further of an untoward kind taking place beyond a little inflammation of the surrounding tissues. If, as may occasionally be the case, the principal value is placed upon the foal, then the Cæsarian operation might be resorted to.

I am, &c.

To the Editors of the 'Veterinarian.'

CASE OF DIFFICULT PARTURITION IN THE MARE, WITH REPLIES TO THE QUESTIONS OF MR. CALLEY.

By Wm. Aitkin, M.R.C.V.S., Kilmarnock.

In the *Veterinarian* for November last, at page 649, there is a communication from Mr. A. Calley, Kirkton by Burntisland, headed "A Mare destroyed from difficult foaling."

After giving a very minute and graphic account of the case and its termination, he puts some questions, and adds, that you will confer an additional favour by appending what comments and remarks on the case, and on the points he suggests, which you may think proper for the practical management of similar cases.

I have looked over the numbers for December and January in the expectation of finding answers to Mr. Calley's queries, and also for your comments on the case, but not finding any, I venture to send you the following account of a case, one of several of the kind which I have had, both in mares and cows, and which, I think, will so far be a reply to the first question.

On the 30th April, 1859, I was called to attend a large-sized five year old draught mare, the property of Mr. John Young, Kilmaurs Mains, about four miles from town. The mare was at her full time with her first foal.

On my arrival, about 7 o'clock a. m., I was told, that on the servant going to the stable early in the morning he found the mare in the act of foaling, and that the fore feet were presenting, but although the mare strained violently no progress was made. It was thought there must be something wrong, and consequently I was sent for. On making a vaginal examination, I found that the head of the foal was out of my reach, and apparently placed under the body of the fœtus—extending backwards. As the mare was standing, and very restless and unmanageable, kicking fearfully when approached, one of the men was ordered to place himself at her head and keep her as steady as possible. One fore foot was also tied up as further security against her doing any one an injury. Placing myself at a convenient height for the purpose, I proceeded to return both the fore legs of the fœtus, and with the "breast staff" endeavoured to push back the body, with a view of bringing up the head, but in this I completely failed.

The proprietor, who was standing by and saw that my efforts were unsuccessful, begged of me to try and save the mare. Having satisfied myself that I had no chance of delivering the foal alive, I proceeded to reduce its size and bring it away piecemeal, after this manner. One fore leg, the near one, was again brought out of the vulva as far as the knee-joint, and confided to the care of an assistant, with instructions to pull strongly enough at it, to keep the whole limb on the stretch. I then, with a knife made for the purpose and placed on my middle finger, introduced my hand by the side of the outstretched leg as far up as the shoulder; when by pushing the knife through the skin, and drawing my hand outwards I cut through the skin on the under side of the limb as far down as the knee-joint. The skin was then severed from this part of the leg, above the knee-joint. I next fastened a cord to the skin, disarticulated the knee-joint, and gave the cord to my assistant, while I, having the foot still attached by the skin, and the assistant pulling steady by the cord, skinned the leg with my thumb and fingers as far up the shoulder as I could reach. The knife was next used to divide the muscles at the breast; and having cut through these I ordered the assistants to pull firmly at the cord; and by which means the limb was removed from the body of the foal. The other fore leg was managed after the same manner, but with much greater ease, there being now more room in the vagina.

With the two fore feet still attached by the skin, I made a strong traction, in the hope of being able to bring away the body of the foal, but was obliged to desist after a fruitless effort. Up to this time the mare had been standing and straining a good deal; but she now laid down, when, placing myself on the floor, I again introduced my hand, armed with the knife, and carried it as far back as the cartilaginous junction of the ribs with the sternum, and cut forward through the cartilages of the posterior ribs. After this by introducing my hand into the chest I removed its contents, and breaking through the diaphragm emptied the abdomen also. Then being furnished with a hook, having an eye, which nearly fills the palm of the hand, I, by fastening it over each rib in turn, at its articulation with the vertebræ, by a sudden twitch disarticulated the rib. The hook, to be successfully used in this proceeding, must be placed as close as possible to the articulation. All the ribs behind the scapula being disarticulated, I placed a broad hook behind the two first ribs, to which a cord was attached, and ordered an assistant to draw at this, while another was pulling by the fore feet. In these efforts the head and neck falling, as it were, into the emptied cavities of the abdomen and chest, permitted of comparatively an easy delivery of the remains of the foal, which proved to be one of more than an average size. A malformation of the head was found to exist, so that it never would have been worth anything had we succeeded in extracting it alive.

The mare recovered quickly, and was at light work within fourteen days. She is still in the possession of Mr. Young, who refused to part with her a few days ago for fifty pounds; a good proof that she had suffered no damage in her difficult labour.

The above case may be taken for an answer to Mr. Calley's *first* question.

As to the *second*, I would merely observe that there are different instruments for breaking down the head. I use them when required.

Third question. I never found a need of tincture of opium. I give mouthfuls of cold water, and sometimes stimulants. It is often folly to think of turning a foal or even a calf until some portion of it is first removed.

Fourth query. All means ought to be tried before ordering the animal to be destroyed.

CASE OF PRETERNATURAL PRESENTATION OF THE HEAD, IN WHICH DELIVERY WAS ACCOMPLISHED WITHOUT INJURY TO THE MARE OR FOAL.

By Andrew Balfour, M.R.C.V.S., Balweary Cottage, by Kirkcaldy, N.B.

Animal obstetricy has not hitherto engaged the attention of veterinary surgeons to the extent which the importance of the subject demands. Such a consideration renders it unnecessary for me to make any prefatory explanation in requesting a place in your widely circulated journal for the following interesting case of difficult parturition arising from preternatural position of the head. And I feel the more called on to elicit professional investigation, in consequence of the publication of Mr. Calley's case in your number for November last, as it presents in its history many practical bearings similar to my own. Both of these cases involve questions in reference to the treatment to be had recourse to, and consequences arising therefrom of vital import to the practitioner and also to the public.

Late on Saturday evening, the 16th of April last, I was sent for by an extensive farmer at Orrock, about five miles distance, to attend a mare belonging to him, that required assistance in foaling. The mare was a healthy working animal, and at her full time. She was eight or nine years old, and had produced several living foals after ordinary labours. On my arrival I was informed by the overseer that he had examined the mare, and found the labour made no advance, and that it was quite different to any he had ever witnessed; adding, that he considered there was no use in doing anything, as he believed the animal was fast sinking. She certainly seemed considerably exhausted from the severity and duration of the ineffectual labour, but by the state of the pulse I did not feel discouraged from attempting by manual assistance to accomplish delivery.

For the purpose of examination, the mare was got up, but she was so weak as to be unable to stand upon her legs for more than a few minutes. I allowed her to rest a short time, before making the attempt to raise her again. When up, I found it impossible to operate, as she could scarcely stand without support. From the examination, however, I was enabled to make, I satisfied myself as to the precise presentation of the foal. The two fore legs were protruding externally, while the head was turned backwards, the crown of it being inclined downwards in the direction of the mare's udder, in place of the nose being presented in the natural way as resting between the advancing fore legs.

In order to enable me to use my hand and arm more freely in adjusting the fœtus, I directed the assistants to turn the mare on her back, and to raise her hind parts by placing trusses of straw beneath them. I then cautiously introduced my hand, passing it over the presenting part of the neck, and pressing it gradually forward until it reached the head of the foal. After this I directed two of the farm servants to lay hold of the protruding fore legs, and to press them strongly backwards. Their continued pressure towards that direction had the effect of moving the neck from its place, which enabled me to bring the head into the natural position, and which I effected without any very great effort or difficulty, by drawing the head towards me, having got hold first of the ear, and afterwards of the jaw. I attribute the comparative facility and short space of time with which the nose was altered from its abnormal to the normal position, to the partial moving of the neck and shoulders out of the pelvic cavity by the two assistants operating during the interval of uterine action, in the manner I have described. Without the space afforded by this proceeding I could not have succeeded. The necessary and preliminary step towards turning the foal's head was the pressing backwards of those parts which had been propelled into, and filled up the vaginal passage. It is obvious that no amount of extracting force applied either to the neck or the feet could have brought away the foal. On the contrary, such an attempt would only have rendered delivery impracticable by jamming up immoveably the presenting parts.

The foal when born was in a very weak state, but by the application of friction to the body, which was continued for some time, it gradually recovered. For eight days it sucked, and appeared to be going on well, when it was seized with enteritis, of which disease it died. The mare made an excellent recovery, and is in foal again.

Mr Calley, in his paper, solicits information "for the practicable management of similar cases." Mr. Calley, who lives within my professional circuit, and is an intelligent and active smith and farrier, informs me that he had stated to Mr. Gamgee, before the mare was destroyed by him, that he had, about three years before, in a presentation of the hind part of the head and neck, disarticulated the foal's head with a strong knife, from the vertebral column, and saved the mare, which had a good recovery, and was soon at work. By continued manipulation and strong traction he succeeded in turning and bringing away the head; and using the fore legs, which protruded, and were not amputated, as a pulley, he was enabled without difficulty to extract the body. Mr. Gamgee, however, did not approve of the proposal, and said it was of no use, and would not do. Surely every operative proceeding which holds out a reasonable chance of saving the life of a mare, even at the sacrifice of the foal, ought to be tried before passing "the last sentence of the law" on the mother.

Although by the operative process adopted in my case I succeeded in saving both, without mutilating the foal or injuring the mother, I admit that in a first labour, and especially in a narrow or contracted pelvis, the life of the offspring may be somewhat endangered, but that of the parent, in my opinion, may always be reasonably reckoned on.

Let me add, in conclusion, that the practice I recommend can only be successfully carried out by an amount of physical assistance, carefully and systematically directed, united with manual dexterity, exerted equally—

"Suaviter in modo, et fortiter in re."

BOTANY AS APPLIED TO VETERINARY SCIENCE

By W. Watson, M.R.C.V.S., Rugby.

(*Continued from p.* 31.)

Festuca (fescue grass).—"*Panicle*, more or less loose; *spikelets*, many flowered; *glumes*, two, unequal, much shorter than the spikelet; *glumellas*, two, outer rounded at the back, taper pointed or awned at or near the summit; *stamens*, three; *styles*, two;" terminal. (Pratt.)

Of these, there are several varieties, but the principal is the *Festuca pratensis* (Meadow fescue).—"*Panicle*, always close; *branches* in pairs, one bearing a single spikelet, the other one or more spikelets; these sometimes wanting; *spikelets*, five to ten, flowered; *outer glumella*, scarcely awned." (Pratt.)

A perennial grass, found in considerable quantities in meadows, and also in almost all other moist or irrigated pastures. It much resembles the floating meadow-grass, (*Poa fluitans*), grows from one to two feet high, flowers in the latter end of June or beginning of July, and ripens its seed towards the commencement of August. It is much relished by all kinds of cattle; contains a considerable amount of nutriment; and on rich moist soils, when largely mixed with other grasses, affords good hay. I have found two or three varieties of this grass ergotized.

Arrhenatherum avenaceum (oat-like grass).—"*Panicle*, lax; *glumes*, of two valves, and two florets, the lowest of which has a long twisted awn, the upper one a short bristle on the outer glumel, lower floret with stamens only, upper one perfect, *i. e.* with stamens and pistils." (Buckman.) Named from *arrhen*, male, and *ather*, an awn.

This grass, which has been so called from its resemblance to the oat, is found growing upon light sandy, or sometimes upon poor clay soils. It attains a height of from three to six feet, and flowers during June and July. It throws up a considerable amount of herbage, which contains but little nutriment; and unless largely mixed with other grasses, is not relished by cattle, on account of its bitter taste. Professor Buckman says, "that the very bitter taste would almost point it out as of medicinal use." And from the large amount of bitter extractive it contains, I have every reason to believe that it would be found a useful vegetable tonic, in the form of either infusion, or extract, both for man and animals. I have found this grass likewise much affected with ergot.

Lolium (darnel or rye grass).—"*Glume,* one valve to the lateral (not transverse), *locustæ,* two to the terminal one; *glumels,* sometimes awned." (Buckman.)

There are three principal varieties of this grass, viz., the *L. perenne, L. Italicum* and *L. lemulactune.* This latter I purpose making some observations upon, when offering some remarks upon the poisonous plants.

Lolium perenne (perennial rye grass).—"*Locustæ* of from six to eight florets, awnless; leaves mostly upright, of a dark green hue; of this there are several varieties." (Buckman.)

This exceedingly valuable perennial grass is found distributed over most parts of England, attaining a height of from six inches to two feet, according to the situation in which it grows. It flowers in June and July, and ripens its seed from the beginning to the end of August. Professor Buckman says, "its properties are such as to render it very valuable to the farmer, as it soon arrives at maturity, yields a good weight to the rick, and in the meadow stands depasturing to any extent, yielding a perennial supply of good succulent leaves, which are readily eaten by stock of all kinds."

It contains 65 per cent. of starch, 7 of sugar, and 28 of extractive and saline matters.

In the *Veterinarian* for 1857-8, some very interesting papers will be found, by Messrs. Small, Armatage, Litt, Robertson, Evans, Storar, Withers, &c., in which paralysis had been produced by horses having partaken of this grass in the end of summer and in the commencement of autumn.

By some of the writers this diseased condition of the animal is thought to have been produced by their feeding upon a large quantity of the indigestible fibrous stems of this grass. But it is somewhat singular that the *English* rye grass should alone produce this (which appears to have been the case), when most of the other grasses at this season of the year are in a similar condition. I am much more inclined to the opinion of Mr. Storar and Mr. Litt, who have ascribed the effects to be produced by "some paralysis-producing principle in the rye grass." What this agent is I am not prepared to say, but the great extent to which I have found this grass affected with ergot (more so than any other), during last autumn, may probably have had some influence in producing it. This opinion is strengthened by the period of the year in which these cases have occurred, viz., at the time when the ergot is developing itself.

I shall again refer to this very interesting subject when noticing ergot.

Lolium Italicum (Italian rye grass).—"*Locustæ*, of from six to eight awned florets; leaves broad, drooping, of a light green colour." This grass, which was introduced into this country about twenty years ago, had for a long time previously been cultivated in Italy and other parts of Europe. It is considered by many to be only a variety of the common rye grass, and which it much resembles, in its general properties, with the exception of yielding a larger amount of nutriment, and being more liked by cattle. It is one of the very few grasses which I have not found more or less affected with ergot during last autumn.

There are many more pasture and meadow grasses which yield food for animals, and which are more or less intermixed with those I have described, such as the *Cynosurus* (dogs'-tail grass); *Holcus lanatus*, (meadow soft grass); *Agrostis*, (beech grass); *Phleum*, (cats'-tail grass), &c. But I trust, by the brief notice of the most interesting, I have given a sufficient insight to enable others to follow out further investigations in this very beautiful and important subject.

(*To be continued.*)

Facts and Observations.

THE BEQUEST OF THE LATE PROFESSOR COLEMAN.

At a late meeting of the Governors of the Royal Veterinary College, it being ascertained that a period of more than seven years had elapsed, and no claimant had appeared for the legacy of the late Professor Coleman—*vide*, the 'Transactions of the Veterinary Medical Association,' 1842, page 113 *et seq.*,—left in the hands of the trustees of the College, it was decided, in accordance with the following conditions of the donor: "If there should be no successful dissertation at the end of seven years, then the amount of the said accumulations shall be disposed of by the said Governors in such manner as they in their discretion may think proper, so as they are applied for the promotion of Veterinary Science :"—

That a *first prize* of a silver medal, a *second* of a bronze medal, and a *third* of a certificate of merit, to be competed for by the pupils of the second session, be given for the best essay on, " the Eye of the Horse, embracing its anatomy and physiology, the laws of light applicable to vision, the chemical composition of the humours, and the pathology, treatment, and results of the disease known by the name of Constitutional Ophthalmia."

PREVALENCE OF PLEURO-PNEUMONIA.

This fatal disease has again become very prevalent in the London dairies, more particularly on the south side of the river. The attacks are marked with much virulence in a very great number of instances; and some of the public prints, which have drawn attention to the matter, state that the fatality is as much as 95 per cent.

URETHRAL CALCULUS IN A PIG.

Mr. Arnold, M.R.C.V.S., Woodbridge, Suffolk, has forwarded to us a very fine calculus taken from the urethral canal of a pig. The history of the case being chiefly obtained from the person who had the care of the animal, and who alone examined him after death, is necessarily brief and imperfect.

It appears that the subject of it was an aged boar.

He had been fed on a mixed diet of refuse roots and dross corn, and had liberty to roam on the pastures adjoining the yard. From the description the yard-man gave of the discovery of the calculus, Mr. Arnold is quite satisfied that it was located in the urethra, about eight inches from the external opening.

The animal was considered to be worn out, and in consequence thereof another boar was kept, both of which were allowed to run at liberty with the whole of the sows; from which cause it could not be ascertained when he last had sexual intercourse. He was found dead, but had not been observed to be unwell previously. He was flayed, and the calculus was not found till the penis was removed from its connections, and slit up in consequence of a hardened enlargement being felt within it, and which proved to be the calculus. Mr. Arnold could not gather any further information as to the appearance of the parts immediately connected with the penis, or the condition of the bladder.

We found the calculus to weigh *ten drachms,* and to measure, in its long diameter, *two inches;* and in its short *one and three eighths* of an inch.

It was of an irregular ovoid form, and smooth on its surface, with the exception of a small part near one of its ends, where it was roughened by a granular deposit.

A chemical analysis, with a microscopical examination, showed that it was composed of the ammonio-magnesian phosphate with oxalate of lime.

LONG LACTATION IN AN AGED COW.

There is at present on the farm of Mosside, Clatt, Aberdeenshire, in the possession of Mr. Wm. Middleton, a cow, in her 24th year, which has had nineteen calves, the last of them being calved in June, 1857. The extraordinary part of the story is, that the cow has given milk every day since the birth of her last calf in 1857, and shows no falling off. Her average quantity is from five to six pints a day.

TURPENTINE IN HÆMOPTYSIS.

There are several well-known remedies which justly enjoy a high reputation for arresting attacks of hæmoptysis, and amongst them may be mentioned acetate of lead, gallic acid, and dilute sulphuric acid. These we see commonly employed, and almost invariably with success. From some cause or other, however, they will sometimes fail, and our reliance must be placed upon some other astringent and styptic, which shall have the power of effectually checking this slow form of bleeding from the lungs. The oil of turpentine is, perhaps, one of the best next to those we have mentioned, and, properly administered, can be relied upon.

The efficacy of turpentine is well known in hæmorrhages from the urinary passages, and also from the uterus,—that is to say, in their passive form; and as it exerts a specific and peculiar influence upon mucous surfaces generally, we may look for good results in other parts of the body, of which the bronchi are most certainly not the least important.—*Lancet.*

ASSAFŒTIDA AND ALOES IN ASCARIDES.

Dr. Nathaniel Smith states that during a practice of more than forty years he has never known assafœtida and aloes to fail of an immediate cure. He has usually employed the tincture, sometimes clearing out the bowels first by a smart purgative—*Boston Journal.*

NEW ESCULENT.

The French Academy of Sciences has just received information of a new esculent of the tubercular kind, called shicama, which grows in the neighbourhood of Cueuza, New Granada. The plant is a shrub which grows to the height of about three feet; its roots engender two different sorts of tubercles—those nearest the surface of the soil are yellowish and bitter, and are only used for the propagation of the plant; the second sort, situated much deeper, are white, juicy, and so sweet that they can be eaten raw. The shicama will bear cold weather extremely well, and might, therefore, be easily introduced into Europe, where it would be a formidable rival to the beet root, since it is an annual and richer in sugar.

PLINY'S VIEW OF MEDICINE.

Every disease is either curable or incurable, a man recovers of it, or is killed by it. Both ways physic is to be rejected: if it be deadly it cannot be cured; if it may be helped, it requires no physician. Nature will expel it of itself.—*Medical Times.*

THE VETERINARIAN, MARCH 1, 1860.

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

SCIENCE IN OUR COURTS OF LAW.

During the last few weeks several cases have been tried in our legal tribunals to vindicate the law of warranty of horses, which have necessarily required the attendance of many veterinary surgeons. Practitioners from the country have made their way to town, and renewed their acquaintance with their metropolitan brethren by appearing in the same case, either with or against them, as scientific witnesses. Again it has occurred, and perhaps to a greater extent than before, that the evidence given by men of experience and standing in the profession has been diametrically opposite; thus placing both the judge and the jury in a strait between the two. Doubtless in matters of *opinion*, and especially on such a subject as the soundness of a horse, there ever must be a difference. In the case, however, of Durie *v.* Hopwood, reported in our present number, the witnesses had to declare on a matter of *fact*, and particularly as to one of the horses, *which was produced before them.* Whether he had a spavin or not? and was lame or not, from this cause? were the two questions to be decided by a *present* examination.

It would be thought that practical men could not be in opposition here; but, nevertheless, the unseemly spectacle is put before the public of some of them declaring that the horse had not spavin, and was not lame; and others, that both these had an existence. We confess our inability to explain away this conflict and contradiction under the peculiar circumstances of the case. Had men of inexperience, mere tyros in practice, been found on either side, a solution might be ventured upon, even if it were not altogether tenable; but no such fact comes to our assistance here, and therefore we must be content to leave the matter as it stands.

It is well known that some veterinary surgeons attach far more importance to certain peculiarities of conformation, slight defects, or diseases, than do others, and this may often be taken as a measure of their experience. Besides, they know the interpretation which the public in general put on the term soundness, and how apt they are to have their decision called in question subsequently by the purchaser of a horse. To tell some persons, at the time of the examination, that the animal has a small bony tumour on one of his limbs, or that certain joints are not well formed, adding, that these things are practically of no importance, is at once sufficient for them to refuse the purchase and to condemn the dealer. Supposing, however, that the veterinary surgeon refrains from naming such trifles, what then is frequently the result? Why, that he not only loses the confidence of his employer, but even incurs his censure. Here, then, is one cause, among many others, of the discrepancy we too often observe, and hence also a reason why some examiners reject and others pass the same horse. All purchasers of horses are not "horse-men;" and until they become so, and the law of warranty remains unaltered, these professional differences will obtain, however much they are to be regretted.

For reasons such as these, the position in which a scientific witness is placed in our courts of law is often a very anomalous one. Too frequently, also, he is considered to be little more than a partisan of either the plaintiff or the defendant for whom he may appear; and it is to be feared that sometimes he does lend himself to the one or the other; whereas he has alone to do with truth. His evidence ought always to be given free from any party bias, "the truth, the whole truth, and nothing but the truth," being his motto. Possibly the neglect of this, arising from some reserve being made, or evasions resorted to, has led to the condemnation of his evidence, and often unjustly so.

Without going into other causes of the discrepancies which are met with among us, as on this occasion they would infringe too much on our limited space, we will close these remarks by observing, that Dr. Angus Smith has lately read a paper at the Society of Arts on the "Science of our Courts of Law," which is reported in *The Chemical News*. Some of the views therein stated may be gathered from the following extracts :

"The doctor thinks that while the position of science is universally recognised, the position of the scientific man is not. He has no status in a court of law, but is allowed to appear under the vague name of a witness; and as such is liable to be cross-examined by an advocate, who is anxious to turn the evidence to the advantage of his client—a course which does not always tend to the elicitation of truth. But it is not right that the scientific man should act as advocate. He ought to be a student of nature, who loves whatever nature says in the most disinterested manner. If he becomes an advocate he is removed from his sphere, and the very ideal of his character is destroyed. Nor is he exactly fitted to be a judge. There is no trial in a court purely scientific. Individual and social rights are always involved, and it does not belong to a "scientist's" province to see the social bearings of a case. He is equally unfitted to act in the capacity of judge and jury united. All law has a tendency to pedantry, that is, a belief in its absolute perfection, forgetful of numerous antagonistic possibilities for which a wider observation willingly makes allowance. The jury represents this wider observation of the untrammelled human spirit; and the number is twelve or more instead of one, because the operations of the individual spirit are uncertain; of the average man nearly certain. It represents also the absence of pedantry or the exaggeration of the law, by the absence of legal knowledge. If we put scientific inquirers in their place we increase the pedantry by adding physical to social law. Besides this it is against the principles of the country to give any class of men uncontrolled authority. Nor is Dr. Smith in favour of commissions recommendatory. The power of a scientific commission reporting, without being cross-examined must be invincible, and consequently a jury would cease to be of value. We must have all the aid of intellect and science, but we refuse its despotism and oppression. When both sides are heard the juryman has the advantage of both arguments; when clear he becomes convinced; when uncertain he has abundant reason for reposing on his perceptions or instincts. A jury of *experts*, the doctor thinks, would introduce too much law and leave out mutual considerations—would increase formal law and diminish instinct — would enlarge the head of the court and leave no room for its heart. Reviewing the position of the scientist as witness at great length, the lecturer advocated the admission of written scientific evidence upon which the witness may be examined and cross-examined if necessary. We gain by this means a clear and full statement which will not be stopped conveniently at every dangerous spot, but will either tell the truth, the whole truth, and nothing but the truth, or leave the witness to take his chance of receiving the character of a perjurer. The lecturer concluded as follows:

"This lecture has been in favour of giving the scientific man an independent position in a court of law. He becomes a court of appeal in himself, used equally by both plaintiff, defendant, and judge. On the one side, the plaintiff has the advantage of his knowledge and opinion, having made himself well acquainted with the case, and been instructed in all its relations to science. The same advantage is given to the defendant, whilst an adviser, able by his education to encounter that class of reasoning, is given to the judge Scientific men are bound together by mutual beliefs in a stronger manner than the community at large, and if put into this honorable and independent position, they will act according to their knowledge and character, and thus will cease much unnecessary contradiction and opposition. Being bound to speak the truth, the whole truth, and nothing but the truth, they will feel in honour bound to do so when an opportunity offers. This opportunity rarely occurs in the present confusion.

"My belief is, that no class of men will so fully agree with each other as the scientific, if not kept separate by the present corrupting system, and no class will spread a more beneficial influence over society if not contemptuously compelled to herd with thieves and scoundrels in a witness box. Perhaps this expression is too strong, but it has a side of truth; and I have seen barristers speaking to a scientific witness in a box in such a way as to show that a witness was to them always an inferior personage. This too happens, even in cases where the word of the scientific man must of necessity decide the whole case, and where the duty of the barrister is a mere simple formality.

"I think a scientific man may well claim for himself such an exemption from insult. You may say that his own character and bearing ought to command respect, but there are few men, if any, in this world, whose treatment by others is entirely unaffected by position.]

"We have now gone through the main points to be discussed according to this view of the case, and concluded that:

"1st. The scientific man shall not take the place of judge; the study of physical science does not fit a man for that office.

"2d. He shall not take the place of a jury, because the jury represents the instincts and impulses of intelligent freemen acting out the common sense of the community, an element essentially distinct from any physical science.

"3d. He shall not act as a plenipotentiary commission, absorbing judge and jury, for the above reasons.

"4th. He shall not act as a recommending commission, as such is apt to become too powerful, and really does become so in practice. Nos. 3 and 4 are plans of despotic states.

"5th. He shall not act as advocate, because he represents fixed law, not the interests of individuals.

"6th. If he acts as witness he must be allowed to express his opinion independently of the advocate, or the plaintiff and defendant. Put upon his own honour, he will be able and willing to speak the truth, the whole truth, and nothing but the truth, which is now not permitted him.

"7th. He shall assist the judge in examining scientific witnesses, or obtaining scientific evidence as assessor.

"8th. That instead of witness he may appear in his own character of a scientific man, whose evidence is different from ordinary witnesses, and whose position is capable of being made, to a great extent, independent of the parties in the suit. This allies itself with No. 6.

"*The Remedies Proposed.*—1st. To have a scientific assessor on the bench beside the judge, who shall examine the witnesses, if needful, and who shall advise the judge. That this assessor shall be appointed by the crown. He shall not be questioned as a witness, but sit as assistant judge.

"2d. That a position be given to the scientific man independent of the barrister. I am not a lawyer, and do not pretend to adjust the mode of doing this, but I believe it is essential, and must be done sooner or later.

"3d. That scientific men giving evidence on scientific points shall be allowed to deliver their examinations in writing. The reading and elucidation to be controlled by the judge, examination and cross-examination by the barrister to follow."

Extracts from British and Foreign Journals.

THE COLLEGE OF VETERINARY SURGEONS OF NEW YORK.

From the 'New York Herald' of November 21st, 1859.

"Last year the Legislature of this State supplied a great desideratum in the incorporation of the College of Veterinary Surgeons of New York. The result is that a handsome three-story brick and brown-stone building, called the 'Veterinary College Institute,' has just been completed for its accommodation, at the corner of Twenty-third Street and Sixth Avenue, capable of accommodating fifty horses in the most superior manner, containing spacious stalls, thoroughly ventilated and comfortable, and with as much light as is usually admitted into the human dwelling. The institute is designed to teach both the theory and practice of medicine for the horse—to have a museum, a dissecting-room, and a lecture-room for the anatomy, physiology, pathology, and diseases of that animal, and for the propagation of useful knowledge as regards his management in health, so as to prevent disease, and to derive all the benefit from the horse of which he is capable—to furnish reliable information as regards the breeding of the animal, so as to enable the public to obtain the best stock and to perpetuate it; and lastly, to have a model range of stables to teach by practical example how the horse ought to be taken care of, and to exhibit those improvements which art has invented to better his condition.

"Medical colleges for man there are in abundance, but as yet for the horse there has been none in this country, with the exception of one in Boston, which proved a failure. The want is now supplied as far as this city is concerned, and a beginning is made, which, it is hoped, will extend to every part of the country. Quackery of the horse has hitherto been universal, but now a more enlightened treatment is inaugurated. To Captain Ralston great credit is due for this result. He has laboured for years to bring it about. Some years since a committee of the Legislature of this State reported as follows:

"'That the great importance of the science and practice of the veterinary art will be universally admitted; and there are some considerations pertaining to this subject that seem to call with much force for the establishment of a State institution for the improvement of this art. It cannot but be confessed that the treatment of diseases among the domestic animals is not founded on scientific principles, and is too often confided to hands neither skilful nor humane; and it cannot be doubted that a careful inquiry into the principles of the veterinary art would lead to better remedies, and a more rational and satisfactory mode of applying them.'

"This report is all very true, but no practical movement followed upon it, till now at length Captain Ralston has succeeded in obtaining the act incorporating the Veterinary College, and organizing the institution in Twenty-third Street.

"In this country, above all other civilised nations, the horse stands pre-eminent in numbers in proportion to the population, as well as in the general use of the animal by the people, and in the high admiration in which it is held. In this State there is nearly an average of one horse to every family or five inhabitants. In Great Britain there is only one to every twelve or thirteen inhabitants. In France the proportion is less, and in other countries of Europe statistics show that the ratio is still smaller between men and horses. Yet in England and France there are numerous veterinary institutions, and many most skillful practitioners of the art, while here there are no schools, and very few persons thoroughly qualified to treat the horse. In France the profession occupies a very high ground, and its advantages and benefits have been demonstrated in the most conclusive manner. No country in the world can surpass this in the means and facilities of raising the finest horses. By the establishment of scientific veterinary institutions the lives of many valuable animals will be saved. For want of them thousands of horses are lost or rendered comparatively worthless.

"The New York College of Veterinary Surgeons, as incorporated, consists of the following: The Faculty—John Campbell Ralston, M.R.C.V.S., &c., Professor of Veterinary Theory and Practice, President; John Busteed, M.D., Professor of Veterinary Anatomy and Surgery; R. Ogden Doremus, M.D., Professor of Chemistry and Materia Medica, New York Medical College. Censors—Professor Parker, M.D., Professors Mott, Draper, and Van Buren, M.D., University Medical College; Professors Horace Green, Carnochan and Davis, M.D., New York Medical College. The first annual course of lectures is to commence immediately. There is a complete set of the finest-coloured anatomical plates of the horse. Captain Ralston will give a series of lectures on the horse's foot and shoeing, stable management, &c. There is an extensive forge, with four pair of bellows in the establishment, and model shoes are exhibited, which will not injure the foot or interfere with its growth and development.

"The stables are so drained by perforations through the floors, that the beds of the animals are hardly ever allowed to be wet; and, when damp, they are thoroughly dried in a room through which a pipe containing hot air passes. The stables are kept sufficiently warm by the same process, for they are so large and airy that artificial heat is needed in cold weather.

"The whole establishment, which has already a considerable number of horses, is almost as neat and clean as a dwelling-house. The stall is so arranged that the feed and water are supplied at the horse's head, and from the outside, by opening a trap-door, so that it is not necessary to enter his stall at all. By this means much time is saved and risk avoided in the case of vicious animals. There are three compartments in the manger, one for hay, one for oats or other feed, and one for water. Each stall is ventilated by a chimney immediately over it. The stalls are all sheeted with iron, to prevent the horses biting them. For sick and lame horses there are splendid box-stalls. Horses labouring under infectious or contagious diseases are not admitted. In this establishment horses in health are boarded and taken care of for owners in a superior style.

"There is a consulting-room, and a registration-office for the registry of horses for sale, where the colour, height, age, qualifications, price, warranty, &c., will be stated in a ledger kept for the purpose.

"Dr. Ralston, the director of the institute, is eminently qualified for the important task he has assumed. He has been for twenty years a cavalry officer in the British army, is a graduate of the Royal Veterinary College, and member of the Royal College of Veterinary Surgeons, and was for several years in charge of the veterinary department of the cavalry of India, and Cavalry Veterinary Surgeon of the Royal Army, England.

"From this institution great benefit is expected, especially to the interests of agriculture. The veterinary schools of Europe are supported and fostered by the governments for their acknowledged utility, and their distinguished professors rewarded by signal marks of favour. Let our veterinary schools and professors be sustained by the people. The human medical schools have derived a large amount of their knowledge from veterinary sources—from comparative anatomy, physiology, and pathology—the connection in the chain of creation between man and the horse being more intimate than the superficial observer would suppose. This institution, therefore, is calculated to advance medical science.

"Its primary object, however, is to introduce and extend an improved treatment and management of the horse, and in this way to benefit the community at large. Of all animals the horse is the noblest, the best, and the most useful to man. In this State, in 1855, according to the State census of that year, there were 579,715 horses, a most important branch of property and a grand element of prosperity. To preserve it from destruction and to improve its value is the mission of a public benefactor."

REMARKS ON THE SUPPLY, USES, AND FABRICATION OF MILK.

The most important of all the dairy productions is certainly milk, whether considered in its pure form as a beverage for domestic use, or in its prepared products, of cream, butter, and cheese. The aggregate consumption of milk, in the United Kingdom, excluding the other dairy products obtained from it, has been roundly estimated at something like 1300 million gallons per annum, which would require, to supply it, half a million milch cows. The demand for milk in London, Liverpool, and other large towns, is very great; and, if we could arrive with any accuracy at the extent of the metropolitan consumption, it would be a curious and instructive investigation. Taking the resident and floating population in London at 3,000,000, and assuming that they use a quarter of a pint each a day, this would require a weekly supply of 656,250 gallons, or 17,062,500 barn gallons a year.

The great proportion of the London supply now comes up by railway from the country from considerable distances, and the country milk trade is daily increasing. Scarcely one fifth of the London supply is furnished by the cows kept in the metropolitan lay-stalls, and no doubt ere long the whole will come from the suburban districts and the home-counties. According to the *London Directory*, there are about 2900 dairymen for the supply of the metropolis; what number of itinerant milk-vendors there may be it would be difficult to say. There are also four professed vendors of asses' milk.

In this country we depend entirely upon cows' milk, if we except an occasional resort to asses' milk for invalids. But in other countries the milk of the goat, sheep, mare, camel, and reindeer are utilized. Sheep's milk is a common beverage in Toorkistan, where the sheep are milked regularly three times a day. It is also used in Sweden and Denmark. Goats' milk is used in Switzerland, and reindeer's milk in Lapland. The milk of the camel is a very favorite drink in all countries where the animal is used. The quantity given by the camel, without green food, does not usually exceed a quart; but the Bactrian, which enjoys a more succulent diet, yields twice that quantity. Some of the pastoral tribes possessing large herds live almost wholly upon camels' milk during a great part of the year, and it is frequently given to favorite horses, which are extremely fond of it.

From 80 to 90 per cent. of cows' milk consists of water. This quantity may be increased by special feeding for this purpose. Some sellers of milk in the neighbourhood of large cities, who are too conscientious to add water to their milk, but who still desire to dilute it, contrive to effect their purpose by feeding their cows on juicy, succulent food, containing much water. Such watered milk they are able to sell with a safe conscience, though it may be doubted if the true morality of the case is much better than if the pump or water-can had been called directly into action. The large breeds of cows, which are remarkable for giving very great quantities of poor, watery milk, are kept in many parts of the country around London for supplying the metropolis with milk. The seasons have their effect upon milk. The milk in spring is supposed to be the best for drinking; hence it would be the best for calves. In summer it is best suited for cheese; and in autumn for butter making, it is better than that of summer. The cows less frequently milked give richer milk, and consequently more butter. The morning's milk is richer than the evening's. The last-drawn milk of each milking, at all times and seasons, is richer than the first drawn, which is the poorest. Both the quality and quantity of milk will depend on many circumstances. The breed of cows is important. Small breeds give less milk, but it is of a rich quality. The kind of food also exercises no inconsiderable influence. Fed on grass and brewers' grains, cows give great quantities of milk; but the grains are an unnatural food, and have an injurious influence on the health of the cows and the quality of the milk.

Various plans for the production of artificial milk, solidified milk, &c., have been brought before the public from time to time, a few of which may be alluded to. The addition of sugar and evaporation by heat appear to be the plans pursued by most. Thus the process followed by M. Delignac, and which has been pronounced perfect by the Paris Academy of Science, is to mix with good milk a certain quantity of sugar, and then subject it to evaporation at a temperature below 100 deg. centigrade, by continued agitation; when reduced to twotenths, the thickened liquid is put into a tin box hermetically sealed, and subjected to further heat.

In the United States several plans are used for concentrating and solidifying milk. Mr. Gail Borden, of Connecticut, prepares a concentrated milk by boiling in vacuo, at a temperature of less than 140 deg. of Fahr., and thus removing 75 or 80 per cent. of water. It is intended for general use by diluting with water, and keeps a little longer than common milk. But it can be preserved for months by hermetically sealing it in cans, or combining with it a due proportion of pulverized sugar. Another maker, Mr. Blachford, in the State of New York, makes a solidified milk by adding one fourth part in weight of white sugar and a tea spoonful of soda, evaporating the milk by water heated with steam. It is formed into tablets covered with tinfoil. Similar solidified cakes of milk are sold occasionally in this country. Mr. Moore, of Sun Street, vends a concentrated preserved milk in tin cases; one spoonful of which, added to six of boiling water, yields a very good milk.

Mr. Septimus Piesse furnishes the following receipt for the manufacture of a purely artificial milk or lactine: Honey, four ounces; powdered gum arabic, half an ounce; three yolks of eggs and six ounces of salad oil; well rubbed up together. One ounce of this, dissolved in half a pint of water, produces that amount of artificial milk. A more useful plan for the emigrant or voyager is to place bottles of milk, well corked, in a pan of cold water, and gradually raise the temperature to the boiling point. Then remove the pan from the fire, and let the bottles cool in the water. The milk will remain good for six months. In Italy they carry the process further, in the production of a dry substance called "Lactenia" Instead of putting the milk into bottles they evaporate it to dryness, under constant stirring. A dry mass is thus obtained, which, when dissolved in water, is said to possess all the properties of the best milk.

Milk has been made to perform other offices besides the production of butter and cheese, custards and puddings, and

and colouring of dietetic drinks. It has taken the place of albumen in the textile factories, and has been found useful in the hands of the calico printer. In pigment-printing the colours have to be laid on the face of the fabric in an insoluble condition, so as to give a full, brilliant appearance. Lactarin, obtained from butter-milk, is more economical than the expensive egg-albumen. When the prices of olive and other oils were high, the woollen manufacturers and spinners mixed milk with the oil. It did not, however, amalgamate well with the oil; and an inferior texture of yarn and cloth was said to be the result. Besides, the milk undergoes chemical changes, which leave a sour smell about the fabrics, that make them less saleable; and the acid of the milk corrodes the combs and other machinery used in the processes of manufacturing the wool into yarn and cloth.

The Kalmucks, and most of the shepherd tribes of Central Asia, prepare from the milk of their cattle two kinds of beverage; one is called "koumis," and is sour milk which has undergone a certain degree of vinous fermentation. It corresponds with the "pinna" of the Laplanders, which is made of reindeer milk. The other beverage is an intoxicating and agreeably flavoured liquid, obtained from koumis by distillation. Good koumis cannot be obtained from every kind of milk; that made with the milk of cows or sheep is bad. The milk of camels, and of mares particularly, yields twice as much. The koumis is prepared by mixing six parts of warm milk with one of warm water, and some old koumis as a ferment, then fermenting with frequent agitation. The fermenting quality of milk depends on the saccharine matter which is held in solution by the whey, in the proportion of about 5 per cent. Sugar of milk is obtained after cheese is made, by evaporating the whey. When dissolved in four times its weight of water, clarified, and evaporated to a syrup, white crystals are obtained, called lactic acid. Milk boiled with a little sugar keeps a considerable time. In Switzerland milk-sugar is made somewhat largely, and used for food; and it is also used medicinally in this country.

Thus much for the milk of our breakfast-tables. This brief inquiry shows us under how many various aspects even one product may be viewed by different persons and in different countries.—*Farmer's Magazine.*

ON THE INTRODUCTION OF MEDICINAL SUBSTANCES THROUGH THE MILK OF ANIMALS.

By M. Labourdette.

M. Labourdette, in his communication to the Académie, gives an account of some extensive investigations he has entered into; and M. Bouley, reporting on the paper, enters also into a general review of what has previously been done. A most extensive series of experiments had been previously performed by MM. Chevallier, and O. Henry, and the results of these were unfavourable, inasmuch as under the administration of medicinal agents, capable of imparting a therapeutical agency to the milk, the animals lost their health, and at no remote period died.

M. Labourdette commenced his experiments by administering iodide of potassium to cows and goats, which in a very short time gave rise to various accidents; and, in all the cases in which it was not suspended, at the end of a few weeks the animal either died, or entirely lost its milk. In this way eighteen animals were sacrificed, notwithstanding the various means adopted to counteract the ill effects of the drug. But these experiments were performed in Paris, and M. Labourdette determined upon repeating them in one of the finest Normandy pastures. There, in dairies and stables of exquisite cleanliness, he has kept cows and goats for five or six years in perfect health, notwithstanding that their milk, as observed personally by the reporter, is impregnated with iodine, mercury, or arsenic. One of the first facts ascertained by M. Labourdette was the ill effects of sequestration. In Paris a cow was not to be kept alive longer than four months, providing that the iodine was not suspended; and even in Normandy, if the cows were kept three, or even two days in the stables, without resorting to the meadows, similar ill effects to those observed at Paris began to be developed. But even pasturage and free roaming, although essential, were not found to suffice without the aid of an excellent regimen, and the administration of medicinal agents, termed by M. Labourdette *adjuvants* and *correctives*. We have not space to give the details of these, but must refer to the paper for them, as well as for an account of the means by which the animals were induced to take the large doses required, and the mode of treating injurious effects when they appeared. Iodide of potassium constituted at once the most desirable, and the most difficult agent to introduce, being the one tolerated with most difficulty by the ruminant. Next to it in difficulty came mercurials, ferruginous and arsenical preparations being much more easily tolerated, while alkalis, and the chloride of sodium were always taken with pleasure by the animal, the latter being employed as an adjuvant with respect to other substances. The milk of animals thus treated became richer in casein and butter, this being probably due to the regimen employed.

M. Boudet, while admiring the persevering efforts of M. Labourdette, carried on through ten years, still could not admit that the results promised to prove of much practical utility. The small quantity of iodine, for example, that could be thus communicated to the milk, rendered this fluid far inferior in this respect to cod-liver oil; and while in the latter it existed in a natural organic combination, in the former it was only got in by doing violence to the habits of the animal. To act therapeutically, very large quantities of this milk-diet would be required, which might be ill-supported or in other respects objectionable.

M. Trousseau observed that he did not believe that the quantity of a substance administered constituted all its consequence. Thus, for example, in the treatment of chloro-anæmia by iron, it was long believed that the iron was only of efficacy when it gained a bodily entrance into the blood, to supply the deficient colouring matter. It was believed that the minute portions of iron wanting to the blood of a chlorotic woman, were replaced by a certain amount of the enormous quantities taken by the mouth. This theory of the action of iron is now pretty generally abandoned. It is admitted that it acts to a certain extent by modifying the functions especially operating on the assimilatory functions in such a manner that small portions of iron may be absorbed and utilised, independently of the quantity that has been administered, *i. e.*, that the assimilation operates just as well upon the iron introduced by aliments, as upon that which may be given in large doses. What is here said of iron may be repeated concerning other medicinal substances to which a purely dynamic action is very generally attributed. Mercury, for example, acts in no other manner in syphilis. No one ever supposed that the direct contact of the mercury with each living particle is necessary for the purpose of neutralising the syphilitic virus throughout the economy. If this were the case, it is evident that the milk of a cow submitted to the mercurial regimen, in order to be efficacious, should contain far larger quantities of mercury than have been discovered in it. "But I am convinced that this milk, independently of the mercury which it contains, acts also by virtue of the properties imparted to it by the general condition induced in the animal by the mercurial regimen. We are daily submitting nurses to a mercurial treatment, intended to act upon infected infants, and although the quantities given to these women are not to be compared to those which these animals were made to take, it is no less true that the health of the nurseling becomes re-established. As to cod-liver oil, I am not so certain as M. Boudet, of its owing its efficacy to its iodine; for similar effects are produced by other oils containing not a particle of iodine, or simply by animal fats."

M. Piorry could not very well understand M. Trousseau's theory of the action of iron in chlorosis; and with respect to his doubts as to the agency of iodine in cod-liver oil, he, M. Piorry, was enabled to refer to 800 cases of phthisis in which amelioration was brought about by iodine alone: and here it is the iodine acting directly, just as it is phosphate of lime in softening of the bones.

M. Chatin suggested that these experiments would be best carried on by causing vegetable substances first to absorb medicinal solutions, which they will readily, and then feeding the animals with these. For example, a plant living in an iodised liquid will absorb an enormous portion of iodine, and iodine thus assimilated by a plant becomes a very energetic agent.

M. Bouley replied that however seductive physiologically this plan may be, it would be impracticable. M. Labourdette had already expended 40,000 francs on his experiments; but this preliminary vegetable assimilation would require the cultivation of large grounds, and watering them with a very expensive fluid.—*Bulletin de l'Académie,* tome xxiv, pp. 746, 799.

ON THE PRODUCTION OF THE SEXES AMONG SHEEP.

M. Martegout, formerly Professor of Rural Economy in France, has contributed to the *Journal d'Agriculture Pratique* a paper of interest to the breeders of sheep.

Daily observations, he observes, conducted and arranged with the calculation in hand, in a sheepfold of great importance—that of the Dishley-Mauat Mauchamp marinos of Mons. J. M. Viallet, Blanc, in the commune of Gailhac-Toulza (Haute-Garonne)—have enabled me to comprehend the laws which, according to M. Giron de Bazareingues, preside over the production of the sexes. If I am not deceived, I have gained some new hints; but, however this may be, the reader will see in the following notes only an exposition of facts, designed simply to draw attention once more to this curious question. And as the establishment of any natural law whatever, has at all times its utility even in practice, it is perhaps desirable still to find it of importance in the economic management of animals in certain positions.

The general law which Giron de Bazareingues has recognised on the subject of the procreation of the sexes is as follows: The sex of the product would depend on the greater or less relative vigour of the individuals coupled. In many experiments purposely made, he has obtained from the ewes more males than females, by coupling very strong rams with ewes either too young or too aged, or badly fed; and more females than males, by an inverse action in the choice of the ewes and rams he put together.

This law has developed itself regularly enough at the sheepfold of Blanc, in all cases in which circumstances of different vigour between the rams and ewes have been observed in coupling them. Witness two striking examples of it.

In 1853, the births, the issue of young ewes by a Dishley-Mauchamp marino ram, extremely vigorous and highly fed, produced 25 males and 9 females only, or 71·73 per cent. of males, and 28·27 per cent. of females.

At a latter period, the same ram, still in full vigour, having been put to some ewes that had done nursing their lambs—a period at which the ewe is found very weak—there resulted, in 1853, 8 male births against 4 female; and in 1854, under similar circumstances, 17 male against 9 female births. The two occasions united yielded 65·78 per cent. of males, and 34·22 per cent. of females.

But the following fact has nothing in common with those related by Giron de Bazareingues, and which has been repeated, with small variation, every year, from 1853—the period at which the observations I have noted down began.

This fact consists:

1st. In that, at the commencement of the rutting season, when the ram was in his full vigour, he procreated more males than females.

2d. When, some days after, the ewes coming in heat and in great numbers at once, the ram was weakened by a more frequent renewal of the exertion, the procreation of females took the lead.

3d. The period of excessive exertion having passed, and the number of ewes in heat being diminished, the ram also found less weakened, the procreation of males in majority again commenced.

In order to show that the cause of such a result is isolated from all other influences, of a nature to be confounded with it, I shall take the years 1855-6, in which, by the effect of a degree of equilibrium of age and vigour between the rams and ewes, the male and female births were found, relatively with each other, nearly upon a par in numbers, being 25 males to 23 females.

Other results have furnished two remarkable facts:

1st. The ewes that have produced the female lambs are, on an average, of a weight superior to those that produced the males; and they evidently lose more in weight than these last, during the suckling period.

2d. The ewes that produce males weigh less, and do not lose, in nursing, so much as the others.

If the indications given by these facts come to be confirmed by experiment sufficiently repeated, two new laws will be placed by the side of that which Giron de Bazareingues has determined by his observations and experiments.

On the one hand, as, at liberty or in the savage state, it is a general rule that the predominance in acts of generation belongs to the strongest males, to the exclusion of the weak, and as such a predominance is favourable to the procreation of the male sex, it would follow that the number of males would tend to surpass incessantly that of the females, amongst whom no want of energy or power would turn aside from generation; and the species would find in it a fatal obstacle to its reproduction. But, on the other hand, if it was true that the strongest females, and the best nurses amongst them, produce females rather than males, nature would thus oppose a contrary law, which would establish the equilibrium, and, by an admirable harmony, would secure the perfection and preservation of the species, by confiding the reproduction of either sex to the most perfect type of each respectively.—*Irish Weekly Agricultural Review.*

Translations and Reviews of Continental Veterinary Journals.

Journal de la Société Agricole de l'est de la Belgique.

INQUIRY BY THE CENTRAL SOCIETY OF AGRICULTURE OF BELGIUM, INTO THE EFFICACY OF THE MEANS EMPLOYED TO COMBAT EXUDATIVE PLEURO-PNEUMONIA IN HORNED CATTLE.

At a meeting of the council of the society, held on December 7th, 1859, it was decided, on the proposition of Mons. T. Kint, of Naeyer, that an inquiry should be made into the means which had been employed up to the present time in Belgium, and also in other countries, in order to combat the spread of pleuro-pneumonia.

In accordance with this decision, a special committee was appointed to inquire into the kind of investigation the society should adopt in order to collect all the information which was necessary to elucidate the question.

At the meeting on the 2d ultimo, the committee reported that the plan of inquiry, offering the best chance of success, consisted in the preparing a series of questions to be answered by persons who were competent to give an opinion based upon both observation and experience.

This report being adopted, led to the preparing and publication of the following circular letter:—

"Sir,—Pleuro-pneumonia having existed among cattle for many years in almost every country of Europe, has, in Belgium in particular, destroyed a great many animals during the last thirty years.

"The losses to the public caused by this calamity are very considerable, but for want of official statistics their amount has only been partially ascertained. Thus, in Belgium alone, the proprietors of affected cattle, being obliged to sell their animals at a depreciated price, have sustained an annual loss which may be estimated, in round numbers, at two millions.

"The Belgium government spends yearly more than 100,000 francs, as an indemnity for the affected cattle which are killed by the butchers.

"In the low countries the losses are immense; and according to the reports of the French Scientific Commission on inoculation, in 217 communes in the northern department alone, during a period of nineteen years, they were as many as fifty-two millions.

"These disasters have naturally attracted the attention of the Council of the Central Society of Agriculture, who have thought it their duty to take the matter into their consideration; and as such they resolved, on the 5th of December, on the proposition of Mons. T. Kint, of Naeyer, to appoint a committee to call upon persons who could furnish the necessary information; with a view to the obtaining correct and, in some degree, universal statistical returns of the different preventive means employed, and especially that of inoculation as introduced by Dr. Willems, which had been extolled since 1852, and the application of which to beasts has already been attended with great success.

"To arrive at this end the committee has the honour to ask you to kindly reply to the following questions. The importance of the service which you will thus render to agriculture is an assurance that your compliance will tend to promote the object, the elucidation of which is thus sought. The result to which the society arrives will, in due time, be communicated to you.

"Accept, sir, the highest expressions of our sentiments, &c.

"Signed, DAUMERIE, *President.*

"GUSTAVE LE DOCTE, *Secretary.*"

1. How long has pleuro-pneumonia existed in your stables or meadows, and in those of your neighbours?

2. What preventive and curative measures have you had recourse to?

3. What have been the results of the use of these different remedies?

4. Do you think pleuro-pneumonia contagious?

5. Have you made use of the inoculation of the disease, after the plan of Dr. Willems?

6. How many animals have been inoculated?

   a. With success?

   b. Without success?

7. Had the animals been in contact with diseased cattle before being inoculated?

8. Of what ages were the inoculated animals?

9. What *per-centage* of the animals have died, or been injured, in consequence of the performance of the operation?

10. What *per-centage* of the animals have taken the malady after having been inoculated with success?

11. What proportion of *un*inoculated animals have become ill, when placed under the same conditions as those which had been inoculated?

12. Have you used salt to combat pleuro-pneumonia?

13. What have been the results?

14. What (after your own experience, and of the cases which have come under your own knowledge) is your opinion relative to—

a. The prophylactic value of inoculation?

b. Compared to the other means employed, as remedies against pleuro-pneumonia?

FORTHCOMING AGRICULTURAL MEETING IN BRITTANY.

Mons. E. Rouher, the French Minister of Agriculture, Commerce, and Public Works, has just issued a notice of an agricultural meeting, to be held at Vannes, in Brittany, from the 8th to the 13th of May, 1860.

The departments to which this especially extends comprise those of Loire-Inférieure, Côtes-du-Nord, Finistèrre, Ille-et-Vilaine, Moblhan, Maine-et-Loire, and of Vendée.

The principal prize, amounting to 5000 francs, and a silver cup of the value of 3000 francs, will be given to the proprietor of the best cultivated farm in the department of Morbihan.

Gold and silver medals will be awarded by the Minister according to the proposition of the jury, to those persons who have improved their farms by drainage, irrigation, the erection of suitable farm buildings, &c., in the several departments which are to be represented.

A sum of 500 francs, and silver and bronze medals, will be placed at the disposal of the jury for distribution among the holders of the best cultivated lands.

Prizes for cattle will be awarded according to the following scale:

First Division.—PARTHENAISE, CHOLETAISE, OR NANTAISE CATTLE.

BULLS.

First Section.—For the best Bull born between the 1st of May, 1858, and the 1st of May, 1859.

First prize, a gold medal and 600 francs.
Second prize, a silver medal and 500 francs.
Third prize, a bronze medal and 400 francs.

Second Section.—For the best Bull born before the 1st of May, 1858.

First prize, a gold medal and 600 francs.
Second prize, a silver medal and 500 francs.
Third prize, a bronze medal and 400 francs.

COWS.

First Section.—For the best Heifer born between the 1st of May, 1858, and the 1st of May, 1859, and which has not had a calf.

First prize, a gold medal and 300 francs.
Second prize, a silver medal and 200 francs.

Second Section.—For the best Heifer, in calf or milk, born between the 1st of May, 1857, and the 1st of May, 1858.

First prize, a gold medal and 400 francs.
Second prize, a silver medal and 300 francs.

Third Section.—For the best Cow, in calf or milk, born before the 1st of May, 1857.

First prize, a gold medal and 400 francs.
Second prize, a silver medal and 300 francs.
Third prize, a bronze medal and 200 francs.

Second Division.—BRITTANY CATTLE.

BULLS.

First Section.—For the best Bull born between the 1st of May, 1858, and the 1st of May, 1859.

First prize, a gold medal and 400 francs.
Second prize, a silver medal and 300 francs.
Third prize, a bronze medal and 250 francs.
Fourth prize, a bronze medal and 200 francs.
Fifth prize, a bronze medal and 150 francs.

Second Section.—For the best Bull born before the 1st of May, 1858.

First prize, a gold medal and 400 francs.
Second prize, a silver medal and 300 francs.
Third prize, a bronze medal and 250 francs.
Fourth prize, a bronze medal and 200 francs.
Fifth prize, a bronze medal and 150 francs.

COWS.

First Section.—For the best Heifer born between the 1st of May, 1858, and the 1st of May, 1859, and which has not had a calf.

First prize, a gold medal and 200 francs.
Second prize, a silver medal and 150 francs.
Third prize, a bronze medal and 100 francs.
Fourth prize, a bronze medal and 80 francs.

Second Section.—For the best Heifer, in calf or milk, born between the 1st of May, 1857, and the 1st of May, 1858.

First prize, a gold medal and 250 francs.
Second prize, a silver medal and 175 francs.
Third prize, a bronze medal and 100 francs.
Fourth prize, a bronze medal and 80 francs.

Third Section.—For the best Cow, in calf or milk, born before the 1st of May, 1857.

First prize, a gold medal and 250 francs.
Second prize, a silver medal and 175 francs.
Third prize, a bronze medal and 125 francs.
Fourth prize, a bronze medal and 100 francs.
Fifth prize, a bronze medal and 80 francs.

Third Division. — OTHER FRENCH PURE BREEDS NOT INCLUDED IN THE ABOVE.

BULLS.

First Section.—For the best Bull born between the 1st of May, 1858, and the 1st of May, 1859.

First prize, a gold medal and 400 francs.
Second prize, a silver medal and 300 francs.

Second Section.—For the best Bull born before the 1st of May, 1858.

First prize, a gold medal and 400 francs.
Second prize, a silver medal and 300 francs.

COWS.

First Section.—For the best Heifer born between the 1st of May, 1858, and the 1st of May, 1859, and which has not had a calf.

First prize, a gold medal and 250 francs.
Second prize, a silver medal and 200 francs.

Second Section.—For the best Heifer, in calf or milk, born between the 1st of May, 1857, and the 1st of May, 1858, and which has not had a calf.

First prize, a gold medal and 300 francs.
Second prize, a silver medal and 200 francs.

Third Section.—For the best Cow, in calf or milk, born before the 1st of May, 1857.

First prize, a gold medal and 300 francs.
Second prize, a silver medal and 200 francs.

Fourth Division.—DURHAM BREED.

(*Improved Short-horn.*)

BULLS.

First Section.—For the best Bull born between the 1st of May, 1858, and the 1st of May, 1859.

First prize, a gold medal and 600 francs.
Second prize, a silver medal and 500 francs.
Third prize, a bronze medal and 400 francs.
Fourth prize, a bronze medal and 300 francs.

Second Section.—For the best Bull born before the 1st of May, 1858.

First prize, a gold medal and 600 francs.
Second prize, a silver medal and 500 francs.
Third prize, a bronze medal and 400 francs.
Fourth prize, a bronze medal and 300 francs.

COWS.

First Section.—For the best Heifer born between the 1st of May, 1858, and the 1st of May, 1859, and which has not had a calf.

First prize, a gold medal and 300 francs.
Second prize, a silver medal and 200 francs.
Third prize, a bronze medal and 150 francs.

Second Section.—For the best Heifer, in calf or milk, born between the 1st of May, 1857, and the 1st of May, 1858.

First prize, a gold medal and 400 francs.
Second prize, a silver medal and 300 francs.
Third prize, a bronze medal and 200 francs.

Third Section.—For the best Cow, in calf or milk, born before the 1st of May, 1857.

First prize, a gold medal and 400 francs.
Second prize, a silver medal and 300 francs.
Third prize, a bronze medal and 200 francs.
Fourth prize, a bronze medal and 150 francs.

Fifth Division.—OTHER FOREIGN PURE BREEDS.

BULLS.

First Section.—For the best Bull born between the 1st of May, 1858, and the 1st of May, 1859.

First prize, a gold medal and 500 francs.
Second prize, a silver medal and 400 francs.
Third prize, a bronze medal and 300 francs.

Second Section.—For the best Bull born before the 1st of May, 1858.

First prize, a gold medal and 500 francs.
Second prize, a silver medal and 400 francs.
Third prize, a bronze medal and 300 francs.

COWS.

First Section.—For the best Heifer born between the 1st of May, 1858, and the 1st of May, 1859, and which has not had a calf.

First prize, a gold medal and 300 francs.
Second prize, a silver medal and 200 francs.

Second Section.—For the best Heifer, in calf or milk, born between the 1st of May, 1857, and the 1st of May, 1858.

First prize, a gold medal and 400 francs.
Second prize, a silver medal and 300 francs.

Third Section.—For the best Cow, in calf or milk, born before the 1st of May, 1857.

First prize, a gold medal, and 400 francs.
Second prize, a silver medal and 300 francs.

Sixth Division.—DURHAM CROSS-BREEDS.

BULLS.

First Section.—For the best Bull born between the 1st of May, 1858, and the 1st of May, 1859.

First prize, a gold medal and 400 francs.
Second prize, a silver medal and 300 francs.

Second Section.—For the best Bull born before the 1st of May, 1858.

First prize, a gold medal and 400 francs.
Second prize, a silver medal and 300 francs.

COWS.

First Section.—For the best Heifer born between the 1st of May, 1858, and the 1st of May, 1859, and which has not had a calf.

First prize, a gold medal and 300 francs.
Second prize, a silver medal and 200 francs.
Third prize, a bronze medal and 150 francs.

Second Section.—For the best Heifer, in calf or milk, born between the 1st of May, 1857, and the 1st of May, 1858.

First prize, a gold medal and 400 francs.
Second prize, a silver medal and 300 francs.
Third prize, a bronze medal and 200 francs.

Third Section.—For the best Cow, in calf or milk, born before the 1st of May, 1857.

First prize, a gold medal and 400 francs.
Second prize, a silver medal and 300 francs.
Third prize, a bronze medal and 200 francs.
Fourth prize, a bronze medal and 150 francs.

SEVENTH DIVISION.—OTHER CROSS-BREEDS (not included in the Sixth Division).

BULLS.

First Section.—For the best Bull born between the 1st of May, 1858, and the 1st of May, 1859.

First prize, a gold medal and 300 francs.
Second prize, a silver medal and 200 francs.

Second Section.—For the best Bull born before the 1st of May, 1858.

First prize, a gold medal and 300 francs.
Second prize, a silver medal and 200 francs.

COWS.

First Section.—For the best Heifer born between the 1st of May, 1858, and the 1st of May, 1859, and which has not had a calf.

First prize, a gold medal and 200 francs.
Second prize, a silver medal and 150 franes.

Second Section.—For the best Heifer, in calf or milk, born between the 1st of May, 1857, and the 1st of May, 1858.

First prize, a gold medal and 300 francs.
Second prize, a silver medal and 200 francs.

Third Section.—For the best Cow, in calf or milk, born before the 1st of May, 1857.

First prize, a gold medal and 300 francs.
Second prize, a silver medal and 200 francs.

SHEEP.

(*The animals shown must have been born before the* 1*st of May*, 1859.)

First Division.—MERINO AND MIXED-MERINO BREEDS.

For the best Ram.

First prize, a gold medal and 300 francs.
Second prize, a silver medal and 200 francs.

For the best Pen of five Ewes.

First prize, a gold medal and 300 francs.
Second prize, a silver medal and 200 francs.

Second Division.—FRENCH PURE BREEDS.

For the best Ram.

First prize, a gold medal and 300 francs.
Second prize, a silver medal and 200 francs.

For the best Pen of five Ewes.

First prize, a gold medal and 300 francs.
Second prize, a silver medal and 200 francs.

Third Division.—FOREIGN PURE BREEDS.

For the best Ram.

First prize, a gold medal and 300 francs.
Second prize, a silver medal and 200 francs.
Third prize, a bronze medal and 150 francs.
Fourth prize, a bronze medal and 100 francs.

For the best Pen of five Ewes.

First prize, a gold medal and 300 francs.
Second prize, a silver medal and 250 francs.
Third prize, a bronze medal and 150 francs.

Fourth Division.—CROSS-BREEDS.

For the best Ram.

First prize, a gold medal and 300 francs.
Second prize, a silver medal and 200 francs.
Third prize, a bronze medal and 150 francs.

For the best Pen of five Ewes.

First prize, a gold medal and 300 francs.
Second prize, a silver medal and 200 francs.
Third prize, a bronze medal and 150 francs.
Fourth prize, a bronze medal and 100 francs.

PIGS.

(*The animals shown must have been born before the* 1*st of December*, 1859.)

First Division.—FRENCH BREEDS.

For the best Boar.

First prize, a gold medal and 250 francs.
Second prize, a silver medal and 200 francs.
Third prize, a bronze medal and 150 francs.

For the best Sow (in pig or having littered).

First prize, a gold medal and 200 francs.
Second prize, a silver medal and 150 francs.
Third prize, a bronze medal and 100 francs.

Second Division.—FOREIGN BREEDS.

For the best Boar.

First prize, a gold medal and 250 francs.
Second prize, a silver medal and 200 francs.
Third prize, a bronze medal and 150 francs.
Fourth prize, a bronze medal and 100 francs.
Fifth prize, a bronze medal and 80 francs.
Sixth prize, a bronze medal and 70 francs.

For the best Sow (in pig or having littered).

First prize, a gold medal and 200 francs.
Second prize, a silver medal and 150 francs.
Third prize, a bronze medal and 125 francs.
Fourth prize, a bronze medal and 100 francs.
Fifth prize, a bronze medal and 80 francs.
Sixth prize, a bronze medal and 70 francs.

Third Division. — CROSS-BREEDS BETWEEN FOREIGN AND FRENCH BREEDS.

For the best Boar.

First prize, a gold medal and 150 francs.
Second prize, a silver medal and 100 francs.

For the best Sow (in pig or having littered).

First prize, a gold medal and 150 francs.
Second prize, a silver medal and 100 francs.
Third prize, a bronze medal and 80 francs.
Fourth prize, a bronze medal and 70 francs.

Prizes will likewise be given for poultry, agricultural machinery and implements, and agricultural products.

Although, as will be seen, prizes are to be awarded to foreign cattle, sheep, and pigs, these animals must be the property of persons residing in the several departments comprised within the radius of the exhibition.

Veterinary Jurisprudence.

COURT OF COMMON PLEAS.

WESTMINSTER, *February 6th.*

(*Sittings at Nisi Prius, before* LORD CHIEF JUSTICE ERLE *and Special Juries.*)

FREEMAN *v.* JACOBS.

THIS was an action on a warranty on the sale of a horse.

Mr. Edwin James, Q.C., and Mr. Needham appeared for the plaintiff; Mr. Hawkins, Q.C., and Mr. Henry James for the defendant.

The plaintiff, it appeared, is a jobmaster in Blenheim-yard, New Bond-street, and the defendant a horse dealer in the North of England. Both the plaintiff and the defendant attended last Horncastle Fair, and the defendant then bought the horse in question, with a warranty from another dealer, for £90, and sold him to the plaintiff with a warranty of soundness, freedom from vice, and that he was not a roarer, for £100. The horse was a brown gelding sixteen hands high, with some blood in him, and was bought for a carriage horse. Both the plaintiff and the defendant tried him before he was bought. The day after, the horse was sent up to London by railway, and at night he refused his food and coughed a little. He also refused his food the next day, and a veterinary surgeon was sent for to see him, who found him very ill, and labouring under inflammation of the lungs, of which disease he died in a week, on the 25th of August last. A *post-mortem* examination was made by Mr. South, the veterinary surgeon, of New Bond-street, who found the lungs and liver surrounded by several strong and broad bands, the result of inflammation, and in his judgment these could not have been caused by inflammation within a week, but must have been the result of chronic disease of some standing. The muscles of the larynx were also diseased. The effect of this would be to make the horse a whistler or roarer. The evidence for the defendant was that the horse was quite well and sound on the day he was sold, and that he had been galloped and trotted, and was not a roarer or whistler the day he was purchased. The question, therefore, on this point, turned on the evidence given by Mr. South and others who saw the larynx.

The jury returned a verdict for the plaintiff,—damages, £100.—*The Times.*

WESTMINSTER, *February 11th.*

(*Sittings at Nisi Prius, before* LORD CHIEF JUSTICE ERLE *and a Special Jury.*)

DURIE *v.* HOPWOOD.

SPAVIN OR NO SPAVIN.

THIS was an action brought on a warranty of soundness on the sale of two horses.

Mr. Edwin James, Q.C., Mr. Needham, and Mr. Allen, appeared for the plaintiff; and Mr. Sergeant Ballantine and Mr. Brett for the defendant.

The action was brought by the plaintiff, Major Durie, of Broxholme Park, Herts, against the defendant, Mr. Hopwood, for a breach of warranty on two horses, one a blood horse and the other a carriage horse, sold by the defendant to the plaintiff on the 16th of October last. It appeared from the evidence for the plaintiff that the horses were bought at Liverpool for £131 10*s*., with a written warranty that they were both four years old and perfectly sound. The plaintiff took them home, and his wife tried them and did not much like them, and the plaintiff therefore proposed to sell them to a dealer named Clough. Clough examined them, and expressed some doubt about the soundness of each, and he therefore said before he could deal he must have them examined by Mr. Mavor, who certified that they had each a bone spavin on the off hock. The plaintiff thereupon applied to the defendant to take back the horses, but he refused. He then submitted them to the examination of Professor Spooner, Mr. Varnell, and Mr. Field, all distinguished veterinary surgeons, and all of whom pronounced the horses as suffering from chronic bone spavin of the off hock, and that it was a permanent unsoundness. The horses were then sent to Liverpool, and the defendant, having examined them, remained of opinion that they were both sound. There they were examined by Mr. Lucas, Mr. Ellis, and Mr. Bretherton, veterinary surgeons of great reputation at Liverpool, and by them pronounced to be perfectly sound, Mr. Ellis certifying, however, that there was a deposit of bone on the shankbone of the off hind leg of the carriage horse, but which did not interfere with the action, and was a mere blemish, and not unsoundness. The horses, having been refused to be taken back, were sent to Tattersall's, and sold for £57 10*s*., having been bought by the defendant. The present action was brought to recover the difference and the expenses. For the defence, it appeared that the defendant bought the horses at Ballinasloe fair, in Ireland. He had been a dealer for seventeen years, and took particular care in the purchase because he bought them in Ireland. He was satisfied of their soundness, and bought them for £80. After buying them back at Tattersall's he sold the carriage horse to a clergyman named Buchanan, in Staffordshire, and the other to a young lady for a riding horse, getting £70 for one and £65 for the other. He mentioned to the purchasers the bother there was about them, and Mr. Kettle, a country veterinary surgeon, examined one for the purchaser, and Mr. Payne, of Market Drayton, a veterinary surgeon, examined the other for the purchaser, and pronounced each horse to be sound. Since the purchase both purchasers were exceedingly satisfied with the horses. The trainer of the blood horse, who trained him to carry a lady, pronounced him to be sound, and not at all lame. The coachman of the Rev. Mr. Buchanan had been allowed by that gentleman to bring the carriage horse up to town to be inspected, and he was brought round to the door of the court and inspected by the jury, and, at their request, by Mr. Ellis, veterinary surgeon, of Liverpool, who attended for the defendant, and Mr. Mavor, veterinary surgeon, of London, for the plaintiff. The coachman pronounced the horse to be a splendid one, and said his master set great value on him; that he had frequently driven him at the rate of twelve miles an hour, and that he was perfectly sound, and not lame in the slightest degree. After the horse had been inspected, Mr. Lucas, of the repository at Liverpool, twenty-five years a veterinary surgeon in that town, and of great experience, repeated his testimony that both horses were perfectly sound. He had examined the carriage horse at the door, and in his judgment he exhibited not the slightest indication of bone spavin, and was then sound. Mr. Ellis, for twenty-eight years a veterinary surgeon at Liverpool, adhered to his opinion that neither horse had a bone spavin. He had examined the horse at the door, and he was as sound a horse and as free now from blemish as any horse that ever lived, the bony deposit on the shank having been absorbed since he had last seen him. A bone spavin could not be absorbed. Once a spavin always a spavin. He pledged his reputation that the carriage horse he had just seen was sound.

Mr. Payne, veterinary surgeon, after seeing the horse, gave similar evidence.

On the part of the plaintiff, *Mr. Mavor* was called, and he stated that the horse at the door had a bone spavin on the off hock, and was lame of it, and was lamer to-day than when he last saw him. He was very palpably lame; he had not a shadow of doubt about it.

Mr. Ballantine then summed up, asking the jury on this contradictory scientific evidence to rely on the facts proved in the case, and not to place too much reliance on the evidence of veterinary surgeons seeking to prove unsoundness; for, if such proof were required, it was notorious it could always be got. A friend of his used to tell a story of all the horses in London shying whenever they passed a celebrated veterinary surgeon's door, because they instinctively knew if they were taken there they would get a character for unsoundness.

Mr. James having summed up in an able speech,

His Lordship went carefully over the conflicting evidence to the jury.

The jury retired, and after an absence of half an hour found a verdict for the plaintiff. They at the same time wished to express an opinion as to the honorable conduct of the defendant all through the transaction.—Verdict for the plaintiff—Damages, £92.

ARMY APPOINTMENTS.

War Office, Pall Mall, *Jan.* 31, 1860.

Royal Regiment of Horse Guards.—Veterinary Surgeon Matthew John Harpley, from the Royal Artillery, to be Veterinary Surgeon, *vice* Byrne, who retires upon half-pay.

Royal Artillery.—Acting Veterinary Surgeon Edwin Thomas Cheesman, to be Veterinary Surgeon, *vice* Harpley, appointed to the Royal Regiment of Horse Guards.

VETERINARY MEDICAL DEPARTMENT.

To be Acting Veterinary Surgeons.

Griffith Evans, Gent.
James Joseph Meyrick, Gent.
John Marshall Wilson, Gent.
William Appleton, Gent.
Robert Marshall, Gent.
Adam Elijah Clarke, Gent.
John Anderson, Gent.

War Office, *Feb.* 3, 1860.

2d Dragoons.—The Commission of Veterinary Surgeon, Thornton Hart, to be antedated to the 4th of July, 1855.

9th Light Dragoons.—The Commission of Veterinary Surgeon, Frederick Bailey, to be antedated to the 1st of June, 1855.

14th Light Dragoons.—The Commission of Veterinary Surgeon, Henry Dawson, to be antedated to the 5th of July, 1855.

Royal Artillery.—James Woodyer Callow, to be Veterinary Surgeon *vice* Cochrane, deceased.

War Office, *Feb.* 14, 1860.

Royal Artillery.—The Commission of Veterinary Surgeon, James Lambert, to be antedated to the 12th of October.

MISCELLANEA.

Professor Edmund Davy lately read a paper to the Royal Dublin Society, on a cement, which he obtains by melting together in an iron vessel, two parts by weight of common pitch with one part of gutta percha. It forms a homogeneous fluid, which is much more manageable for many useful purposes than gutta percha alone, and which, after being poured into cold water, may be easily wiped dry and kept for use. The cement adheres with the greatest tenacity to wood, stones, glass, porcelain, ivory, leather, parchment, paper, hair, feathers, silk, woollen, cotton, linen fabrics, &c. It is well adapted for aquariums.

OBITUARY.

Mr. James Sewell, whose death was recorded in our last number, was the elder and only surviving brother of the late Professor Sewell. The younger, however, was before the elder in the profession, he having in very early life become the pupil of the late Professor Coleman, and obtained his diploma in 1799.

The late Mr. James Sewell was born at Church House, Aldham, Essex, from whence he went with his father to reside at Reading, where he remained until nearly thirty years of age, when, probably being influenced in part by the success which attended his younger brother, he also became a pupil at the College, and graduated in 1807.

It would seem that the same love of animals was possessed by both brothers, as each had been brought up as an agriculturist.

At that period the veterinary art was just emerging from the darkness which had so long enveloped it, and the principles of medical science were being applied to the diseases of the lower animals, which before had been, in most instances, subjected to only empirical barbarism. What wonder was it, that when more correct views were taken of disease, and the public were made conversant with these, through some of the most talented men of the day lending their powerful aid to the infant art, that young men of education and principle should be induced to become its students? There are yet those living who remember the struggles and difficulties they had to contend with; nevertheless these were overcome, and as years passed on fresh strength was acquired, and means of instruction were increased, until the profession attained its present standing.

After obtaining his diploma, Mr. James Sewell entered into practice at Bath, but not liking that locality, he removed to Windsor with the intention of joining the late Mr. Dean as a partner. Failing in this, he went to St. Albans in 1810, where, by his strictly honourable and upright conduct, he obtained the confidence and respect of the leading noblemen, gentlemen, and agriculturists of the neighbourhood. In 1834, the present Mr. Silvester, of St. Albans, joined him as a partner, and at the end of three years from that time succeeded to the practice. Mr. Sewell, however, continued to take the most lively interest in all relating to veterinary matters, and was to be seen as almost a daily visitor to the infirmary of his sucessor.

He continued to reside at St. Albans until 1853, when the delicate state of his sister's health induced him to go and live with her at Reading, where he remained, not only until her death, in October last, but until he himself was called upon to depart. His illness commenced with a sudden attack of difficulty of breathing and cough, which, in a few days, increased so much as to confine him to his bed for about a month before his death. His age was eighty-three.

Although the subject of this memoir did not contribute much to veterinary science, he was generally considered a good and sound practitioner of his day. It has been said of him, that which few can boast of—that he never made an enemy, but by his quaint and good humour many a friend.

THE

VETERINARIAN.

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Communications and Cases.

DO ANIMALS EAT THE RANUNCULACEÆ IN SUFFICIENT QUANTITIES SO AS TO PROVE POISONOUS TO THEM?

We are induced to put this in the form of a question, and to give it a prominent place, from having been lately consulted by Mr. C. Wallis, M.R.C.V.S., respecting the cause and nature of a disease which had carried off several oxen, sheep, and horses, in a particular district in his locality. A strong suspicion existed that the cause, whatever it might have been, was confined to one meadow, in which *Ranunculaceæ* abound, and it was conjectured that these plants might have been taken by the different animals.

The first death that occurred was in July, 1858, and since then several other animals have died, all of which have presented the same post-mortem appearances.

Mr. Wallis informed us that an enormous enlargement of the spleen was in every case the most marked feature to be observed in the examinations made after death. Not only, however, was this organ enlarged, but in some instances it had become so much softened that it would not bear its own weight when an attempt was made to lift it up.

The mucous membrane of the rumen, reticulum, and omasum, in both the sheep and cattle, was simply reddened; but that of the abomasum and the large and small intestines was of a very dark-red colour, and studded in places with ecchymosed spots. The mucous membrane of the stomach and intestines of the horses likewise exhibited the same conditions, but there were not any lesions indicating that death had been caused by a mineral poison. The general character of the mucous membranes rather suggests the idea that some vegetable irritant had produced the morbid appearance.

A request was made that information should be furnished us as to the duration of the illness of each animal, and in due time we received the following statement from the proprietor of the land on which the disease is believed to have originated:

CHERTSEY; *January* 28*th*, 1860.

THE first bullock that died was bought in London, on Monday, 18th July, 1858, was put into the field the same night, and found dead on Wednesday by 9 o'clock. The second death was that of a heifer, bought in the neighbourhood the following week. She died after being in the field only four days. On the following week several sheep died.

The next was a pony, about eight years old. When placed in the field he was well, and in good condition, but was taken ill after being there about a fortnight, and died. A colt, two years old, died the next week, with the same symptoms.

In the following year, 1859, no stock were turned into the field until the 18th of September, when an Irish heifer, bought in London, was put into it on the Tuesday night, and died the following Tuesday, and two sheep also.

The field remained then until the middle of October, when fifteen store beasts, about a year and a half old, were put into it, the grass being very high, and in a week's time five of them were dead. Next a mare was put in. She lived and improved considerably for three months, but when brought into a straw-yard died in twelve hours. A young pony was put into the yard at the same time, and she continued well for two days after the mare died, when she was taken ill, and died in twenty-four hours. This pony had never been near the field.

EDWARD DEARLE.

After the receipt of this communication it was thought desirable to ascertain if a drain from any factory, slaughter-house, or yard belonging to any building conveyed anything of a deleterious nature, either continually or at intervals, into the brook which flowed through the meadow. We therefore again wrote to Mr. Wallis, and received the following reply:

STAINES; *February* 4*th*, 1860.

I have only to-day obtained the required information to enable me to reply to your letter of the 31st ultimo. I find that the only water which can be got at from the suspected field comes from Virginia Water, a distance of about four miles. There are two water-mills on the stream before it reaches the field. It flows towards the town of Chertsey, and empties itself into the Thames. No drains from yards or houses flow into it.

I have ascertained that a quantity of sheep are every year washed in the stream, about two miles before it reaches the field; but as it supplies the cattle throughout the locality in which it passes, I cannot think that this can have anything to do with the cause of the evil, as no cattle except those in the two fields have been similarly affected.

CHARLES WALLIS.

Subsequently to this Mr. Wallis brought with him some of the plants which it was thought had been productive of the mischief, and which we believed to be the *Ranunculus bulbosus* of Linnæus. Respecting it, Professor Lindley, in his 'Flora Medica,' says:

"Exceedingly acrid, raising blisters and producing extensive inflammation, sometimes followed by deep ill-conditioned sloughing ulcers in certain constitutions, but not affecting all persons alike, in which respect it resembles the poisonous species of rhus and antiaris.

"Gilbert states that it vesicates with less pain than cantharides, and without affecting the urinary organs."

Sir Gilbert T. Burnett, in his 'Outlines of Botany,' under the head *Ranunculaceæ*, has the following:

"Nearly two hundred species of ranunculus are known, and these have been distributed into five or six sections, or sub-genera. The whole have a pretty, and some very showy blossoms. They are remarkable for their general acridity. Some are violent poisons, such as *R. scutatus*, which was formerly employed by the Swiss hunters to envenom their darts with which they shot the wild beasts; and others, such as *R. sceleratus* and *acris*, are scarcely less virulent. They excoriate the skin, and form ulcers that are difficult to heal; and even carrying specimens for a short time will occasionally inflame the hand. The water crow-foot (*R. aquatilis*) is less acrid than any of the rest, and Dr. Pulteney extols it as a wholesome and nutritious fodder. In some parts of the country, as near Kingswood, on the banks of the Avon, the cottagers support their cows, and even their horses, almost wholly on this plant; and in wet situations where it abounds, it would become, were its properties generally known, of considerable economical importance. Cattle will also eat the *R. arvensis* with avidity, but it is a dangerous food; and its juice is so poisonous that M. Bruynon says three ounces killed a dog in four minutes, and sheep have been poisoned by feeding on it near Turin. The vulgar opinion, that the butter in spring owes its deeper colour and richness to the ranunculi, hence called butter-cups, is an error scarcely worthy of contradiction, for they are plants that the cattle rarely touch."

He adds further:

"The Ranunculaceæ are in general poisonous plants, as remarkable for the acridity of their juices and venomous properties as for the beauty of their flowers. The principle upon which their deleterious powers depends is, according to the observations of Krappen, of a very singular nature. It is so volatile, that in most cases simple drying, or infusion in water, or decoction, is sufficient to remove it, and to render the plants innocuous; and in some it is developed in such small quantities as not to be injurious. It is said to be neither acid nor alkaline, but its activity is increased by the addition of acids, or the admixture of sugar, honey, wine, spirit, &c.; and that it is only removed or effectually destroyed by the agency of water."

Pereira says of these plants, they are "mostly poisonous: acridity is the prevailing quality, conjoined, in a considerable number of instances, with a narcotic quality. Several of the species are topical benumbers."

Speaking of the *R. acris* (upright meadow crowfoot), he observes that Orfila has shown, by experiments on animals, its power of causing inflammation of the tissues to which it is applied. Its acrid principle is either very volatile, or it readily undergoes decomposition, as, by drying, the plant loses its acridity.

Being desirous of obtaining all the information we could upon the subject, we forwarded to Mr. Watson, M.R.C.V.S. (respecting whose acquaintance with the science of botany we need not say a word, as our pages bear ample proof of it), some of the plants forwarded to us by Mr. Wallis. The following is his reply, in which it will be seen that he fully confirms our opinion.

RUGBY; *January 30th*, 1860.

The plant you kindly forwarded to me the other day is the *Ranunculus bulbosus* (butter-cup, or crow-flower); Nat. Ord., *Ranunculaceæ*. It is very common in meadows and pastures of most parts of England. My attention was directed to this tribe of plants some time since, and I have found this one in almost all situations, both on high and low grounds. Since I received your letter I have furnished myself with specimens from meadows on the borders of the river Avon, which have been recently under water, and also from high pasture land. From inquiries I have made of parties occupying the meadow lands near the Avon, I find they all agree, that cattle cannot be with safety long kept on them in the autumn of the year, diarrhœa being always produced. What this depends upon I am not quite prepared to state, but probably this plant has something to do with it, as well as some of the other Ranunculaceæ. I am, however, satisfied it does not depend upon these alone.

As you observe, the chief question to decide is, will animals partake of these plants? because if they do, I think there is little doubt that serious effects would be produced by them. They are described by almost all authors as possessing exceedingly acrid properties, which are much modified by position and cultivation, and entirely disappear by drying. By some authors it is stated that sheep and goats eat the ranunculus, but that horses, cows, and swine refuse it. From my own observation I find that all kinds of cattle (the goat excepted, of which I know nothing) refuse to partake of almost all the plants belonging to this order. This is not to be wondered at when the irritating effect it has upon the tongue and mouth is considered, and which may be readily perceived by masticating a small portion of the recent plant.

Formerly this (*R. bulbosus*) and the *R. acris* were used as vesicatories, being said to produce a quicker effect than cantharides, and never causing strangury.

I find there is a case recorded of a horse being poisoned by some species of ranunculus, in the *Veterinarian* for 1840, page 478, but that it was so does not appear very clear to me.

This is all the information I can give you respecting these plants. May I be permitted to ask (this being a subject I feel very great interest in, and being also anxious to gain all the knowledge I can, with a view of making my observations in your Journal, on the poisonous plants, as complete as possible), if there was any *Colchicum autumnale* growing in the meadow from which the plant sent me was obtained?

I have inclosed another species of the ranunculus, found in the same meadow from which I obtained the *R. bulbosus*. This I believe to be confined to low and wet situations.

WALKER WATSON.

We are able to answer Mr. Watson's inquiry, having ourselves put it to Mr. Wallis: the Colchicum Autumnale is not known to grow there.

Much remains yet to be ascertained respecting the action of certain vegetables on the lower animals, when accidentally partaken of in seasons of scarcity, or otherwise. It is true that animals are endowed with instinct that rarely ever errs, so that they avoid those plants which are prejudicial to them; yet when pushed by hunger they have been know to eat them with greediness. Besides this, there are certain conditional states of the same plant in which its poisonous nature is not recognised by them. Thus we are told by Linnæus that the cow-bane (*cicuta virosa*) in the moist pastures of Sweden was often found to be productive of extensive disease among horned cattle until the fact was ascertained that when young the odour of the plant was so faint that its presence was not detected, they therefore ate it indiscriminately with other herbage. As the plant, however, acquires age, the smell emitted from it is so strong and offensive that the cows refuse it. Linnæus suggested to the graziers to keep their cattle in the upland pastures until the cow-bane was fully grown, after which they might be safely driven to the lowlands. This expedient being adopted, the annual losses, which were before this immense, ceased from that period. We are further informed that while this plant is so poisonous to cattle, and also to man,—horses, sheep, and goats feed on it with impunity. How is this to be accounted for?

OBSERVATIONS BY ASSISTANT-PROFESSOR VARNELL.

Our remarks on the above cases must of necessity be brief, and to a great extent inconclusive, in consequence of not being in possession of sufficient data, upon which to form anything like a definite opinion.

With reference to the post-mortem appearances, an outline only was given to us, and that during a short conversation with Mr. Wallis. Each of the facts may have possessed, in association with disease of other organs not mentioned, many interesting peculiarities, and which might have assisted us in coming to a more correct knowledge of the nature of the disease, as well as the cause which gave rise to it.

These few facts, however, have their value, and will, we hope, excite a deeper research, and lead to a clearer elucidation of similar affections.

A summary of the leading features of the case is as follows: Several horses, oxen, and sheep have died in a very short time without, as far as we know, showing scarcely any premonitory symptoms. They had all been pastured in the same field, which, in some seasons of the year, is overflowed with water, and here the cause of the disease is believed to have existed.

Examination after death developed, as has been before stated, an enormously enlarged spleen, and redness and ecchymosis of the intestinal mucous membrane. In the meadow the only plant discovered which was thought to be inimical to health was the "*Ranunculus bulbosus*," one of the most poisonous of that variety of plants, and of this there was a great abundance.

We should expect that if animals partook of a sufficient quantity of these plants so as to cause death, the constitutional disturbance would not have been overlooked by those whose duty it was to see the stock from time to time. Dr. Taylor, in his 'Manual on Poisons,' p. 519, states that there is no instance of this plant (the *Ranunculus bulbosus*) having operated fatally on the human being; but the effects are such as leave no doubt of its possessing poisonous properties. The following case of poisoning by it is of recent occurrence: "A young lady, aged fifteen years, ate several stems and flowers of the plant, and chewed many more, sucking the juice. In six hours she complained of a sense of heat in the throat, and sickness; these symptoms were followed by tenderness of the abdomen, delirium, and stupor. The symptoms lasted eight days, leaving her in a state of debility.

She recovered under a farinaceous diet and oleaginous clysters." Mr. Wallis informed us that those animals which were seen immediately before death gave indications of stupor, and were also the subjects of increased thirst.

The enlarged spleen, in particular, and also the condition of the intestinal mucous membrane would suggest the probability of the disease being typhoid in its nature, and especially should we incline to this opinion, if in addition to the lesions mentioned, sloughing ulcers, a swollen state of the membrane, and disease of the solitary and Peyer's glands had been observed; and which, perhaps, although not noticed, did exist.

But while we have proof of the poisonous plant, above alluded to, existing in great abundance in the meadows, we have not heard of any causes especially calculated to induce typhus. Therefore, while we may admit that the disease observed in the intestines could have been produced by the plants alluded to, nevertheless, can we as easily understand the cause, in any of the instances, of the enlarged spleen? Is it of usual occurrence in poisoning by such agents as is supposed to be in operation in these cases? We are not aware that it is; but if such is the case, the only way that suggests itself as likely to produce such an effect, would be by its action on the semilunar ganglia, or the solar plexus of nerves, or, perhaps on both. In this way we can understand that such might be the case.

The fact of the mare having been in the meadow for the space of three months, and during which time she improved so much in condition that the owner had her taken home to his own premises, with a view of putting her to work, and she having died in twelve hours after being put into the yard, with the same disease as those that died in the meadow, makes it still more difficult to understand what the cause of the malady is.

May it not be that, although she had accumulated flesh while at pasture, some cause or other existing in that locality may have so far predisposed her to disease that either the change of locality, or something special connected with it, became the exciting agent, which rapidly developed the immediate cause of death? The question, then, which would suggest itself is,—Was there anything deteterious to health in the straw-yard, or near to it, which could thus act? We find, on inquiry, that the owner of the animals in question was a butcher, and that the blood and offal from the slaughter-house were thrown into the yard for the pigs, and when not consumed by them it may have become decomposed, and thus proved injurious. This idea, I think, will receive support from the following occurrence, also incidentally alluded to, although it will certainly not prove it. A pony, five years old, apparently in very good health, and which had not been in the meadow at all, was placed in the same straw-yard with the mare, and in two days was taken ill and died. The post-mortem appearances of this animal, although not corresponding with those of the mare, as described to us, nevertheless strongly indicated that a powerful *septic* poison had been in operation in producing disease and death.

It appears from the above statement that the horses withstood the poisonous effects of the agent, whatever it may have been, longer than the cattle. The length of time the sheep lived after being put into meadow is and not stated.

With reference to the mare which is said to have been three months in the meadow, and improved very much in condition during that time, I should have thought, had not the post-mortem appearances corresponded with those of the pony and colt, and also those of the cattle, that her death was due to some other cause, rather than that which destroyed the other animals.

The following parts of the pony were brought by Mr. Wallis to the College for our inspection: namely, the spleen, a portion of the liver, both kidneys, a part of the stomach and intestines, and the head and neck. The spleen was a little enlarged; the kidneys, and portions of the liver, were very much engorged with blood; the latter organ was somewhat softened. The mucous membrane of the large intestines, from congestion of its vessels, and effusion into the submucous areolar tissue, was reddened, and in some places there were darkened patches from effused blood. The small intestines we did not see. The mucous membrane of the stomach was slightly reddened. We also found extensive effusion of blood and serum in the areolar tissue of the submaxillary space, also in the structure of the salivary and lymphatic glands, the guttural pouch, and the sheath of the carotid artery for some distance down the neck. The vessels of the brain, the spinal cord, and their membranes were enormously distended with blood, as were also the venous sinuses in the cranial cavity. The mucous membrane lining the fauces, larynx, tracheæ, and bronchial tubes was of a dark red colour, and in places much thickened, particularly around the glottis. Its surface was covered with a dark greenish-brown and glairy fluid. The surface of the dorsum of the tongue was coated with a dark yellowish-brown fur, and its sides and edges were of a blueish-red tint.

Such were the morbid appearances of the diseased parts, and which we think will be admitted are characteristic of death having been caused by the system becoming imbued with a septic poison that emanated from something undergoing decomposition either in the yard or near to it.

These remarks, we hope, will elicit the opinions of members of the profession as to the real cause which gave rise to this disease in the above cases; and also excite a desire to ascertain what plants are true poisons to our domestic animals.

THE BLADDER OF A HORSE CONTAINING A LARGE QUANTITY OF CALCAREOUS DEPOSIT.

By J. Grover, M.R.C.V.S., Lewes.

Dear Sir,—I have forwarded you the bladder of a horse, containing much sabulous matter, just as it was taken from the animal. He had never been really ill from it, and was killed on account of his age, having worked up to the time he was destroyed. For the last year or two there has been a constant dripping of urine from the penis.

I hope to see your remarks on it in the next number of the *Veterinarian*.

I remain, dear Sir,
Yours truly.

Assistant-Professor Varnell.

OBSERVATIONS BY MR. VARNELL.

"It will be seen by Mr. Grover's letter that there were indications of derangement existing in the urinary apparatus of the horse for a year or two before he was destroyed, from his frequently passing only small quantities of urine at a time; and, although it was not observed, it is most probable that it was mixed with sabulous matter.

"I should have thought, from the weight and magnitude of the bladder and its contents, that there would have been a straddling gait, and perhaps some tumefaction of the hind extremities from the pressure imparted to the iliac veins. These symptoms, however, are so very common in old horses, that, so long as they can do their work, no notice generally is taken of them.

"The question for our consideration, and in a practical point of view it is an important one, is, supposing that a horse, not being very old, is known to have a large quantity of calcareous matter in the bladder, is it advisable to attempt its removal? The answer to this doubtlessly will be in the affirmative. Then, it would be asked, How is this to be effected?

"Professor Morton, in his valuable work on 'Calculous Concretions in the Horse, and other Animals,' at page 49, has recorded a case which assists us in satisfactorily answering this question. It occurred in the practice of the late Mr. Draper, V.S., Melbourne, Derbyshire: 'An aged horse, which for years had been known to void much gravel mixed with his urine, and in which Mr. Draper, being desirous of testing the solvent properties of hydrochloric acid, gave it in two-drachm doses for a long time; and perceiving, after only a very short period had elapsed, that it manifested decided action, he steadily continued its use until he had the gratification of witnessing the gradual return of the health of the animal.' Another case, in which it would seem that a calculus existed in the bladder, occurring in the practice of Mr. Hutton, V.S., Great Yeldham, is also recorded in the same work, at page 49. This was treated in a similar way, and with results equally as satisfactory. In both of these cases the above acid was given by the mouth. The same agent, in a diluted state, may be injected into the bladder, so as to decompose the earthy carbonates; and not only can this be done with safety, but, should any irritation exist in the mucous membrane, the acid will be found beneficial in allaying it.

"These accumulations are not so commonly met with in the bladder of the mare as of the horse, in consequence, perhaps, of the rapidity with which the urine is passed out from the bladder of the former through the short, but large urethral canal, thus carrying with it any earthy deposits that may exist.

"But supposing a case of this kind to come under our notice, it seems to me that the earthy matters might be removed mechanically by the aid of a large tube attached to a stomach-pump, or even a good-sized syringe, by which water could be pumped into the bladder. This having become commingled with the sabulous deposit, should be drawn out again, and thus, by repeating the process, a large portion, if not all of it, might be removed. Or, to facilitate the solution of the mass, the above plan of injecting dilute acid might be resorted to, leaving it for some little time in the bladder before withdrawing it.

"In the horse, from the lengthened and peculiar course of the urethral canal, together with its comparatively small dia- it would be far more difficult to effect our object than in the meter, female; nevertheless it might be tried.

"On all occasions I think the diluted acid should be given by the mouth as well as injected into the bladder; the attendant success in the two instances above alluded to certainly will warrant us in so doing. Moreover, it is fair to infer that both the pelvis of the kidneys and the ureters would contain some of the same deposit, which would be acted upon by the acid when given by the mouth; while, at the same time, from its well-known tonic influence, a healthy state of the constitution would be induced."

[The bladder was filled almost to distension with sabulous matter, only a small space near its neck existing for the reception of the urinary secretion; consequently, the animal must have laboured under incontinence of urine.

It weighed twenty-five pounds avoirdupois, the contents being yet moist, possessing a highly urinous smell, and a brown colour.

Analysis showed the deposit to consist principally of the carbonate of lime, as it underwent solution with active effervescence in dilute hydrochloric acid, and oxalate of ammonia threw down an abundant precipitate from it. Traces of magnesia, and of the phosphates, were also met with.

Although carbonate of lime is a normal constituent of the urine of the horse, existing in it to the amount of one per cent., or more, and oftentimes large quantities of it are voided by this animal, giving to the secretion much turbidity, and that without the manifestation of any constitutional disturbance; nevertheless, when met with in such an accumulated quantity as this, it must have been the result of diseased action in the urinary apparatus.

Its source is to be traced to an excess of lime salts in the blood. The function of the kidneys, it is well known, is to separate from this fluid those matters which, if retained in it, would prove prejudicial to health; hence we meet with in the urine the soluble constituents of the effete constituents of the frame. From disease being set up, we find that urea—the nitrogenized principle which gives to urine its characteristic properties—becomes decomposed through catalytic action induced by the epithelial scales of the mucous membrane, themselves in a state of change, and the elements of water being assimilated, carbonate of ammonia is formed; which, reacting on the lime salts in solution, throws down lime in the form of carbonates, the crystals of which present themselves in the shape of spherules and dumb-bells of a large size. These being nearly insoluble, are either ejected with the secretion, giving to it opalescence, as before stated, or they are retained in the bladder, constituting sabulous matter. Frequently, however, the molecular forces aggregate the particles together, and a calculus is the result.

It is obvious that this change in the urine can take place either in the pelvis of the kidney, or the urinary cyst; and hence it is that we have both renal and vesicular calculi formed.

Were the phosphates present in the urine, similar results would follow; that is to say, carbonate of ammonia being thus slowly added, carbonic acid gas would escape, and the ammonia, combining with the phosphates of lime and magnesia, would form the triple phosphate, the crystals of which are prismatic, and occasionally stellated, mixed with the phosphate of lime, which is amorphous.]

MEMOIRS OF A VETERINARY SURGEON.

THOUGHTS IN THE SICK BOX.

By Thos. Greaves, M.R.C.V.S., Manchester.

(*Continued from* p. 74.)

In all inquiries into great truths, we soon discover that to arrive at a satisfactory result, we must apply ourselves to almost the entire range of human knowledge; hence we must set ourselves earnestly and diligently to work, and shall often find that we are engaged in abstruse and intricate inquiries seemingly foreign to the one we seek to investigate. We must avail ourselves, however, of every avenue that leads to it or from it, and shall thus find, even to our surprise, that many subjects, which had been but little noticed by us, contribute most essentially to our correct deliberations. While we are occupied in this all-absorbing scrutiny, we must not allow one fact to escape our observation, but must let each settle itself fairly into our mind, there to be weighed and scrutinised, calmly and faithfully. Knowledge thus obtained, must also be combined with that which had been gathered from other sources, until the truth we seek is found to be based upon certain fixed laws, or otherwise supported by such a mass of uncontrovertable evidence, that it becomes accepted by every eminent and really practical man, to be used as a standard or principle of action. It is scarcely necessary to add, that it is this way that each fact gradually permeates society and propagates its power for a greater or a lesser period of time.

In my former papers I have endeavoured to show, and I am desirous to convey my idea correctly, that the power with which nature has been endowed by the Creator, is able to restore healthy action, whenever any of her organs are disordered, provided that every antagonistic force be at once removed, and every circumstance necessary to her well-being and the carrying on of her proper functions be duly attended to; in which case her cure will not only be more speedy but also more effectual and complete; whereas the usual method of treatment, *if the above conditions are not complied with,* frequently leaves, after apparent recovery, the affected organ or organs of the patient more or less permanently debilitated. In those papers I have likewise laid considerable stress upon the great assistance we render to nature in her restorative efforts, by the free supply of fresh cold air, by keeping the ears and feet of our patients warm, and by a systematic attention to their diet, and the plentiful use of cold water. In all incipient cases of fever, I am thoroughly convinced that these are all-important points, and being based upon correct principles and observations, are confidently offered for the guidance of the veterinary surgeon.

In all large and well-conducted establishments, the horse-keeper is a man generally selected as one of some observation, who, as by instinct, sees whether his charge is all right or not. As he glances his eye along the long range of horses both night and morning, his quick observant eye detects the ailing horse, hanging back in his stall, drooping his head, by his dull and unhealthy look, and other symptoms that are difficult to be described. On going up to him he finds him breathing rather quicker than usual, his mouth hot, and his food uneaten in his manger; yet this horsekeeper of 1860 does not leave him wholly unattended to, whilst he sends for the veterinary surgeon, whereby some valuable time is very frequently lost, before any remedial means are had recourse to, for he has this ailing horse removed *at once*, from the heated stable, into a cool, loose box; ties his head to the open door; sees that his ears and feet are warm; gives him some cold water, and medicine appropriate to such cases. This is one of the results of more enlightened times, and proves him to be a man who has had instilled into him the immense value and importance of taking time by the forelock.

The disease is only in its *incipient stage.*

INFECTED STABLES.

It sometimes occurs that we find more disease in one stable than in another; it is then our bounden duty to bring into play all our powers of observation. In the first place we should note whether the stable be properly ventilated, sewers thoroughly cleansed, the stalls properly swept under the manger, and the disinfectant powder used; we should also bring the thermometer into requisition, to observe the maximum and minimum temperature; and ascertain the exact state of dryness, or humidity of the air by means of the hygrometer, and compare it with the hygienic state of other stables.

THE HYGROMETER.

This scientific instrument is for the purpose of indicating the relative degrees of dryness or humidity in the atmosphere, as well as its temperature. There are two perpendicular glass tubes, with a bulb at the bottom of each, containing a quantity of quicksilver. It may very properly be called a double thermometer. There is likewise a graduated scale along the side of each tube. The bulb of one tube is encased in a fine linen or silken bag, one end of which is immersed in pure soft water in a glass cup; the water soon ascends, by the law of corpuscular or capillary attraction, to the top of the bag surrounding the bulb. The evaporation which goes on from the bag upon the surface of the bulb robs the quicksilver of a certain amount of heat, in exact proportion as the evaporation is rapid or slow, and this effect is dependent upon the state of humidity or dryness of the surrounding air. When the air is very dry, the difference between the two thermometers will be very great; if it be moist, the difference will be less in proportion, and if the air be fully saturated, the two thermometers will stand alike.

My experience has fully convinced me that we do not pay that amount of attention to these points which we ought, and which their importance demands. Observe the low, typhoid, lingering class of cases that we have in wet, damp seasons, of unusual duration. I do not know of one single bodily disease that is exacerbated by the opposite state of the weather.

I very well remember, a customer of mine had for many years his stable built immediately upon a large horizontal boiler, that was continually filled with boiling water, to supply steam to work the machinery in a large mechanic's shop, and iron-foundry. I have frequently gone into this stable when the dry hot air was most oppressive, and could not have been at a lower temperature than 90° Fahr. The horse, standing day and night in this stable, except when at work, never ailed anything, nor had any internal bodily ailment, but his fore feet were tender naturally, and this hot floor aggravated the evil.

Wherever it can be done I strongly advise a thorough current of air right through the stable; it contributes largely to its wholesome state, it tends to dry the ground surface and the air, and creates a freshness and sweetness in the place. If neither the thermometer nor the hygrometer, however, will afford you the requisite knowledge of the cause of any extra amount of sickness in the stable, you must ascertain by the sepometer the exact amount in the air of carbonizing matter, which is often the subtle propagator of disease. Compare your observations with other results ascertained in experiments in other stables known to be healthy. By this means you will see your enemy face to face, and be enabled to bring to bear a well selected artillery, the proper discharge of which will prostrate him under your feet.

Having ascertained that the stable is damp and the air foul, as is nearly always the case in new stables, I strongly advise that a stove be fixed in the interior, and a good bright fire be kept burning the whole of the day and let out at night: this may be continued for some weeks if the weather is winterly and damp; the fire draws into it and burns all the raw damp air, the miasma and exhalations from the damp, cold ground, timber in boskins, damp walls, &c., and then when the air is sufficiently dry the fir can be discontinued.

THE SEPOMETER.

This is a most ingenious and scientific instrument, invented by R. Angus Smith, Esq., Ph.D., F.R.S., of Manchester, and promises to be very useful in the hands of the sanitary economist. It is used for the purpose of measuring the gross amount of organic and other oxidizable matter in the air. It is not pretended that it shall as yet show what kind of organic matter is wholesome or otherwise; it has, nevertheless, laid bare numerous facts calculated to stimulate future inquiry, and it is more than conjectured that by it we may even hope to perceive premonitory causes of disease in the atmosphere before they affect the human body. The exciting cause itself exists long before it has been able to take effect, so that useful precautions may be made in time, and an efficient defence prepared.

The instrument is described as follows by the inventor:

"The vessel used is simply a bottle with a perforated stopper, through which pass two tubes, to one of these a stop-cock is attached, to the other a clasp or stop-cock. The standard size proposed is 100 cubic inches, and to this all the experiments have been reduced. The stop-cock is of glass, or hard caoutchouc, which is still better. When the bottle is to be filled with air to be tested, the stopper is removed and the pipe of an exhausting pump is inserted, reaching to the bottom of the bottle. The pump is made like a cylindrical bellows, of about eight inches long when stretched out, and about four inches in diameter, and is compressible into the thickness of about two inches; the sides are made of thin mackintosh cloth. By the use of the pump the air of the vessel is removed and the external air of course enters; a few strokes of the pump are sufficient, *i.e.*, from six to ten. After ten strokes I perceive no change, and am inclined to think that it is an unnecessary number. The test liquid is poured into a graduated tube, or buvette, containing somewhat more than will be required. A portion is then poured into the tube which passes through the stopper, and the stop-cock is opened to allow it to pass; small quantities are used. When it has entered the bottle the liquid is made to spread over the sides, and time given it to be exposed to the action of the air. It is found that in five or six minutes a decided epoch is attained from which to date the comparative action. The first few drops that are poured in will probably be decolorised at once, a few more drops must then be added, if they become decolorised a few drops more must be used, and so on until there is a perceptible amount of colour remaining. When this occurs the experiment is concluded. The amount of the reagent used is then to be read off from the graduated measure, the number of grains gives the comparative quantity at once.

"If the matter in the air be in a decomposing state the colour of the test is rapidly destroyed, but if the matter be not in a state of decomposition the action will be much slower.

"The liquid test is an extremely weak solution of the mineral chameleon, permanganate of potash, or soda in pure water, and is of a reddish purple shade."

The above is extracted from an essay read by Dr. Smith before the Royal Institution of Great Britain, March 25th, 1859. The author had established the correctness of his theory by numerous experiments made upon Snowden, Mont Blanc, St. Bernard, near Milan, on the open sea, in London, Manchester, dwelling-houses, pigsties, &c. In a letter kindly addressed to me to-day, the author says, "I have not yet ascertained the average for stables, but have found some of them three times more unwholesome than others, or in other words, giving out into the air three times more unwholesome matter. The substance used for testing the air and estimating the amount of oxidisable matter is an alkaline permanganate. It has a deep colour, and the amount of the impurity is judged of by the amount of the solution from which one hundred cubic inches of air will remove the colour. There are other and similar substances capable of being thus employed. I hope soon to publish three or four hundred experiments with it. I do not think exact observations will be made by any one except a chemist; but I believe comparative observations for daily guidance may be made by those who are not acquainted with chemistry."

The great difficulty I have always felt has been in seasons of hot sultry weather, when the thermometer has stood from 80° to 90° in the shade. How very pleasant is a breath of fresh, cool air to a poor, suffering patient burnt up with internal fever! You can judge by his very looks how grateful he feels to you when you can provide it for him. It is the instinct of nature speaking to us, and it is our duty to listen to her and help her as much as we are able. I hold it to be a great responsibility to have the life of a valuable animal placed entirely under our care, scarcely second to that of the man whose comprehensive intellect metes out the dose that will certainly save or jeopardize a human life. How often have I had the front of the sick-box degged with salt and cold water on such occasions, aye, the walls, the roof, and even the floor itself, in the hope that evaporation taking place it would to some extent lower the temperature. With this I have conjoined the waving and shaking of sheets to agitate the air. But I now employ another means, which, after many anxious trials, I have to some extent found to be successful, but which is still capable of further improvement.

AIR-COOLING APPARATUS.

This consists of a large shallow tub, say three feet in diameter and ten inches deep, having a round block of wood in the centre, one foot in diameter, which acts as a cone. The space between this and the sides is filled with twenty or thirty yards of inch lead pipe, both ends of which project out of the top of the tub. I connect one end of this pipe with a large pair of portable bellows; the other end I connect with gutta-percha tubing and convey it into the loose-box. To this I attach a rosehead like that of an ordinary deggin-can, and have it placed, pointing upwards, directly underneath and near to my patient's nostrils. I then immerse the whole of my lead piping in the tub in a quantity of artificially made ice or some refrigerating mixtures, such as Glauber salts, nitrate of potash, sal ammoniac and water mixed in certain proportions: the thermometer will fall from from 80° to 15° in the mixture. I then, say in two or three minutes, commence blowing with the bellows, and the current of air driven through the submerged pipe comes out at the rosehead cold enough for any practical purposes. Close to the rosehead it will be 30° Fahr., at six inches off it will be 40° Fahr., at a foot off it will be 50° Fahr., and so on. It may be used for one hour at a time, twice or thrice a day, as the case may require. I am disposed to think that the salts may be evaporated and made serviceable over and over again, but of this I am not quite satisfied.

I have now brought these papers upon ACUTE FEVER to a close. If the ideas I have endeavoured to inculcate, prove of any service to my fellow-practitioners,—and I am fully convinced they will,—then my object has been gained, and I trust that much of the suffering and premature fatality of our patients may be averted, and other practitioners will be enabled to bear witness to the wisdom displayed by our Creator in the bountiful provision whereby nature effects her own repairs. Then will they experience the same emotions that Cowper so beautifully describes :—

> "The heart is hard in nature and unfit
> For human fellowship, as being void
> Of sympathy, and therefore dead alike
> To love and friendship both, that is not pleased
> With sights of animals enjoying life,
> Nor feels their happiness augment his own."

(*To be continued.*)

UNSOUNDNESS IN HORSES.

By A '45 "Vet."

The present paper contains a few hastily penned remarks, which occurred to the mind of the writer after conning over the reports of the trial "*Durie* v. *Hopwood*," which took place at Westminster, February 11th; and a second case which was tried in Dublin on February 13th; and a third between a friend of the author and a veterinary surgeon, which was likewise tried during the past month.

The month of February would thus appear to have been very prolific in producing a difference of opinion *upon facts*. I had always considered that "facts were stubborn things," but it seems that, in these "go-a-head days," facts are *not* to be received as facts; this, at least, is the inference to be drawn from the statements made at the trial of *Durie* v. *Hopwood*, by some of our *scienced* men. It can readily be believed that a difference of opinion may arise upon matters *not* brought before the eye; *that is*, upon things *un*seen. I can also easily comprehend a horse with spavin being sold by a dealer as a *sound* horse; but I cannot so readily understand how two veterinary surgeons can examine an animal's hocks, and the one declare that he is free from spavin, and the other that not only he is a spavined horse, but also that he is lame therefrom. These two opposite opinions are inexplicable; and it is the existence of such a state of things which causes the profession to be looked down upon.

The case of "*Durie* v. *Hopwood*" is so plainly put forward, both in the newspapers and *The Veterinarian*, that I need not occupy any space in further allusion to it, but proceed to call attention to a trial which is reported in *The Newry Telegraph* of February 16th, "*Ormsby* v. *The Dundalk Railway Company*."

It appears a race-horse, named "*Cooper's-Hill*," was sent to Carrickmacross; and, on the journey, was detained by the officials of the railway company; the result of which was that the horse became affected with cold, and was thus rendered unfit to run satisfactorily in the race. The evidence of the two veterinary surgeons I give as reported in the paper:

"Joseph Doyle, examined by *Mr. Rollestone, Q.C.*—Is a veterinary surgeon; had experience of race and steeplechase horses; the detention of such a horse would injure him, and interfere with his running for the time being.

"Cross-examined by *Mr. Armstrong, Q.C.*—Heard the witness, Harte, say that the horse was kept at the railway an hour before starting; the custom was to keep a horse exercising to prevent him from getting cold.

"To *Mr. Armstrong.*—A horse would be more likely to catch cold if he were kept standing in the open air than if he were conveyed in a snug box.

"Edward Montgomery, examined by *Mr. Armstrong, Q.C.*—Is a veterinary surgeon and knows the treatment of race-horses. Never heard of a sudden chill causing diabetes; it would cause diarrhœa. Did not think that the horse sustained any injury; if he were amiss, he could not race as he had done (losing by half a neck only).

"Cross-examined by *Mr. Morris.*—Got his degree in Edinburgh; had no experience of race-horses; did not agree with Mr. Doyle—he was one of the old school. (A laugh.)

"*A Juror.*—What is the difference between the old school and the new?

"*Witness.*—I cannot tell you. (Laughter.)"

Who can wonder at professional men being lightly thought of, and so roughly spoken against, when such things as these appear in print?

The third case, however, is, I think, a far more glaring one than any I have had the good fortune to see reported.

A professional friend was requested to examine a horse for one of his clients, which he did, and pronounced the animal to be *lame* from spavin, and more especially so in the *near* leg. The exostosis upon the near hock was described as being the size of one half of a *hazel-nut.* The hock joints of *both* legs were, he considered, much diseased; almost, indeed, amounting to a state of anchylosis. The horse being rejected by the examiner, he was not purchased by his client. A veterinary surgeon, who does a good deal in the way of dealing, purchased the animal, and soon afterwards sold him to a gentleman for a long price, warranting him sound. In the course of a week or two the horse became unwell, and the veterinary surgeon from whom he had been bought was summoned to attend at the stables. He forgot, however, to attend; and, consequently, my friend was then requested to go and see the horse, which he did immediately. The owner was very irate at the *non*-attendance of the first-named veterinary surgeon, and having subsequently heard some remarks made respecting the horse he had purchased, inquired of my friend, during his visit to the infirmary, if he knew anything about the animal in question. He very properly acted cautiously, and evaded the question, not knowing precisely what its meaning was. At his next visit matters wore a more open complexion, and it was elicited that this horse was the one which had been rejected for spavins some few weeks before. The gentleman became very angry at the apparent deception practised upon him, and resolved at once to *return* the animal. The "knowing one" was not to be drawn into such a scrape so quickly as the gentleman intended, but, with great *sang-froid,* proposed to telegraph for a first-rate Dublin veterinary surgeon to settle the dispute. The gentleman consulted my friend upon the propriety of taking such a step, who hailed with delight the proposal, and advised its being done without further delay. It was done forthwith, and the veterinary surgeon came down from the big city, examined the animal, and was of opinion the horse had *spavins,* and was also *lame* in the near hind leg, &c. The horse was therefore returned, and all was at an end.

It may be said by those who read this report, that it has but little to do with the matter of soundness and unsoundness in horses as a *public* affair. My reply is, that it is a *national* question. We find almost daily men who have been many years practising as veterinary surgeons, both in London and elsewhere, giving opinions diametrically opposite to each other. What is the reason of this? Something is wrong somewhere; echo answers, where? One thing is certain—reform is wanted and demanded. How is this reform to be brought about? One way, easy enough.

What constitutes a *sound* horse? The answer is very simple,—an animal *without* defect. Is such an animal to be found? Very *seldom;* but approaching perfection often. The plan I advocated, some time ago, was to pronounce every horse *unsound* which was found to have blemishes, either natural or artificial; or, in other words, which was affected with spavin, splent, enlarged bursæ, curb, ringbone, thrush, corn, &c., &c.,—in fact, with any disease; and that the veterinary surgeon should be expected to report upon the *nature* of the disease in question, when an animal was produced to him for examination.

In England, I believe, the veterinary surgeon seldom has to examine a horse as to soundness, unless there is some dispute about the animal. In Ireland, every horse is examined *prior* to purchase; which to my mind is the more satisfactory system. Warranties are seldom given except by the very "knowing ones," and who generally have a happy way of evading law proceedings when found out.

I heard some horse-dealers discussing the merits of veterinary surgeons, one day last autumn, at a fair; and they came to the conclusion that people were as safe in buying horses *without* an opinion as they were in having a professional one, as there was so little dependence to be placed upon it,—one veterinary surgeon said yea, the other nay.

Now I think there can or ought to be but one opinion about the soundness of horses. I should imagine that anything—any abnormal deposit or growth, upon any part of the animal frame—should constitute unsoundness for the time being. A horse with cough, for example, is decidedly an unsound one; and yet, how often do we examine horses with cough? In the present defective state of matters relating to the soundness of horses, what are we to do? Why, merely state that, according to *law*, the case is one of unsoundness; but that, in due course, in all probability, the cough, if of recent origin, will, by proper treatment, soon be removed, and the animal become a *sound* one. On chronic cough there ought to be no second opinion.

The plan or system I invariably adopt in the examination of horses is, as I have before advocated, to pronounce *all* diseases as unsoundness, and give the result of my experience as to how far that unsoundness will militate against the usefulness of the animal, or whether it is likely to be permanent or otherwise. I have found, for a long time past, that this system gives more satisfaction to both buyer and seller than the old one; and, until I have a reason to abolish it for a better, I shall certainly continue and at all times advocate it to the utmost of my power. There are many practitioners of long standing in the profession, who seem to treat the matter with silent contempt, being satisfied with things as they are. Doubtless they have their reasons for this, but I would respectfully ask them to aid and assist those who are just entering the profession. We all of us require a reminder sometimes.

USE OF COLCHICUM AUTUMNALE IN CONSTITUTIONAL OPHTHALMIA.—POISONING WITH THE SAME.—POISONING OF PIGS WITH ARSENIC.—POISONING OF CALVES WITH LEAD.—FREQUENCY OF ABORTION BOTH IN COWS AND MARES.

By Evers Musgrove, M.R.C.V.S., Hereford.

I have thought a few unconnected facts, occurring in my practice, might not prove uninteresting to the profession.

I have lately tried the *colchicum autumnale*, as recommended by you in your 'Manual of Pharmacy,' in specific or constitutional ophthalmia. In three cases the beneficial effects were almost magical. In two others, however, but little benefit appeared to result from its use.

As to poisoning with this plant while growing, during the last year three cases only came under my notice. They all proved fatal in a few hours.

Nine pigs were lately poisoned with arsenic, and seven of them died. Assisted by a medical friend, an analysis was made of the contents of some of their stomachs, and satisfactory indications of the presence of this mineral were given on the application of the usual tests for it.

Last spring, a lot of yearling calves were placed under my care, suffering from the effects of lead. They were similarly affected to those recorded by me in the 'Veterinary Medical Transactions,' some years ago.

This district abounds with abortions, more numerous than I like, both in the Bovine and Equine tribe. The latter, I believe, are brought about by the *extreme cleverness* of the waggoners, and the want of command over them by the owners of the horses.

We have no particular epidemic prevailing in this neighbourhood just now; and that scourge of our fine breed of Herefords, black-leg or typhoid fever, was heard but little of last year. I suppose you are perfectly familiar with an absurd method termed "nerving," which is adopted in this and many other districts, as a preventive of the above fatal malady. It consists in the making an incision in the front, and just above the bifurcation of the foot, and removing a portion of ligamentous tissue. Sometimes one, and occasionally all four feet are thus operated upon; and I have no doubt that in the hind limbs the anterior plantar vein is frequently torn asunder. Is it not strange after all our efforts to instil principles of science into the minds of our clients, that many so-called first-rate agriculturists should countenance so glaring a piece of quackery and inhumanity? It is vain to reason with them on the subject.

I have at present under treatment a horse affected with nasal gleet, for which I have been giving the deniodide of copper, and causing him to inhale diluted chlorine. All my other cases are not of more than ordinary interest.

CASE OF PURPURA HÆMORRHAGICA IN A MARE.

By B. B. Aris, M.R.C.V.S., Wellingborough.

The subject of the following case was a valuable mare of the cart breed, five years old, dark-brown colour, with light, clean legs, the property of Mr. Richard Smith, of Wellingborough Mills. She had been purchased by him lately. In the early part of December, 1858, the animal had a severe attack of influenza, followed by abscesses about the throat and submaxillary glands, from which she recovered, and appeared to be going on well until January 8th, 1859, when the owner informed me that the mare's legs were swelling, and he wished me to see her. On my arrival, I found the hind legs swollen, hot, and very painful upon pressure being applied. I ordered warm fomentations, and gave a dose of diuretic medicine.

January 9th.—The swelling has greatly increased, extending up to the mammæ and along the abdomen. There can be no mistake as to the nature of the case, as bloody serum is oozing from nearly the whole surface of the swelling.

The animal cannot be induced to move, and has not lain down during the previous night; yet the appetite is good and the bowels regular, but she has not urinated. Pulse 60.

Continue fomentations, and give Ol. Tereb. ℥iij in the form of emulsion, and Ferri Carb. ʒvj, in a ball every eight hours. I also ordered that she should be fed liberally with crushed or mashed oats, and be supplied with gruel *ad lib.*

10th.—The swelling has increased to an extraordinary extent, and the exudation from the surface of the skin continues unabated; the other symptoms are the same as yesterday. Continue the medicine as before ordered.

11th.—The swelling still increases, and the other symptoms remain much the same; the appetite also is good, and the bowels regular, but she has not been seen to pass any urine. Repeat the Ol. Tereb., and give the Ferri Carb. every eight hours as before.

12th.—This morning the swelling is somewhat less in the hind legs, but it has increased along the abdomen and sternum. The fore legs are also much swollen and painful. Pulse 65. The breathing is slightly hurried, nevertheless the animal feeds pretty well, and the bowels are regular; still I cannot ascertain whether she has passed any urine or not.

Scarify the belly and sternum freely, and persevere with medicine as before ordered.

13th, 9 a.m.—The enlargement has considerably subsided in the hind legs, but the head is now swelling rapidly, and numerous petechiæ stud the Scneiderian membrane. The pulse is quick and feeble, the breathing rather laboured, the appetite has failed, but bowels are regular. Give Ext. Gent. ʒj, Resina Pulv. ʒiij in ball every six hours, and apply hot fomentations continually to the head, and steam the nostrils.

6 p.m.—The swelling has increased since the morning to an alarming degree; so much so that the nasal passages are nearly filled up. The breathing consequently is very difficult and distressing, and no medicine can be given. I felt reluctant, however, to insert the tracheotomy tube, but ordered the head and nostrils to be constantly steamed with hot water, and determined to wait until the morning.

I would here observe that the exudation from the surface of the skin has been gradually subsiding since yesterday morning, although I have scarified freely with a broad-shouldered lancet daily.

14th, 9 a.m. — The swelling of the head is less, the breathing much easier, and the animal seems more cheerful; she can also suck up a little sloppy mash. There is, in fact, a decided change for the better. Sloughing of the skin has commenced on the inner side of the off thigh and in the groin, to the extent of six inches in length and four in width. Dress with a dilute solution of the chloride of zinc, and let Ferri Sulph. ℥j be dissolved in a bucket of thin gruel and left by her, as she appears willing to drink. Also give Ext. Gent. ʒj, et Resinæ Pulv. ʒiij in ball every six hours. This, however, was effected with very great difficulty, the swelling still interfering with the opening of the mouth.

15th, 9 a.m.—The swelling of the head is much reduced, the breathing tranquil, the pulse about 52, the bowels still acting regularly, the appetite good, and the poor animal more cheerful. Give the Ol. Tereb. et Ferri Carb. again, as previously ordered.

16th.—The swellings are nearly gone, but the animal now refuses all food, gruel, &c., and seems to be rapidly sinking. The respirations are between thirty and forty in the minute; the pulse is very quick and feeble, and, as near as I could count it, about 100 in the minute. She is lying down for the first time since the 8th, and makes fruitless efforts to rise. The expression of the countenance is peculiarly ghastly and deathlike; the extremities are cold; and the visible mucous membranes of a dark-lead colour. Death, to all appearance, had fixed his grasp firmly on his victim; but I determined not to lose a chance. I therefore gave her Spt. Ether Sulph. et Tinct. Opii aa ʒiss in a pint of cold water, and ordered the draught to be repeated in an hour, if she were no better.

6 p.m.—The patient is upon her legs again, and much better; the breathing is easy; the pulse 60, and fuller in tone, and the countenance is cheerful; she has also drank some gruel, is disposed to eat a little food, and has passed fæces of a healthy character.

17th.—She continues to improve. Return to the use of the balls, giving them every six hours, as before.

18th.—On entering the box this morning, I found the patient very restless, apparently suffering intense pain; there was no appetite, the breathing and pulse were accelerated, and she was excessively lame of the near fore and hind legs; the knee and hock joints were very hot and tender, and slight increase of swelling had taken place. It seemed to me to be an acute attack of arthritis, from metastasis.

I ordered flannel bandages dipped in hot water to be applied, and dry ones over them, and gave Ether Sulph. et Tinct. Opii aa ℥j in draught every six hours, and Ferri Sulph. in gruel as before.

19th.—She is much better; the appetite is again good; she moves freely, and with less pain. Administered diuretic and tonic medicine.

I noticed to-day a profuse discharge of fluid from the off hind heel, which was very fœtid, and similar to grease.

20th to 30th.—The patient continued to improve daily, and that uninterruptedly, requiring little more than good nursing. The discharge from the heel also ceased, and with the occasional interposition of a dose of tonic and diuretic medicine combined, by the last-named date, she had apparently quite recovered.

It was subsequently discovered that the mare was pregnant, and she brought forth a small but very healthy foal.

ON FRACTURE OF BONES WITHOUT IMMEDIATE DISPLACEMENT.

By F. Blakeway, M.R.C.V.S., Stourbridge.

In the *Veterinarian* for February last, I see there is a case of fracture of the humerus, by Mr. W. Field, jun., which fracture, I think, there is no doubt occurred during the chase, the bone becoming displaced when the lameness was evinced.

I have recorded a case of fracture of both ossa suffragini in the Journal for 1855, page 260; also another case of fracture, at page 275, bearing upon this point.

A short time since, I met with an instance of fracture of the head of the humerus, caused by a horse galloping against some iron fencing, displacement not occurring till several days after the accident. My observations have led me to believe that we get occult lameness from fracture, unaccompanied with displacement of bone, more frequently than we are apt to imagine.

CASE OF VENTRAL HERNIA.

By E. J. Bovett, M.R.C.V.S., Bridgewater.

January 21st, 1859.—I was hastily summoned to see a grey cob, the property of Mr. C. Kirk, horse-dealer of this town, which was said to have staked himself, and that his intestines were protruding, larger than his, the messenger's head. On my arrival I found a jagged wound to exist in the near flank, from which about a foot of the colon protruded. I was informed the horse was "all right" the night before, but had been found in the above state by the groom in the morning, who thereupon hurried off for me.

On examining the stable I perceived that the stall-post had become rotten at the bottom, and that a shorter one had been driven into the ground, and then nailed to the original post, about eighteen inches from the bottom, as a stay. The nails had split the short post, and on a horse leaning against the stall-boards, he would force the old, and one half of the short post out of the perpendicular, leaving the remaining pointed half of the shorter one sticking up. On this my patient had laid, and struggled no doubt, for some time, as I found a portion of omentum, about the size of my hand, adhering to the top of the post.

I at once cast the animal, which forced the intestine out to double the size it was when he was standing; and having fixed the near hind leg to a bar, driven into the ground behind, I proceeded to examine the parts. I found that the external wound in the skin of the flank did not correspond to that in the abdominal muscles, which was in a line with the costal cartilages of several of the false ribs, and through it the intestine had escaped. This circumstance, although advantageous after I had reduced the hernia, I found added greatly to the difficulty of passing the sutures; in fact, I could not pass the needle from without inwards, without great risk of piercing the intestine, from the respiratory movements and continued straining of the patient. To obviate this I passed my hand—holding the threaded needle near its point—under the skin, and then through the wound in the muscles into the abdomen, and thrust the needle outwards through the whole of the abdominal parietes, and passing it between the cartilages, so that the stitches might have a firmer hold. I then removed the needle, and having placed a bur of leather on the wire, I tied a knot in it, drawing it tight by pulling the other end. I proceeded in this manner until I had perfectly reduced the hernia. I poured a little Lin. Tereb. into the wound, and then let the horse up. I then folded a small rug several times double, and having dipped it into a pail of cold water placed it over the seat of injury, securing it in its position by several rollers. After which I placed the horse in a loose box, tied him short to prevent his lying down, and gave him

> Ol. Lini, ℥xij;
> Tinct. Opii, ℥j, in haustus.

I ordered a spare diet of bran, with a few carrots, and directed the rug to be kept constantly wet with cold water.

The owner being naturally anxious about the case expressed a wish for a second veterinary surgeon to be consulted, to which I consented, and Mr. Joseph Gibbs, of Taunton, was sent for. On his arrival, seeing the horse tranquil, and the wound closed by the sutures, as a matter of course he did not meddle with it, and having expressed his opinion to be in coincidence with my own, he left.

In the evening, perceiving a swelling of the scrotum and surrounding parts had commenced, I gave a diuretic ball.

22d.—The horse is tranquil, the pulse is slightly accelerated, and the scrotum, legs, and abdomen swollen. He eats what is given him, but has a difficulty in passing his fæces. Back-rake, and gave an injection of warm water; also,

> Aloës Barb., ʒij;
> Pot. Nit., ʒvj, in bolus.

23d.—The animal is much the same as yesterday, with the exception that the swellings have enormously increased. Freely scarify the scrotum and abdomen, and give

> Aloës Barb., ʒj;
> Pot. Nit., ʒiv, in bolus, mane et nocte.

A few crushed oats may be allowed with the bran as diet.

24th.—The patient continues much the same. Cautiously remove the rollers and rug; cleanse the wound, the discharge from which is very fœtid, with warm water, and remove the stitches from the skin of the flank. On doing this I found a large slough, the size of a man's hand, coming from the direction of the scrotum. The wound forward was also in a sloughy state. Dress the wounds with creosote liniment and replace the rug, which keep constantly wet as before. Give Ol. Lini. ℥xij in the morning, and a diuretic ball in the evening.

25th.—Cleanse wound, and repeat the dressings.

26th.—Give Ol. Lini. ℥xij, and repeat the dressings as before ordered.

27th.—Repeat the dressings, and give,

> Aloës Barb., ʒj;
> Pot. Nit., ʒiv, in bolus.

28th, 29th.—The dressings were repeated.

30th.—I was surprised to find the horse nearly blind in both eyes, from a severe attack of ophthalmia. He has since gone quite blind. This appeared to me the more singular, when I took into consideration the medicine he had had, and the depletive discharge which had come from the wound, coupled with a diet just sufficient at first to support life, and which, up to this time, had been but little increased. Doubts have arisen in my mind from this circumstance, as to ophthalmia being in reality an inflammatory disease.

31st.—One of the burs of leather was found to have been rubbed off by the shifting of the rug; but as adhesion had now taken place between the skin and abdominal muscles, I removed most of the sutures, fearing the free ends of the wire might possibly injure the intestines. The horse was let loose and the dressings were continued.

By February 15th, the healing process had made considerable advance, but being now somewhat sluggish, I applied a blister over the injured parts, which had the desired effect; and by March 1st the patient was discharged.

I may mention, tbat the horse from having become blind was sold, and has since been at work in a brick-yard in this town. A small protrusion is still observable, of about the size of one half of a goose egg, cut longitudinally.

I have mentioned creosote as a remedial agent, and I cannot speak too highly of it in cases where wounds are fœtid, or where unhealthy sinuses exist. This agent was first named to me by Assistant-Professor Varnell.

SINGULAR CASE OF RUPTURED STOMACH.

By the Same.

July 27th, 1859. About two o'clock this day my attendance was requested to a draught colt, four years old—I say colt, for he had not been broken—the property of K. M. King, Esq., of Walford. The animal had been at pasture, at West Oyse, where he still was. I was informed by the messenger that, a fortnight since, he had fallen off a bridge connecting two fields together, into a ditch, and that instead of proceeding down the ditch he had turned round, and crept through the archway, which no one could have supposed possible even for a twelve-hand pony to have done, much less a powerfully built draught horse, at least sixteen hands three inches high, and in full condition. After a little trouble he was got out of the ditch, when there was apparently nothing amiss with him, except a few slight abrasions on the body. For a day or two afterwards he was a little off his feed, and went somewhat stiffly; but still not more than could be expected. On the 26th, it was remarked by the farmer, on whose land he was grazing, that he filled himself and appeared to have quite lost his stiffness, being playful with his companions.

Early on the morning of the 27th he was found rolling about in pain, and to be covered with a profuse sweat. A messenger was immediately dispatched for a neighbouring practitioner, who promised to attend at once, but failing to do so after repeated messages, my aid was requested.

On my arrival, I found the colt standing in a fixed position, and fluid ingesta to be flowing in small quantities from both nostrils and mouth. The extremities, and greater part of the surface of his body was deathly cold; the pulse was imperceptible at the submaxillary artery, and the breathing rapid and laborious—in fact he was dying. My prognosis rather astonished two or three farmers who had come to have a look at him, and who pronounced him "better than he was in the forenoon, as he was *so much easier*." This, I explained, was the result of mortification, and whilst I was speaking, the animal staggered forward, and died immediately.

Diagnosis.—Ruptured stomach.

Post-mortem examination.—A quantity of fluid ingesta was found in the abdomen, the viscera generally were, however, healthy, with the exception of the duodenum, which was partially strangulated by the peduncle of a fatty tumour, the size of one's fist, which had become twisted around it.

On examining the stomach, I found the outer coats to be ruptured throughout nearly the whole length of the great curvature, and in the centre of the lesion an entire rupture of *all* the coats to exist of a size just sufficient to admit my little finger. My conviction was, that the colt had ruptured the outer coats of his stomach when he went through the archway, and that whilst freaking and kicking about with his companions on the evening before his death, the stomach being full at the time, the rupture became complete at the place I have named. There was a quantity of plastic material in the ruptured portion, showing that reparation had commenced.

CASE OF CHOKING IN A CAT WITH A NEEDLE AND COTTON.

By the Same.

August 13th, 1859. Mr. T—, of this town, requested me to see a favorite cat of his, which he fancied had the influenza, as his wife and daughter had been the subjects of this affection, and he thought it probable that the cat might likewise have contracted the malady. The animal had refused all food for two days, and could not bear to have his throat touched.

On examination I found the throat very sore, but could discover no foreign agent in the œsophagus by *external manipulation*, although it was my opinion that something was fixed within it. I thereupon carefully explored the œsophagus with a pair of bow forceps, to ascertain if a fish bone or any similar thing had become lodged there. On withdrawing the forceps I saw something in their hold, which at first I thought was a *filaria bronchi*, but on further examination I found it to be a piece of sewing-cotton. Search was again made, and a piece more cotton detected. On again opening the mouth I saw something beyond the dorsum of the tongue, which appeared at first sight to be a horse-hair. The idea of hydrophobia suggested itself to my brother, who was holding the cat, finding such substances in this situation. On grasping the supposed hair with the forceps, it turned out to be a threaded needle, which had absolutely become blackened by retention and partial corrosion. A tablespoonful of castor oil was subsequently administered, and a few days afterwards I was informed that pussy was as well as ever, to his owner's high delight.

CALCULI IN THE SHEATH AND URETHRA OF A DONKEY.

By A. J. Lang, M.R.C.V.S., Taunton.

The accompanying three calculi were taken from a donkey, the property of a gentleman residing at North Taunton, Devon. The animal was brought to me on October 20th, 1859. He was said to have been ill for several days, but the symptoms were now every hour becoming of a more aggravated character. When I saw him he was not unlike an animal attacked with violent spasmodic colic, excepting that the pulse was increased, and numbered 70 in the minute. He frequently put his nose underneath the flank, and often made attempts to urinate, but only a few drops of urine were voided. On being told that he had done so several times during the attack, my attention was consequently directed to the urinary organs. The parts presented the following appearances:—perineum much distended, sheath slightly swollen, and upon passing my fore-finger into the latter, I distinctly felt the largest of the calculi, its conical part being presented anteriorly. It however resisted all my endeavours to extract it, both with my fingers and the forceps. In using the latter, as you will notice, a portion of the calculus was broken off. I thereupon made an incision, about four inches in length, along the inferior part of the sheath, when the concretion was easily enough withdrawn. Behind it was lodged a large quantity of sabulous matter, amounting to about three-quarters of a pint, which tended firmly to impact the calculus as in a sac, the walls of which were indurated, as if the concretion had been contained in it for some time. Probably it had been passed out when of a smaller size, and gradually became larger by molecular aggregation. The penis was very much retracted within its sheath, and could with difficulty be brought forward, and when it was, to my astonishment I found the two smaller calculi in the urethral canal, as well as another about the size of a large pea, which I am sorry to say is lost. Upon the whole of these being removed, a large quantity of urine was voided, and the animal became free from pain. Two sutures were passed into the wound, and a diffusable stimulant was given. The wound was subsequently treated in the ordinary manner.

The day after the operation the sheath was considerably swollen; to which warm fomentations were therefore applied. The animal appeared easy, and ate cut grass with avidity; on which food he was kept until discharged.

The second day he appeared to be just the same, excepting that a healthy flow of pus had taken place from the wound.

The fifth day the swelling had decreased; union of the edges of the wound had taken place; the health of the animal had greatly improved, and he continued to do well until discharged, which was on the tenth day after the operation.

About a month afterwards I saw the owner, who said that the animal was better in health than he had been for a long period prior to the operation as he then was constantly having, what he thought to be attacks of colic, but these, no doubt arose from pain and irritation caused by the presence of the calculi, which must have been some time forming.

ANALYSIS OF THE CALCULI.

[The *weight* of the largest of these concretions is ℥iij ʒij; its *shape* that of an imperfect cone; its *colour* light grey; its *surface* smooth; and *smell* highly urinous.

A section being made of it, it was found to be made up of layers superposited upon each other, and alternating towards a common centre, which consisted of an aggregation of small crystals.

A fragment under the blow-pipe blackened, exhaling the odour of animal matter. The flame being urged it became white, and lost half its weight. In dilute hydrochloric acid this underwent perfect solution, with much effervescence, and from the solution oxalate of ammonia threw down an abundant white precipitate.

A portion unburnt similarly conducted itself in dilute acid, but a quantity of flocculent matter subsided, which under the microscope was found to consist of epithelial scales, among which were crystals of carbonate of lime and the phosphates.

The inference is clear. The composition of the calculus is carbonate of lime, mixed with the phosphates, and animal matter.

The two smaller urethral calculi were of a very irregular form, and weighed together only one drachm.]

Facts and Observations.

M. BATKA ON QUINIO OR ROUGH QUININE.

A substance is known in the Brazils under the name of quinio, which is extracted from the fresh bark of the cinchona by lime, and then from the lime by alcohol. It is very rich in quinine, and it is only necessary to boil it with dilute sulphuric acid to obtain an abundant crystallization of pure sulphate of quinine.

Quinio is a yellow body of a resinous appearance and of a bitter taste. It is insoluble in cold and but slightly soluble in boiling water. It is very soluble in alcohol and ether, separating partially from the latter by exposure to the sun. Water precipitates the alcoholic solution. It is almost entirely soluble in weak sulphuric acid, from which soda precipitates it of a dirty white colour, the precipitate assuming the appearance of a resin. A beautiful white sulphate, however, may be prepared from it.

Quinio is free from cellulose; when heated it gives off an odour something like cinnamine; and burnt, leaves a light residue of carbonate of lime. It resembles a good deal the quinoidine of Liebig, but is much purer than the quinoidine of commerce.—*Chemical News*.

POISONING BY ARSENIC.

Dr. Blondlot has communicated, in a paper to the Paris Academy of Sciences, a fact which may be highly valuable in cases of poisoning by arsenic. After numerous experiments, he has come to the conclusion that the slightest quantity of greasy matter in contact with arsenious acid will reduce its solubility to about one-twentieth of what it was before. This explains at once why, in certain judicial investigations, arsenic has been sought for in vain in the liquid portion of the food contained in the stomach, when the food partly consisted of fatty substances, such as broth, milk, &c. It likewise explains how arsenious acid, taken in powder, may sometimes have sojourned a long time in the stomach before it produced any deleterious effect, since in such cases its action was hindered by the presence of fatty substances. Jugglers have been seen swallowing arsenic with impunity, because, according to Dr. Blondlot, they had previously taken the precaution to drink milk and eat fat bacon. Hence it follows that in cases of poisoning by arsenic, fatty substances may be administered as real antidotes, capable of suspending the action of the poison for a considerable time, until more radical means of effecting a cure can be applied.—*Medical Times and Gazette.*

PURIFICATION OF CASTOR-OIL.

When castor-oil has become thick and rancid by long keeping, it may be purified, according to M. Parnesi, of Turin, by mixing 1000 parts of the oil with 2 of animal charcoal and 10 of magnesia, stirring the whole frequently together for three days in a temperature of from 68 to 70. After which it is to be passed through a filter.

PREPARATION OF MERCURIAL OINTMENT.

M. Delarue considers the presence of water in lard materially interferes with the making of mercurial ointment. He therefore heats the lard up to 125° or 130° C., so as to expel the water from it, and sets it aside for three days. After which he mixes the whole of the mercury with one third of the lard, and then gradually adds the remainder. Subsequent trituration for two hours suffices to perfect the making of the ointment.

VIRUS OF THE VIPER.

M. Dumeril contends that there is much similarity between the action of woorara and of the poison of the viper. The animals bitten by a viper are immediately paralysed in motion and sensibility. He also thinks that insects which lay their eggs in the bodies of other animals have equally the property of dulling the sensibility of the parts in which they deposit them.—*Medical Times and Gazette.*

PRIZE QUESTIONS OF THE BELGIAN ACADEMY OF MEDICINE.

The questions for 1860 are—1. The causes, symptoms, character, and treatment of the diseases peculiar to the workmen employed in the Belgian collieries. (A medal of 600 francs value and 1600 francs in money.) 2. Examination of the value of the various remedies for Asiatic cholera. (Medal of 800 francs.) 3. *Indicate the nature and the etiology of the morbid conditions in the horse known under the vague term "influenza." Particularise the relations which these may have with typhoid affections in man, and describe the most appropriate treatment.* (*Medal of* 1000 *francs.*) For 1861:—1. A critical appreciation of the services which Belgian Practitioners have rendered to Medicine, and the branches of study relating to it, during the 16th, 17th, and 18th centuries. (Medal of 1000 francs.) 2. Determine, by new experiments on the mammalia, the relations between the oxygen absorbed by the lungs and the carbonic acid exhaled by the skin; and particularise the influence exerted upon this gaseous exchange by rest, motion, temperature, and food. (Medal of 1500 francs.) 3. *Display the actual state of our knowledge respecting the diseases of the nervous system of the horse, especially dwelling upon their differential diagnosis.* The essays to be forwarded to the Secretary of the Academy by the 1st of July of the respective years, excepting those sent in for the first question, which must be delivered before the 1st of April.—*Medical Times and Gazette.*

DETECTION OF BLOOD STAINS.

In medico-legal inquiries, it is often of the utmost importance to determine the character of red spots on linen or steel, supposed to be blood stains. M. Brucke has recently published the following method, as being superior to those in common use:—"Wash the spot with cold distilled water. To the reddish liquor thus obtained add a solution of sea salt, and evaporate to dryness, *in vacuo*, over a vessel containing sulphuric acid. Examine the dry residue well through a microscope, in order to verify whether it contain any matter that might be mistaken for Tetchmann's crystals; then add a little highly concentrated acetic acid; evaporate again to dryness; moisten the residue with water; and then, if there really be blood in the spots, the microscope will reveal unmistakable crystals of hæmatin."—*Lancet.*

PRESERVATION OF BODIES FOR ANATOMICAL PURPOSES.

Professor Budge has found that bodies may be admirably preserved for a long period of time, whether for anatomical purposes, or for courses of operative surgery, by injecting into the carotid a preservative fluid composed of pyroligneous acid and sulphate of zinc, of each from eight to twelve drachms to seven pounds of water. Bodies thus injected have kept during eight weeks of intense summer heat, without giving rise to any putrefactive smell, the muscles retaining their red colour, and though a little softened, admitting of good dissection. The injection does not prevent the subsequent injection of coloured matters; and the knives used in dissection scarcely suffer at all.—(*Virchow's Archiv*, Band xv, p. 172.)—*Medical Times and Gazette.*

THE VETERINARIAN, APRIL 1, 1860.

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

NECESSITY OF LEGISLATIVE ENACTMENTS TO LIMIT THE SPREAD OF CONTAGIOUS DISEASES AMONG CATTLE.

It has often been said, and with much truth, that ours is a country which differs essentially from almost every other in the fixed determination of its people to carry out their preconceived opinions, despite all opposition, come from whom or whence it may. Self-will, doubtless, has an existence among all peoples; but it almost as universally wants power of acticn, and, consequently, like most inert matter, thus circumstanced, it corrodes and rots within itself. Hence we see Governments readily usurping the place of the popular will, and overawing those for whose benefit they alone should exist. Did we find despotic power rightly wielded, there would frequently be much which we could admire in its acts; but so seldom is this the case, that despotism has become a word so hateful to an Englishman that he would expunge it, if possible, from his vocabulary, and replace it by his ever favorite term—liberty.

It may be asked, however, whether individual independence, self-will, and determined resolves for freedom in everything, are not often the cause of delay, as well as of suffering and loss, to those who insist on their rigid adoption? A government resting on such a basis is too frequently rendered powerless for good, and cannot take the initiative in that which it believes to be for the public weal. It becomes, likewise, an excuse for the "do nothing system" which we find to prevail in high quarters, and is the parent of official routine and red-tapeism which encumbers everything ministerial.

To accomplish a desirable object it is therefore generally necessary to first *convince* the people for whose benefit it is chiefly intended. This done, all is secured. To the task of endeavouring to convince the agriculturists of the necessity of legislative enactments for ascertaining the amount of loss the country sustains from preventible diseases, as well as from the deaths of its cattle and sheep, we now apply ourselves, but with what success remains to be seen.

Few, we fear, have ever thought rightly of this subject, and have consequently but little idea of the enormous sums which are thus annually lost to the country. Every ox, sheep, and pig, dying from disease, is just so much food of which the population are deprived, and therefore tends to raise the price of the poor man's pound of meat. If agriculturists are jealous of official inquiries into the quantities of corn which are gathered into their garners, surely they would not, nor ought to be of the *losses* that they sustain from the inroads of disease among their flocks and herds.

Let such returns as these be made, and enormous benefit would soon result to *themselves* as well as to others. The necessity for sanitary and legislative regulations would be too apparent for any government to refuse their adoption. Contagious diseases would be checked in their career, and veterinary science become elevated to its true position and use in arresting the progress of destruction. To take but one disease in illustration, *namely*, pleuro-pneumonia,—the present pest of our herds. No correct opinion can be given even of the number of animals which are the subjects of this malady at any one time, nor of its location; but still we are continually hearing of its ruinous consequences to individuals On all sides we are asked, what can be done to cure the disease? and gloomily are we looked upon when we reply that, as a rule, it is incurable, but that it can frequently be prevented, and would be so, were sanitary measures adopted by the legislature to limit the contagion.

That the spread of this disease is due to its infectious nature few will be found to dispute, and this without lessening any opinion they may entertain of the influence of *secondary causes* in its production. The outbreak of the malady in Australia, clearly traceable as it is to the introduction of a diseased animal, is of itself sufficient to prove this position.

It will be remembered that about a year since we contrasted the state of the sanitary laws enforced on the continent as applied to pleuro-pneumonia with those existing here, and showed the impropriety of our being left without protection. It is true that an attempt was then made to introduce a bill into Parliament to provide for this defect, but to the surprise of every one it was withdrawn, after evidence had been obtained from both practical agriculturists and scientific men, which proved beyond all disputation the necessity of the measure. We are free to admit that the question is surrounded with difficulties, but we cannot therefore find any justification for our making no effort for its removal. Soon we hope to see agriculturists move in this matter, and do something beyond the recounting of their losses from extensive ravages of disease among their cattle and sheep over the market table.

Let steps be taken to register these losses, with a view to their being made public. Surely no practical difficulty lies in the way of this being done. Once accomplished this, and all the rest will certainly follow. The governmental part of the machinery is at hand, for the Board of Health still exists, although under a new name and with somewhat modified functions. To this could easily be added a veterinary section, for the issuing of proper forms, receiving returns, and the carrying into practice such sanitary measures as are indispensably necessary to preserve the health of those animals which furnish food and clothing to our people. To this subject we shall, at some future time, return.

Extracts from British and Foreign Journals.

PHYSIOLOGICAL CRUELTY.

To the Editor of the 'Medical Times and Gazette.'

Sir,—I will thank you to insert in your next number, the following strange and unheard-of feat, performed by a zealous experimentaliser in the north of England. I cut the paragraph from a newspaper which I accidentally glanced at when visiting a patient; and I send it to you in the hope that it may meet the eyes of the officers of the Society for the Prevention of Cruelty to Animals, for it strikes me they cannot have recorded in their sad annals a more shocking case of senseless cruelty.

Is it not sickening to hear this ingenious tormentor saying, "I had them fed regularly every four hours, though for the first day the crow ate nothing"?

I am, &c.

March 13, 1860. Misericordia.

EXTRAORDINARY EXPERIMENT AND MEDICAL CRUELTY.

Mr. Wainde, surgeon, of Kirby Moorside, writes to the *Scarboro' Mercury*:—"Having noticed the rapidity with which wounds grow up and heal in the lower classes of animals, I have often revolved in my mind the possibility of uniting, by keeping in strict approximation the raw surfaces of two animals not only of different species, but of totally different genera. With this view I have, at various times, endeavoured to produce adhesive inflammation between two animals, by removing the whole of the true skin on a part of each, equal in extent, and then keeping the denuded parts in approximation by means of bandages. In the last experiment of the kind that I made, I was eminently successful. Having had some time in my possession a rat, which had not quite attained its full growth, and which was to a great extent tamed, as it would permit any one to approach and caress it without any signs of fear, I determined upon making a final attempt, and I was confident of success. My next step was to procure another animal with which to unite it; and for this purpose I obtained a full-grown crow. Having removed the skin from the back of the rat, I with a scalpel removed a slice of the subcutaneous tissue, about two lines in thickness, so that the mouths of the minute blood-vessels might be opened. I then took off the feathers from the breast of the bird, and performed precisely the same operation, with regard to the size and thickness of the piece of flesh removed, which was one of an oval form, and about two-and-a-half inches long, by one five-eighths broad, or thereabouts. After sponging the parts with a little cold water, I placed the crow with its legs across the back of the rat, and, by means of a long narrow bandage, kept them in such a position that they could not retract the incised surface in the least. I had them fed regularly every four hours, though for the first day the crow ate nothing. At the end of sixteen days I removed the bandages, and was delighted to find that the whole surfaces were united, except at the extreme edges of the wound, the skin was beginning to unite. They now present a most peculiar appearance, and do not seem by any means disposed to part company. The crow scarcely possesses power of wing sufficient to lift its companion far from the ground, though it flutters along at the height of a foot or two, for several yards. Should any one be sceptical as to the facts, I should have great pleasure in showing them the subjects of the experiment, if they would make it convenient to pay me a visit."

[We have republished this article as our sentiments fully accord with those of "Misericordia."]

Translations and Reviews of Continental Veterinary Journals.

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

Annales de Médecine Vétérinaires, Bruxelles.

MEDICAL DOCTRINES, AND THEIR INFLUENCE ON VETERINARY MEDICINE.

By S. Verheyen, Veterinary Inspector to the Army, &c.

REVIEW.

This is a work of deep research, but nevertheless affords very little for extract. Its history is divided into the following epochs; antiquity, middle-age, and *renaissance*—the present time. In the course of the first two periods medical science only existed in embryo. From time to time, but at long intervals, a step was taken in advance, but this was soon followed by a retrograde movement. It was only during the third period that its aspirations to the title of Science were manifested.

In all countries and in all ages epizootics have been considered as public calamities. One fact leads us to suppose that the priest came to the assistance of the flocks. The tomb of Podalyre, son of Esculapius, was the object of veneration to which the herdsmen went in pilgrimage when disease ravaged their flocks. The priest did not neglect to collect observations* of which philosophy profited when medicine left the temples and formed an intimate alliance with philosophy. Pythagoras and his school effected this revolution, from which time medicine, like philosophy, became of scientific culture. Passing the philosophy of Pythagoras and the Asclepiadian school, of which Hippocrates was the illustrious representer, it was thought that the liquids were more susceptible of alteration than the solids, and pathologists were disposed to seek the cause of disease in these alterations. This school replaced the four elements of the Pythagoreans by the four cardinal humours—the blood, the mucus, the bile, and the atrabile—the mixture of which formed the living body. The predominance or disproportion of one caused malady. A cure resulted from the re-establishing of their proportions. Thus the most ancient system of medicine was not only material but humoral, and differed only from the Pathagorean by the form, disease derived its origin from *the materia peccans, crudem et intemperatum*, which the sick body was to elaborate. Hippocrates distinguished three periods in the malady, as the crude, the coction, and the crisis. The innate caloric produced the coction, and this brought about the crisis, which was ordained by Divine

* The works of Homer give an idea of medical science at the beginning of Grecian civilization, during the sacerdotal epoch. The effect of the wounds received by the Greek and Trojan heroes are described with a correctness which leaves nothing to desire even in our time. The mortal and curable wounds are described according to the several regions. Achilles struck Hector on the inferior part of the throat, the cut did not divide the windpipe, and Hector was enabled to answer a few words. Homer knew then that the trachea was the conductor of the voice, and that if it had been interrupted the voice would have been lost. Antilochus cuts through the vein of the neck of a Trojan, who dies immediately. Achilles, with a blow of the sword, separates the head of Deucalion, and the marrow shoots out of the vertebra. A thrust of a lance penetrated between the head and the neck, the wounded man fell down dead with his face on the ground. Paris shot an arrow at Nestor, it glided off and struck one of the horses at the point where the mane is attached to the head; all wounds at this region, says the poet, are mortal. But in these cases the phenomena are not the same; in the first case the weapon touches the spinal chord and death is instantaneous; in the second the arrow enters the cranium, and the animal gives a leap from the pain and rolls on the ground.

power and the providential wisdom of Nature. The day on which the morbid matter arrived at the period of coction became the critical day. The quarternary period, or four days, was considered the most perfect: then came the ternary, or three days, while the addition of these two periods formed the septennary, or seven days, which was considered the most perfect. Aristotle, the chief of the peripatetic school, gave a fresh impulse to the science of observation, and an impression, which has never been effaced, by his famous axiom, that all ideas are derived from the senses. He showed the necessity of gathering the facts before submitting to theory, thus uniting the example to the precept. During the space of 2000 years the name of Aristotle has been as if surrounded by a divine halo, and to this day his precepts in matter of observation have lost nothing. The philosophy of sensations, or empiricism, of which Aristotle laid the foundation, flourished in a celebrated school at the most brilliant epoch of the human history; but the school of philosophy of Alexandria had its day, and medicine shared the fate of philosophy. The reformers' upset the existing system, and reconstituted the art with new elements. It took the name of empiricism, and from this was derived the sceptic philosophy. The empiric school, considered as the unique source of medical knowledge, excluded all theoretical reasoning. Celsus took up this reasoning of the precept of empiricism in the following phrase: "Morbis non verbis, sed medicamentis sanare. Non interesse quid morbum faciat, sed quid tollat." The last representative of ancient medicine was the illustrious Galen, the most renowned amongst the eclectics. His mind was of a critical turn, conjoined with vast erudition; he united all the doctrines of his predecessors into one nosological system. His general pathology is distinguished by accurate and precise definitions; it developes ideas, some of which have been preserved to the present day; he defines health as the regularity of all the vital functions, the indispensable condition of which is the integrity of the structure of the parts, and the exact proportion of the solids and liquids. These conditions are not better expressed by modern authors. Malady was defined by him as the opposite of health; it was an abnormal state owing to an altered structure, which in its turn altered the function. The moderns have borrowed this definition of Galen without perceiving that it contained an error. Disease is not a *state*, but an *act*.

Christianity introduced a new state of civilization, but it had to sustain many struggles, both moral and material.

Ideas had to be modified before the world could understand the doctrines of Christ and their beneficial consequences. In the East man had lost even the instinct of the study of nature; necessity had preserved the tradition of the medical art, which made no progress; on the contrary, it retrograded. Galenism degenerated. It was no longer transmitted in its purity—the key of the language in which Galen wrote was lost. The translations, the commentaries, the Arabianism, altered and disfigured his works, which thereby lost the stamp of genius which Galen had impressed on them. The neoplatonitians and the astrologers caused medical science to make an enormous retrograde movement; cabals and the subtleties of the scolastics transformed Galenism so throughly that it became a mere manual art—a gross and brutalising empiricism.

If the life of man, the lord of the creation, was thus jeopardised by ignorance and superstition, what could be expected of veterinary medicine, which had been left in its infancy, and to which its elder sister, human medicine, had held out no helping hand when better able? The collection of Greek Hippiatres, the Geoponics, which the Emperor Constantine has caused to be handed down to posterity, only contain a few rare symptoms which are not very intelligible, and the majority of the remedies to be applied to these symptoms, are not anterior to the third century. Some fragments of these collections show that the medical men of the day were as ignorant of medicine as applied to animals, as the Hippiatres were of that of man. On some points the latter were more advanced than the former. They had recognised the contagious nature of diseases, and prescribed measures to prevent it. The epidemics and epizootics were designated by the Greeks under the common name of λοιμὸς. In the pestilential fever or λοιμὸς of the horse, Apsyrtus recommends the separation of the sick animals from the healthy, and the isolation of the former in convenient pastures. If we abstract certain measures which were taken for the purification of the air, we find no trace in antiquity of any recommendation as to the sequestration or isolation of any individual affected with contagious disease. Cælius Aurenialus even rejects the advice of his contemporaries to sequester the leprous, for the simple reason that medicine could not act contrary to humanity (*quod a de alienum humanitas approbat medicinæ*). Flocks and herds have thus enjoyed a protection against contagion before the human race. The Greek hippiatrists were acquainted with the section of the muscles. Pelagonius describes those of the tail thus: *Summum* *articulum in spinam reductum ad dimidium usque rescindes, carabisque ne commissuram ampates.* To them also belongs the priority of the immovable bandage in fractures and dislocations. Hierocles prescribes the fusion of a mixture of resinous matters, and terminates the chapter by the following words: *Hoc medicamentum linteo agglutinatum adhibere solet.* The empiricism of the Roman agronomists who preceded the Greek hippiatrists was more enlightened. Celsus has published a work on rural economy which has not reached us, and it is said that that of Columella is only an abbreviated copy of it; and, in fact, between the contagious malignant fevers in men described by Celsus, and those in domestic animals by Columella, there is more than one analogy. In the second century of the Christian era, veterinary medicine by men specially devoted to its practice, was established in the Roman empire, and it is supposed with some distinction, as Galen lauds two veterinary surgeons, Vænetus and Præsinus, *Studiosi sectatores equorum stertoræ,* whose good practice he recommends not to be neglected by the Roman doctors. That human medicine had considerably excelled the veterinary art we find in written documents; the treatise of Publius Vegetius Renatus, who lived in the fourth century, is a proof. Vegetius was acquainted with the writings of the Greeks, his predecessors; he was more advanced than they, and his premises give evidence of a scientific work. He says that anatomy is the base of the healing art, but his anatomy is far below that of the human doctors of the time, and his practice is on a par with the empiricism of Apsyrtus. He also seems to have had some notions of methodism, of which traces are found in his book (Sanguinis, per quam constricta minutio laxantur.—Ustio Cauterii, per quod laxata firmantus). Vegetius was contemporary with the invasion of the Huns; he describes their horses, and also mentions the pesta bovina which ravaged the Roman empire, and of which he seems to have perfectly seized the contagious characteristics. He says, in speaking of the sick oxen, *Namque inficiunt bibendo fontes, pascendo herbas, stabulo præsepia.**

* The first invasion of the cattle plague in Belgium, and other contiguous countries, is reported to have occurred in 1711. If we compare the one of the 4th century with those of a later date we cannot fail to recognise its geographical progress as well as its perfect identity; all originated from the steppes of Southern Russia, whence the Huns came, and the malady followed in their track. Two contemporaries, St. Ambrose, and the poet Severus Sanctus, offer us good evidence, the former writes: *Hunni in Alanos, Alani in Gothos, Gothi in Taifalos et Sarmatas insurrexerunt, nos quoque in Illyrico-exules patriæ, gothorum exilia fecerunt et nondum est finios quæ omnium esset fames* LUES *pariter hominum cæterique*

The treatise of Vegetius was the last sigh of early veterinary medicine. A thick veil was thrown over it, it became surrounded on all sides with prejudice and ignorance, the treatment of sick animals was left to the lowest of society. To show the contempt those who undertook the care of sick animals were held in, it suffices but to relate that St. Bennet was tempted by the devil, who had taken the shape of a *mulomedicus*. The legend says: *Ei antiquus hostis in mulomedici speciæ obviam factus est, cornu* (the horn to drench) *et tripedicam* (the hobbles) *ferens*. What has been left to us by the Arabs and the riding masters of the middle age in veterinary medicine, is nothing but a vulgar empiricism without originality or merit. The analysis given by Ercolani of the manuscripts in the library of the vatican at Rome, and that of Florence, have enabled us to appreciate them at their just value.

PECORIS *ut etiam nos qui bellum non pertulimus, debellatis tamen fecerit pestilentia.* These verses in the eclogue of Severus Sanctus give an account of the progress of the malady, as well as of its contagious character.

Hæc jam dira leus serpere dicitur
Pridem pannonios, Illyricos quoque,
Et Belgas graviter stravit et impio,
Cursu nos quoque petit.

In all the wars in which Russia has taken part, including that of the Crimea, the cattle pest has always accompanied it. This malady, exclusively confined to the race of the steppes, only occurs in the other races by transmission.

ROYAL COLLEGE OF VETERINARY SURGEONS,

QUARTERLY MEETING OF THE COUNCIL, HELD JAN. 25, 1860.

The President, W. BURLEY, Esq., in the chair.

PRESENT: Professor Spooner; Messrs. Dickens, Field, Helmore, Legrew, Mavor, Richardson, Robinson, Silvester, Wilkinson, Withers, and the Honorary Secretary.

The *Hon. Secretary* stated that a meeting of the Board of Examiners had been held on Wednesday, December 21st, 1859, and that the following candidates had passed their examination, and received the diploma of the College:

Mr. John Anderson, Glasgow.
" T. J. Richardson, Tring.
" Frederick Jarvis, London.

Mr. Philip W. Sandover, Ermington.
„ T. W. Reeve, Halesworth.
„ M. D. Byrne, Brighton.

Professor Morton presented to the Library of the College a copy of a sixth edition of his work on Veterinary Pharmacy, for which, on the motion of *Mr. Field*, seconded by *Mr. Legrew*, the thanks of the Council were given.

The death of *Thomas Turner, Esq.*, the first President of the Royal College of Veterinary Surgeons, and who had been for seven years unanimously re-elected to that office, was reported to the Council, and after a conversation, in which the sympathy of the Council was strongly expressed, it was unanimously resolved, on the motion of *Mr. Field*, seconded by *Mr. Withers*, "That the Honorary Secretary be requested to write a letter of condolence to *Mrs. Turner* on the melancholy event."

The Treasurer laid the Quarterly Balance Sheet, before the meeting, which showed a balance in hand of £413 2*s.* 8*d.*

On the motions of *Messrs. Field* and *Sylvester*, and *Messrs. Robinson* and *Helmore*, respectively, it was declared to be received and adopted.

It was ordered that the Treasurer pay the current expenses of the quarter.

Mr. Field read a letter from *Dr. Hood*, describing the very favorable state of the health of their worthy Secretary, and adding his conviction that, with a few weeks' sojourn in the country, his health would be completely restored, and that he would be quite equal to resume his professional duties.

On the motion of *Professor Spooner*, seconded by *Mr. Field*, it was unanimously resolved, "That the half-yearly allowance due to the Secretary in April, be now paid in advance."

E. Braby, *Honorary Secretary.*

SPECIAL MEETING OF THE COUNCIL, held March 21, 1860.

The President, W. Burley, Esq., in the chair.

Present: Professor Spooner; Messrs. Braby, Cartledge, Dickens, Helmore, Moon, Silvester, Wilkinson, Withers, and the Secretary.

The Secretary returned thanks for the great and unremitting kindness he had experienced from the Council during his long and serious illness, and also to the Honorary Secretary, for his untiring exertions during his lengthened absence.

The minutes of the preceding meeting having been read and signed. It was resolved, on the motion of *Mr. Wilkinson*, seconded by *Mr. Cartledge*, "That the thanks of the Council be given to *Mr. Braby*, for his efficient services as Honorary Secretary."

The election of two Auditors was then proceeded with, and on the motions of *Messrs. Cartledge* and *Moon*, and *Messrs. Dickens* and *Silvester*, respectively, *Messrs. R. Skelton*, of Leyton, and *A. Mavor*, of London, were declared duly elected.

On the motion of *Mr. Wilkinson*, seconded by *Mr. Withers*, *Messrs. Braby, Helmore,* and the *Secretary* were elected as the Committee to prepare the Annual Report.

Mr. Braby read to the meeting a copy of the letter which, as Honorary Secretary, he had written to *Mrs. Turner*.

Notice of resignation of office as a Member of the Council at the next Annual General Meeting, was received from Professor Morton.

E. N. GABRIEL, *Secretary*.

Veterinary Jurisprudence.

LEICESTER ASSIZES.

SUPPOSED injury done to some grazing cattle by the occasional inhalation of the vapours of a manure manufactory situated at upwards of a mile and quarter distant from them.

ASHTON *v.* HUBBARD.

(*Before* Mr. JUSTICE WILLES *and a Special Jury.*)

Mr. Macaulay, Q.C., and Mr. Brewer for the plaintiff; and Mr. Mellor, Q.C., Mr. Serjeant Hayes, and Mr. Merewether for the defendant.

This was an action to recover compensation for damage done to some cattle by the vapour from the bone-mill of the defendant, at Bowden.

Mr. Macaulay, in opening the case, said the plaintiff was a farmer and grazier, living at Labbenham, in this county, and the defendant was the proprietor of certain bone-crushing mills for the manufacture of what was called superphosphate of lime situate near Harborough. The plaintiff had suffered a loss of no less than £250, from the injury done to his cattle by the vapours of this mill, during the course of last summer. The effects of the vapours from the mill were not perceived upon the cattle in the two years previous to 1859, because pure water was mixed in the operation of crushing; but at the commencement of 1859, instead of using pure water, the water taken from the boiler in which bones had been boiled, was mixed up, and then the injurious vapours arose.—Mr. Macaulay then detailed the process of bone-smashing, which will be found in the evidence below.

Plaintiff said he was a grazier, and occupied a farm called the Manor Farm, at Lubbenham. It consisted of about 150 acres. Three fields were called the Great Close, the Great Toft Close, and the Little Toft Close. They were large pastures and valuable. The defendant occupied some manure mills in the same parish, about a mile-and-a-half from his house, and about a mile and a quarter from the farm. The mill was situate upon the side of the hill, and it was about upon a level with the three closes named. Remembered noticing the beasts during the month of May last, in these closes. There were about fifty beasts in one of the closes; some of them had been there about a fortnight, and some six months. They were running about in a very distracted state. He then went into the next close, called the Great Close, in which were fifty-six beasts. They were also in a very distressed state, and ran about in an extraordinary manner. He visited each close the following day, and found the beasts still in the same state. Went each successive day, but then the beasts were not in so bad a state, and gradually became more settled. The wind during this time was blowing from the mill, in a north-easterly direction, of which wind they had a good deal, during the spring. At this time he could not account for the effects produced upon the cattle in any way. On the morning of the 10th of June he smelt a most unaccountable smell in the yard at home. He inquired what it was, but could not get to know. In that afternoon he went into the close with Mr. Swingler. As they were going the smell came across the fields in a most choking manner. The wind was then from the north-east. On reaching the Great Toft Close (the vapour not having arrived there), the beasts were lying down. As soon as the smell came to them the beasts jumped up, appeared very excited, and behaved in a way which he could not account for. They seemed in a great perspiration. He observed that the beasts in the fields in the direction of the mill were similarly affected. On the 11th of January he came to Leicester, for the purpose of meeting the defendant, but he was not able to see him; and he saw Mr. Eames, his foreman. On returning from Leicester he again visited the fields, and the beasts were in the same state as before. He told Mr. Eames of the state of the beasts, but he did not agree with him as to the cause. Mr. Eames said he would do what he could to remedy the case if he found that the vapour from the mill caused the effect described. The defendant not being at home when he went, he waited until he did come home, and then told him of the exact state of the beasts. The defendant said he did not think the vapour caused the effects upon the animals, although the mill was at work at the time. On the 12th of June the wind changed to the west, and continued so up till Thursday, the 16th, and during that time the beasts were more settled, and he (plaintiff) hoped they had left off working at the mill. On the 16th of June the wind again changed, and he again went to his fields. It blew from the north-east. Did not smell any smell then. The beasts were in the state in which he had before seen them—very excited. It was a week or two before they settled down, and they were losing flesh instead of gaining. He called upon Mr. Payne and Mr. Fisher, to ask them to come and look at them. On Friday, the 17th June, he went within twenty yards of the mill, and he smelt a smell; but he did not think it was working, as it was about five o'clock in the evening. The smell was identical with the smell he had previously smelt, but not so strong. In the evening of the 17th

June, the wind again changed to the west. On the morning of that day Mr. Fisher came and saw the cattle, and after then the cattle became more quiet. At times they would run together, and not rest to feed. They did not really settle down before they went to London. About the middle of June the defendant's mill stopped working. During the months of May and June the weather was hot and muggy. The beasts he fed last spring were very fine; but by running about great injury was done to them. In some parts of the pasture the grass was trodden down, and quite bare; it was where the beasts had huddled together. Some of them were Herefords, some Short-horns, and some Welsh. They cost him from £12 to £16, and when he disposed of them (believed in the months of August and December) some of them were not worth so much as they were when he bought them. He lost by them from 40*s.* to 50*s.* per head. He had some other land on which he fed beasts; but it was not so good. Some of it was half a mile, and some three miles, from the land in question. These animals were not affected; and they did as well as could have been expected.

By *Mr. Mellor*—Had been a grazier five years. This was the first time when he lost so much by his cattle. He had lost by odd beasts. It was a dry autumn last year, and he gave the beasts at the latter end of the year oil cake. This was his first occupation under Mr. Paget. He went down to Leicester that Saturday to see Mr. Paget's agent. He (plaintiff) had business at Leicester, and Mr. Hubbard had a stand in the Corn Exchange, at the latter place. It would have interfered with his arrangements to have gone to Market Harborough instead of Leicester. It gave him an opportunity of calling upon Mr. Paget. Could not see the mill from any part of his farm. During that time of the year he was in the habit of going to Leicester every Saturday. Sometimes he saw Mr. Hubbard. Did say that when a man named York walked out, the beasts could smell him. He said the beasts would follow him, and he said that because the beasts smelt his clothes. The first time he observed the beasts in the peculiar condition nobody was with him. On the 10th of June, he was in company with a person, when he examined them. He lived next door to two butchers. One of them might boil his offal and fat; but he never observed a smell from it, upon his premises. The wind was in a contrary direction from the butchers when he observed the smell from the mill. Did not see any breeze flies on either of the days mentioned. When beasts were affected by these insects, three out of fifty would, perhaps, gallop together about the field. A frequent galloping about for a length of time would make them thin. His beasts went in a body, like a regiment. Did not use superphosphate of lime for agricultural purposes. He occupied about eighty acres of arable land. Superphosphate of lime was not so much used in that neighbourhood as others.

By *Mr. Macaulay*—Did not go so far as to say that superphosphate of lime was necessary. It was on Saturday, the 2d of June, that he expected to see Mr. Hubbard at the Leicester market. On the 10th of June he took Mr. Swingler to look at the cattle. This was not Mr. Paget's action. He brought it independently himself. Mr. Paget had property within twenty yards of the mill. Mr. Paget stopped proceeding with his indictment, because he (plaintiff) was proceeding with this action.

William Taylor said he had been in the service of Mr. Ashton thirteen years. Last May he noticed the beasts in the Great and Little Toft Closes, in which were fifty and fifty-six beasts. He was in the adjoining field when he noticed them. When they got to the top of the hill they were chasing along by the Bowden Brook altogether, and stood against the pens. He went to examine them, and found them all of a reek and pother. He turned them out, when they went to another corner and blocked that up. Was not able to understand the cause, and he went and told his master: had never seen beasts in that state before: he could not smell, as he had no sense of smell. Saw the beasts every day from that time. A week or two after, he and his master, and Mr. Swingler went to see the beasts. They were quiet in the morning, but in the afternoon they were running about in the same manner as when he first saw them. When he saw the beasts at night they looked very thin and dirty. The day after that they were a little quieter; but in a week after they were worse again. Mr. Pain and Mr. Dimblebee then saw them. The wind then came from the direction of the bone-mill: it was a dull day and foggy.

By *Mr. Serjeant Hayes*—It was about the 20th of May that they first began to run about. He looked after them till they were sold off, at the end of the year. They ate little from June to December, although there was plenty of keep: gave them oilcake. The beasts acted quite different from gadding: never observed that gad-flies came with the east wind: sometimes they gad before May.

John Swingler said he was a grazier. In May last he noticed the beasts upon the plaintiff's land; they were in a very bad state indeed. Mr. Ashton asked him to go and look at them. He never saw beasts act in such a manner before, nor anybody else; they appeared as though they had been running about very much. A few days after he again went to the plaintiff's premises, for the purpose of going to Gumley with him. While in the plaintiff's yard he noticed a smell which was very disagreeable. He asked the plaintiff what he had about his premises that smelt so bad. Plaintiff said that he had nothing at all that he knew of. He then went upon the road, but still smelt the same smell. He observed the direction of the wind to be north-east. When they returned from Gumley, he went to see the beasts again; and when they came to the Little Toft Close there came over a very strong vapour, and the beasts, which were lying down, got up and ran away as soon as the smell reached them. He said to the plaintiff, "What on earth have you got here that smells in this way?" He replied that he did not know that he had anything. They remained looking at them above half an hour. Saw the same beasts several times afterwards, when they were in the same state. After this they passed by the bone-mills, when they perceived a similar smell, though it was not so strong. It was a good summer for feeding beasts, and he never saw finer pastures. The loss upon the animals he estimated at from 40*s*. to 50*s*. per head.

By *Mr. Mellor*.—Grazing was a good trade. The beasts were lying down, and as he approached them they got up; had seen them upon former occasions. When they got up he was a hundred yards from them. Perhaps they might take him for York. He grazed about one hundred acres. Did not use superphosphate of lime. It was a very good aftermath. Had good keep for the beasts, although the weather was dry. Had often seen the beasts restless before, but not for so long a time together. He lived about a mile and a half from these mills, but his land lay in a different direction to the plaintiff's. The mill was perhaps a mile, or a mile and a half, from the town of Market Harborough. The site of the mill was once a brick-yard. Mr. Ashton occupied rather more than fifty acres of his land, and it adjoins Mr. Paget's.

By *Mr. Macaulay*.—The beasts did not start off because he (witness) frightened them.

Peter Dimblebee, grazier, deposed that he noticed the beasts of the defendant all being huddled together in a corner of the field. The perspiration ascended from them like the vapour from a lime-kiln, which was very extraordinary. Saw them again in a day or two after, when they were in a frightful state, which he was not able to account for. He was told that some stench caused it, but he had no idea that that was the cause. Smell, according to his experience, would produce bad effects. He saw the beasts on the following day, and found them in the same condition. The ground for grazing was first-rate. He believed fairly, that £2 a head was lost upon the cattle. Had known beasts to be so affected by a boat load of bones, some two or three years ago.

By *Mr. Mellor*.—Never knew a boat of manure to affect them. A mill, in which manure was made in London, which he knew of, affected some cattle. Did not know the Thames to affect cattle. Burning lime did not affect them. Did not know that superphosphate of lime was used extensively. Witness lived just opposite to a butcher, but had never smelt anything offensive from his premises.

William Cotton, shepherd to Mr. John Iliffe, (who occupied land adjoining Mr. Ashton's), said, one of these fields was between Mr. Ashton's fields and the bone-mill. His master had some beasts feeding on his land in May last. He saw them all running about the field in an excited state, and he went and told his master, as he thought the cattle were all going mad. He first noticed some beasts on the land adjoining, belonging to Mr. Underwood, which were affected in a similar way. Never smelt much that was offensive, because he had a bad cold. The direction of the wind was between north and north-east.

George Marven, labourer, said he worked for Mr. Ashton last spring and summer. On the 11th of June he saw the beasts lift up their noses and smell, and then start off, and go round the close, three or four times. Had never seen them go about in that way before. He did not smell anything at that time. During the same day he again saw them start round the close, and he smelt a very strong smell. The wind came from the direction of the mill. When the wind was not the same way, the beasts were quieter. The smell was different from any other smell he knew, and was very nasty indeed.

William Burdett said he was shepherd to Mr. Gilford, who occupied some land adjoining Mr. Ashton's—between it and the mill. Had been his shepherd for some five years. This witness then gave evidence similar to the previous one, respecting the effect of the vapours from the mill on the cattle, upon this land. There were, he said, about forty beasts upon the land in May and June last. Last Whitsuntide they were all in a heap, and upon examining them he found they were covered all over with dirt and sweating. The reek ascended from them like the steam from a kiln. He smelt a stench when the wind was from the north-east, coming from the bone-mill. The beasts were not so bad when the wind was not in that direction. During the number of years he had known this land he had not known beasts to be similarly affected, though he had been a shepherd for upwards of sixty years. Mr. Haddon had some land adjoining, and his beasts were affected in the same way.

By *Mr. Mellor*.—He shepherded for Mr. Haddon. Heard of the smell first, and it being "noised about" afterwards; further examination was made, and the smell was perceived. Never smelt such a smell before or since.

John Cockerell, a labourer, said he worked upon Mr. Breedon's ground, which lay between Mr. Ashton's and the bone-mills. It was about the 15th or 16th of June when he heard tell of Mr. Ashton's beasts. It was on Thursday morning, while they were at work, that Gilbert said, "Look yonder, what a mist there is coming!" They stayed and looked. It came from the direction of Thomas Howlett's lodge, from the bone-mill. Gilbert said, "You may depend upon it, it's from Mr. Hubbard's bone-mill." It was visible from 100 to 150 yards distant. They saw it penetrate the hedge. They had the vapour first, before it reached the beasts. Gilbert put his hand to his nose and said, "Oh dear, is it not enough to stifle you?" Witness and Gilbert got out of the way as quick as they could. As soon as the vapour reached the beasts, they jumped up and started off, as quickly as they could, round the field. The beasts shook very much.

By *Mr. Serjeant Hayes.*—Smelt a similar smell two years ago.

John Iliffe said he occupied land as a grazier at Lubbenham. On the 16th of June, he went out with his shepherd in a light cart. As he was passing through Mr. Underwood's fields, he observed the beasts there, about 80 or 100 yards off. Forty of them came running towards them, so that he thought they would be upset by them. The wind was in the north-east. As the beasts passed him he perceived a bad smell, and he made the observation, "Good dear, how these beasts stink!" He was told by his shepherd that his beasts frequently behaved in a similar manner.

William Burdett, jun., said he was ploughman for Mr. Inliffe. He knew the mills in question, and he saw the vapour, almost a couple of hundred yards before it got to him. It came from the north-east, direct from the mills. The effect upon the beasts in Mr. Underwood's and Mr. Iliffe's fields was the same as described by the former witnesses.

John Seale, shepherd to Mr. Kirby, said three of the closes which his master occupied were near the turnpike road. Last June he frequently noticed a smell from the mill. On the 13th of June he saw the beasts quietly lying down, when they suddenly jumped up, and started off in a gallop, towards the canal. There was a very nasty smell coming from the mill at the time.

By *Mr. Serjeant Hayes.*—The beasts cocked their heads in the air, and seemed very much frightened. The smell from the direction of the mill was like vitriol.

By *Mr. Mellor.*—Had smelt vitriol. The land his master occupied was Mr. Paget's land. Had lived in the neighbourhood all his life.

John Payne said he went with Mr. Dimblebee to see Mr. Ashton's beasts. Saw upwards of fifty in one field, and they were going about the field in a sort of trot. They went to the rails and stood there, as though they wanted to go out. That part of the field was trampled down, as though there had been a fair held there. The beasts looked as though they had come from Wales in two days less time than they ought to have done. They were heated and dirty, and they seemed alarmed. Could not account for it.

George Noon said he was a labourer, and lived at Hinckley. He formerly worked for Mr. Hubbard, at the Gallow Mill. Left off work there six months ago. The bones sometimes came to the mill with meat on them. The first thing done to the bones was, they were crushed in the mill, and then boiled. The fat was then skimmed off the liquor, which was sold. The liquor was run into a cistern in an adjoining field. When that cistern was full it was emptied upon land adjoining. After the bones had been crushed, they were ground, and then put into a trough, which was eight feet by three feet. Coprolites, vitriol, and some common salt were then mixed with the bone-dust, and the mixture ultimately became superphosphate. Water was also added; but the last season they used the liquor in which the bones had been boiled, instead of the water. When the mixture in the trough was stirred, there arose a great steam, and a strong smell. The steam was very thick, and at times the man on the opposite side of the trough could not be seen. The stench last year was stronger than it had ever been before. There was no difference in the mixture, except the liquor being used instead of the water. In June they ceased making the manure.

By *Mr. Mellor.*—Did not stir it oftener than others. York and Mortin worked at the mill. Cattle did not run away from him (witness).

Mr. Fisher, land agent at Harborough, deposed that when he arrived at the field, he found the cattle at the south-west corner. They seemed in an excited and restless state. They did not run about while he was there. Had not seen "gadding" produce similar effects. The cattle were very poor—they seemed starved—and not to have derived any benefit from the pasture. The grass was trampled down in consequence of the frequent running of the beasts.

Dr. Albert J. Bernays, Professor of Chemistry at St. Thomas's Hospital, Fellow of the Chemical Society, &c., said, on the 18th of last month he went to the defendant's mill, and asked leave to view the works, but was refused. He saw the person who had charge of the works. He had examined the situation of the mill, and its relative position to the plaintiff's land. The fumes from the mill might be carried to Mr. Ashton's land. He had known like odours to be carried greater distances. Cattle were very fond of sweet air. The addition of salt to the mixture, as described by the witness, would only make it more disagreeable. The causticity would arise more in the drying process. The odour was not injurious to health. It might produce nausea, but nothing more.

This being the case for the plaintiff, and there being a considerable number of witnesses to be examined for the defendant, the court rose at five o'clock.

Mr. Mellor addressed the jury for the defendant. He said he felt it his duty to lay before them a considerable amount of evidence in this case, in order to its due consideration. It was not disputed that this manure was essential and important to the best interests of agriculture. He quite admitted that the manufacturer of things of this description must be careful where he placed his manufactory. What might be a nuisance in the middle of the town was not a nuisance in the country. What might be improper in Grosvenor Square, or Eaton Square, was not improper in the outlying districts which surrounded the metropolis. According to law there was no ground for action against a reasonable, useful, and lawful trade, in a convenient and proper place, though some one might suffer inconvenience from its being so carried on. He took it that the trade carried on by his client was not an unlawful one; but that it was a lawful trade, and the question for them would be, was the site of the mill a convenient place where to carry it on? The mill was some distance from Lubbenham and Market Harborough, and far from all human habitations, amid the fields; and if the making of superphosphate of lime was not to be carried on in such a place, where was it to be? If it was not lawful there, it would not be lawful anywhere. Wherever a manufacture of that sort was carried on it must be so near to fields. What would be a nuisance in

Market Harborough, or Leicester, certainly would be less liable to objection in the open fields. Not a single human being resident in the town of Market Harborough had brought a complaint; but the people who objected occupied Mr. Paget's land, and no human being had complained but those resident on his property. The operation at the mill had been carried on during the years 1857 and 1858, and it was not till May and June, 1859, that complaints were made. They had been three seasons finding the matter out. One of the witnesses said he was told of the smell, when he looked for it and found it. Mr. Iliffe, Mr. Underwood, and Mr. Kirby, who were not resident upon Mr. Paget's land, but occupied land nearer to the mill, and had an interest in protecting their cattle—why did not they complain? It was the most extraordinary case he had met with in his life. There were not less than two thousand head of cattle grazing near the mill, and yet their owners were not called. His opponents knew perfectly well, and he said so most decidedly, that the complaint was all a fudge. There were occupiers of land in all directions, and the wind did not always blow from the north-east. If his learned friend had failed in making out that the trade was a noxious trade, carried on in an improper place, he (Mr. Mellor) was entitled to their verdict. It was the average sensibility of men they were to consider in a case of nuisance, and not the effect upon particular human beings.

The first witness called for the defence was—

Robert Hubbard, who said he was the defendant in this action, and carried on business as a druggist at Market Harborough. In the year 1856 he commenced the business of making bone manure, for which there was a considerable demand at different distances from his neighbourhood. The chief purposes for which it was used was for manuring turnips, and for dressing corn in spring time. It had got into practical use extensively over the country. He purchased the site and erected the mill in 1856, and commenced to work it in 1857. He selected the piece of land because he thought it was as far from dwellings as he should be able to get any. Brick-making had been carried on for some time before on the site. There were no houses for a considerable distance. It was two miles from Lubbenham and a mile and a half from Market Harborough. Before commencing the manufacture he appealed to an agricultural chemist, and obtained from him instructions, upon paper, which he had followed. The chemist's name was Mr. Nisbett, of London. When the mixture in the trough was stirred then the vapour arose, which was disagreeable. The smell remained a longer or shorter time, according to the state of the atmosphere. If the atmosphere was favorable it was pretty soon dispersed. In the first year, 1857, he made 125 tons, beginning about March and leaving off about June. In 1858, 150 tons of manure were made, beginning in January and finishing in June. The quantity made last year was only 130 tons. The process of mixing lasted about eight minutes; and when they were busy they had about eight mixings a-day. No other part of the process gave rise to a disagreeable vapour. The mixture consisted of boiled bones, vitriol, coprolites, and salt. Sometimes he used water, and sometimes the liquid from the boiler in which the bones had been boiled, to dilute the acid. The practice was to skim the fat from the liquor, and put it into a cistern. When they had not this liquor they used pure water. That had been the course they had adopted from beginning to end. In 1857 and 1858 they had no complaint from any one of the vapour. About the end of May, last year, the plaintiff complained to him. It was then getting towards the end of his season, they having made above 100 tons of manure. Had received complaints from the plaintiff's landlord, Mr. Paget.

By *Mr. Macaulay.*—When he erected his mills he followed the instructions of Mr. Nesbitt. Since he had erected his mill he had seen other mills. Did not know that such a mill had been removed to the Isle of Dogs. Eames, who was the foreman, had been an innkeeper. Bone manure was sometimes used for grazing-land, but not in so large a proportion. There was some ploughed land about a quarter of a mile from the mill. The land he chiefly supplied was between three and five miles distant. Generally went to Leicester market on Saturday. On the 11th of June he saw the plaintiff. He told the latter that he did not think the smell could go so far, and treated the matter in ridicule. He and Mr. Ashton were on perfectly good terms. He was also asked to go and see the plaintiff's cattle, but he did not go, as he thought the idea was ridiculous, and he thought so still. The skimmed liquor was sometimes used for manure. Mr. Walker did not complain of the liquor getting unto his land. He was at the works two or three times a week. When the vapour rose from the mill it had to ascend the hill and then go in different directions. The vapour shot to different heights, according to the state of the atmosphere. Mr. Breedon came to him to speak about Mr. Ashton's beasts, but he did not ask him to come and see them. He (defendant) rather laughed, when Mr. Breedon said, "You have no occasion to treat it like this." Did not remember making an experiment. Had a boy called Warner, but did not remember sending him to see the effects of such experiment. He believed he did try an experiment one time. Could not remember making another experiment, and then sending the boy out again. He put some vitriol in the trough to ascertain what would be the effect upon the beasts. Did not remember sending Howlett to see the effect of an experiment. He went himself. Warner did not come back and say it made the beasts run. Did not recollect what he did say. Would swear it did not disturb the beasts.

By *Mr. Serjeant Hayes.*—Kirby's Close is against the bone-mill. He saw the effect of the vapour in the next field. It went amongst the beasts, but they took little notice of it.

Robert Eames said he conducted the bone business for the defendant. Eight mixings made about five tons. He had occupied sixty-six acres of grazing-land adjoining the bone-mill, two years. The vapour came close to the beasts, but did not disturb them. He had as many as 400 beasts in the fields at a time. In 1857 and 1858 there was no complaint made. In May last, the first complaint was made by Mr. Ashton, who said the mill was a great nuisance.

By *Mr. Macaulay.*—Made five tons a-day, making 130 tons in twenty-six days; began about January and ended in June. There would not be much room for the cattle to gallop when there were 400 head of beasts in the fields.

By *Mr. Mellor.*—There was room for them to huddle together.

William Beale, farmer and grazier, of Frolesworth, said he had occupied land for a good number of years, and had paid great attention to the breeding of stock. He occupied a considerable portion of land close to the mills. He had observed vapour from the mill, but he never saw it disturb the cattle. The beasts grazing there never did better than they did last year. They did not seem to care about the vapour. The vapour that went to Ashton's fields must go over his fields. Some of his land was on a level with the mill, and some lower.

John Sedgeley, farmer and grazier, of Sutton Basset, said he grazed from 1000 to 1100 acres of land at Lubbenham. Part of it was within half a mile of the bone-mill. Part of it was in an easterly direction and part in a westerly direction. Some of it lay between Mr. Ashton's land and the mill. Witness was in the habit of going to it three or four times a week. He occupied the land before the bone-mills were there. The cattle had never been in the least affected by the bone-mill. Beasts got restless in the summer, more or less. It was no uncommon thing for beasts to huddle together. They generally separated when they were gadding.

By *Mr. Macaulay.*—Could not say when he first heard that Mr. Ashton's beasts had suffered. He was in the habit of going to Lubbenham three or four times a week. His own shepherd mentioned to him about the beasts.

Robert Cart, farmer and grazier, of Smeeton Westerby, said he had occupied about thirty acres of land in Bowden, just above the bone-mills, for fifteen years. His father had occupied the same before him. The cattle had not done worse since the bone-mill had been erected. He had seen the vapour come into his field, but they were not affected by it.

By *Mr. Macaulay.*—Heard of Mr. Ashton's beasts at different markets.

Joseph Brown, of Market Harborough, said he occupied thirty acres of land to the north of the bone-mills, and also overlooked land belonging to Mr. Dalby. Some of his land was within a quarter of a mile from the mill. He kept feeding beasts and store beasts, which he was in the habit of going to see there frequently. His beasts had done as well as usual, and had not been disturbed by the bone-mills.

By *Mr. Macaulay.*—His land was in the valley below the bone-mills. Could not say how much below the mills. He had got a very good nose, but he never smelt any smell.

William Weston, William Price, William Hyde, John Warren, John Holmes, Thomas Howlett, and *Francis Montgomery*, who either occupied land near to the bone-mills, or were in the service of farmers occupying land near to them, gave similar evidence to the preceding.

Professor Simonds, of the Royal Veterinary College, and *Professor Way*, late Consulting Chemist to the Royal Agricultural Society, as scientific witnesses, were also in attendance on the part of the defendant, but were not called, the evidence being so conclusive of so many other cattle being unaffected by the vapour of the mill.

Mr. Mellor again addressed the jury. He said there must be something remarkable about the beasts of the plaintiff, because the witnesses he had called, who had beasts grazing on land very near to the mill, would have the same interest as the plaintiff in the matter, and would not have come there to swear as they had done, if their cattle had been similarly affected.

Mr. Macaulay then addressed the jury for the plaintiff. He said nothing had been laid before them to show that it was not perfectly possible and easy, at a small expense, to conduct this mixing operation upon these very premises so as to prevent a recurrence of the nuisance which undoubtedly took place in the course of last summer. This being so, the real question in this case was whether the operation of this bone-mill did, or did not, in the months of May and June last, do an injury to the property of Mr. Ashton. This was a question of fact. His learned friend was good enough to say, in the course of his address, that Mr. Ashton's case was all a "fudge," and that no injury had been done. He appealed to them whether one single particle of evidence had been given for the purpose of disproving any one portion of the evidence respecting the injury to the cattle. They had heard a good deal from other people, who lived in other directions, on different levels of ground, and at different distances; but not one word had been spoken by any one of them which tended to interfere with the perfect accuracy of every statement made by Mr. Ashton. He seriously asked them whether they could attribute the manifestations made by these cattle to any other cause than that which the witnesses had attributed it to on the preceding day. This mill had been at work for no doubt three seasons; but in the third season (1859), the process of mixing was changed by using the liquor, in which the bones had been boiled, instead of pure water; and then these mixings might have taken place at different periods of the season, and under different circumstances. Salt was also used, which was not used in other manufactories. It had not been clearly proved that the identical thing was done in the years 1857 and 1858, as was in 1859. On every occasion the course of the vapour had been traced to the mill, and the cattle did not recover from the effects of such vapour, and did not again settle down as before. The identity of the smell was established. He had endeavoured to shape his remarks in such a form as to call their attention to the sworn evidence in the case. The fact of Mr. Ashton's case had been truly made out in evidence, and some other mode should be adopted at the mill which would not render the property of other people liable to be injured or destroyed.

The learned *Judge* then summed up; and in doing so, he said the law was not made for the fastidious or the sensitive. They were not to misunderstand the action. If a person were walking along the streets, on a muddy day, and somebody's carriage were accidentally to spatter him; or if a person were riding along a road, and caused a dust which went in somebody's eyes,—it would be foolish to raise an action upon that ground. The question was, how the cattle came to be injured—whether it was from the vapour from the mill, or from some peculiar feature inherent in the animals. It would have been better if some person scientifically acquainted with the habits of cattle had thrown some light upon the last point. Was it made out to their satisfaction that the defendant did injure the plaintiff's cattle by contaminating the air? This was not one of those cases in which people were affected by inhaling acid vapours, such as muriatic acid, nitric acid, and other acids while being thrown off works. Dr. Bernays had been called, and they were to remember that he, in his evidence, stated that the vapour was not injurious to health. With respect to the difference in the carrying on the trade, there was only the evidence of the mixture of the bones in the last year with the liquor in which such bones had been boiled, water having been used the year before. The evidence of Dr. Bernays only went so far as to say that the addition of salt would make the smell more disagreeable. Then the important consideration was, that during the years 1857 and 1858, there was no injury at all to the cattle from the smell. How came it in the year 1859 to produce such an effect upon the plaintiff's cattle? The addition of the liquor, Dr. Bernays (a scientific gentleman) had told them would make it a little more disagreeable. That was strongly in favour of the negative. A very great number of persons had been called from different directions of the mill, and nearer the mill than the plaintiff's land, who stated that no effect was produced upon their cattle. It was argued by the learned counsel for the plaintiff, that the mill had not the same effect upon the cattle belonging to witnesses for the defence; accounting for it by the conformation of the land. With respect to that, several of the witnesses stated that they really saw vapour come on to their lands, and enter the place where their cattle were; but the effect produced was that the cows lifted up their noses, and took no other notice of it. Assuming by the evidence of the plaintiff, that his cattle were injured in the manner described, it would be for the jury to say that the plaintiff had made out that the injury did not arise from anything that was peculiar in the cattle, or some affection to which they were subject; but which unfortunately had not been accounted for at all. Assuming that they should be of opinion that the cattle had been injured by the vapour from the mill, the next question would be whether this business was a business of necessity—whether it was a necessary trade—whether the place where it was carried on was a reasonable and proper one—and whether it was carried on with a due regard to other persons who surrounded such a place of business. It was a mile and a half from any inhabited place. He thought he need not trouble them upon that, but only state the questions. After reading the evidence from his notes, his Lordship said the questions for them to consider were these:—Whether the plaintiff's cattle had been injured in the manner complained of or not? Was it made out, to their satisfaction, that the injury did not come from some peculiarity in the state of the cattle? If it was made out that the injury was caused by the contamination of the air by the mill, of course they would find for the plaintiff. If they thought it was so, they would still have to consider whether the damage resulted from carrying on a necessary trade in a reasonable, fit, and proper place. He had really gone through all the points which he thought were necessary.

The Jury found for the defendant.

The Judge then asked them whether they found for defendant on the first count.

The Foreman—Yes.

The Judge—Not on the second count?

The Foreman said not.

The Judge—Precisely so. I think that is the best way, as it leaves the second count open.

OBITUARY.

Died at Thornton, Yorkshire, on the 28th February, Mr. John Maw, M.R.C.V.S., æt. 23. Mr. Maw only obtained his diploma in April, 1858.

We have also been informed of the death of Mr. W. T. O'Donnell, from an attack of bronchitis, aged 34. His diploma bears date May 25th, 1849.

ERRATA IN NO. 387.

Page 143, line 16, *for* skin *read* limb.
„ 148, „ 12, *for* L. lemulactune *read* L. temulentum.
„ 149, „ 21, *for* beech *read* bent.

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Communications and Cases.

ON STARCH, ITS VARIETIES, AND SOME OF THE CHANGES IT UNDERGOES.

Among the metamorphoses that obtain in organic substances, there are few more interesting or of greater importance than those which occur in starch.

Starch, as existing in the vegetable kingdom, is conjectured to be the origin of most of the non-nitrogenized proximate principles there met with, such as gum, sugar, lignine, &c. In the growing plant these compounds are produced by processes too intricate and recondite for the ken of man to comprehend, therefore they are inexplicable; yet have a few of them been formed by him in his laboratory.

On the large scale, according to Mr. T. G. Calvert, F.R.S., who has lately read a paper on it at the *Society of Arts*, Starch is made by

"Mixing wheat with water in large vats, and allowing it to ferment for several weeks. The fermentation produces what is called *sour water*, which contains alcohol, acetate of ammonia, acetic and lactic acids, biphosphate of lime and decomposed gluten. Alcohol is first formed, but it is rapidly transformed into acetic acid, and it is by this acid and the lactic acid that the separation of the starch and the gluten is effected. The fermentation and the acids, however, do not remove or destroy the whole of the gluten, which forms a layer called slimes or flummery on the top of the starch. This, which was formerly used for feeding pigs, is now employed by the calico printer as a resist paste. After the slimes have been removed by washing and by sieves, the starch is allowed to settle in clear water for several days. It is then drained from the water, dried, and cut into lumps of about six inches cubic, which are placed in carefully heated stoves, where they split into the irregular pieces well known to consumers."

"At the beginning of this century," he said, "starch was only used in the laundry, for the toilet, and to a limited extent as diet; but since it and its products have become used in manufactures, its consumption has so enormously increased that at one single print works near Manchester more than 300 tons are used annually. In nature starch is often found associated with poisonous matters—in the arum with an acrid substance —and in the mannihot with prussic acid; but the natives of Guiana and the West Indies have found out that by heating the roots of the mannihot the prussic acid is dissipated, and then the tapioca obtained is harmless."

We have lately seen a very simple but highly ingenious and effective machine, invented by Mr. H. Martin, of Edenbridge, for separating starch from the *flour* of wheat, by mechanical means alone; that is, without setting up the fermentative process in it. By the use of this machine, not only is there no loss of material, but a considerable saving of time, since less than hours suffice to effect what required days by the old process, while the quantity of starch obtained is also much greater. Ordinarily from wheat this amounts to from 42 to 44 per cent., and by the machine, from wheaten flour, as much as 75 per cent. has been procured. The plan, we need hardly say, is patented, but it essentially consists in making a paste of the flour, and causing grooved rollers to pass backwards and forwards over it, while small streams or jets of water play continuously on it, so as to carry off the starch as it is separated into a fit receptacle. The gluten, the other essential constituent of wheat, is thus of course left behind, and when in a moist state, this is sometimes as much as 25 per cent. It is very pure; and it is principally for this substance that the invention is worked. By drying, it loses more than half its weight; but if baked, it resembles in appearance very light and porous bread, and in this state it may be kept with care for almost an indefinite period. We saw some twelve months old, which was perfectly good. In taste, after it had been masticated for a little time, it strongly resembled animal matter. There is every reason to believe—at least it appears so to us—that when this process is generally known, it will become the one resorted to for the purpose of separating these two principles, starch and gluten, the one from the other, since it has in its favour both the saving of time and the obtainment of a larger amount of produce, especially as far as bran and gluten are concerned, while the last named is nearly equal in value to the starch obtained.

When we were first shown the gluten, we could not refrain from asking ourselves the question, would it not have been wiser in the feeding of animals, instead of giving to them that kind of provender which is conducive to the laying on of fat, and by doing which too often a debilitated state of the system is induced, thus favouring the development of disease, to have given this nitrogenized compound, so that more muscular fibre might have been formed? We are quite aware that animals cannot live on concentrated nutriment, and that they must have heat-giving principles, as well as flesh-forming ones, in their food. Still we do think the former has been carried a little too far, and we hope obesity has had its day.

The cost of gluten, may possibly in this form be at present too great, but it would not be necessary to separate so completely the starch from it, when required for the lower animals. Unquestionably, for man it will constitute an admirable article of diet, when he is invalided, or otherwise, since it may be added to other kinds of food to increase their nutritive properties. Perhaps, too, it may be used as pemmican is for long voyages, &c., while it may be substituted for animal albumen for mordanting the new colours.

Varieties of Starch.

The other forms in which starch is commonly met with in the shops are arrow-root, sago, saloop, tapioca, and potato and rice starch. But from all tubers and grains it may be procured; and various names are given to it, depending on its source. The starch-globule, in all these, differs both in size and shape. Arrow-root is obtained from the root of the *Maranta arundinacea*, a plant cultivated both in the East and West Indies. Rice starch is procured from the ground grain by the action of alkalies or their carbonates on it, which dissolve the gluten, and set free the starch. By rasping the tuber of the potato, and allowing water to flow through the pulpy mass, the starch is quickly washed out, and the vegetable fibre—*cellulose*—left behind. Sago is formed from the cellular tissue of the interior of a palm; tapioca, from the mandioc plant—*Jatropha manihot;* and saloop, from the roots of the male orchis—*Orchis mascula.*

Starch, when pure, is a white substance, nearly devoid of taste and smell, undergoing no change if kept dry, insoluble in cold water, but soluble if so be its temperature is raised to 150° or 180°, when it forms a viscid solution, becoming as it cools a transparent jelly. In this state it is used for the purpose of stiffening muslin and other goods. Its introduction into the laundry has been thus given:

"The most peculiar article of dress belonging to the age of Elizabeth was the ruff, the pointed edges of which were called piccadillies. Stiffness was an indispensable quality in the ruff, and, with such delicate materials, the requisite tenacity was unattainable except by the agency of starch. This fact helps us to fix tolerably accurately the date about which the ruff came into vogue. Starch was brought into use in England by a Mrs. Dingen van Plesse in 1564; and it was considered an improvement of such importance in the laundry, that it was elevated at once into an 'art,' in which Mrs. Dingen van Plesse gave lessons at the enormous premium of five guineas. At first the starch was of the common dead-white hue, but in process of time various glowing dyes were introduced, so as to give increased effect to the ruff by the tints it was thus made to shed upon the face. There was a yellow dye discovered by the notorious Mrs. Turner, who was implicated in the murder of Sir Thomas Overbury; but it was dismissed with abhorrence by the fashionable world, says Dr. Drake, when its ingenious inventor was executed at Tyburn in a ruff of her favorite tint."

Iodine is a very delicate test for starch, forming with it a blue compound—the *iodide of amylum*. Its chemical composition is given as $C_{24}H_{20}O_{20}$. The granules are irregularly shaped, and they vary in size, from the $\frac{1}{400}$th to the $\frac{1}{2000}$th part of an inch in diameter. This variation in shape and size is seen in every species of plant yielding it. Under the microscope they appear to possess a central nucleus, called *amidine* or *dextrine*, which is surrounded by an envelope. This envelope is insoluble in cold water, but it expands and at length bursts as heat is applied to it. Acids and fermentation also produce the same effect. From this circumstance we are enabled to understand the benefit derived from steaming or cooking of the farinaceous food of animals, as well as, at least in part, the action of the stomach on it.

The following table gives the quantities of starch in 100 parts of the various kinds of grain, tubers, &c.

Rice . . .	74 parts.	Beans . . .	36 parts.
Maize . . .	60 ,,	Lentils . . .	35 ,,
Wheat . . .	59 ,,	Parsnips . .	17 ,,
Rye . . .	51 ,,	Potatoes . .	15 ,,
Buckwheat . .	50 ,,	Mangel-wurzel .	12 ,,
Barley . . .	48 ,,	Carrots . . .	11 ,,
Oats . . .	39 ,,	Turnips . . .	10 ,,
Peas . . .	37 ,,	Cabbage . .	4 ,,

Changes of Starch.

Starch, by the application of heat to it for some hours, the temperature being from 250° to 300° Fahr., becomes converted into *dextrine*. The change is said to be only a molecular one, and probably it is the result merely of the bursting of the envelope.

Dextrine is of an amber colour, soluble in cold water, and largely used by calico printers for stiffening their goods, under the name of *British gum*. The larger quantity, perhaps, is obtained from potato-starch.

If starch be boiled for some time in very dilute acids, the like change will be effected; but if the quantity of acid be increased, the dextrine becomes transformed into *grape sugar*. "A mixture of 15 parts of potato-starch, 60 parts of water, and 6 parts of sulphuric acid, may be kept boiling for about four hours; the liquid neutralized with chalk, filtered, and rapidly evaporated to a small bulk. By digestion with animal charcoal and a second filtration, much of the colour will be removed, after which the solution may be boiled down to a thin syrup, and left to crystallize: in the course of a few days, it solidifies to a mass of grape sugar."

During the germination of seeds or the malting of barley, the like metamorphosis obtains. This is brought about by a nitrogenized principle contained in them, probably the gluten which, undergoing transformation, gives rise to *diastase*, the ultimate composition of which is not known, it never having been separated in a state of absolute purity. It is stated by Brande to be white, soluble in water and dilute alcohol, but insoluble in strong alcohol; its aqueous solution is tasteless, and soon decomposes. By it the farina is first converted into dextrine, and then into grape sugar or glucose.

The relationship that exists between these substances will be seen by the following analysis:

Starch	$C_{24} H_{20} O_{20}$.
Amidine	$C_{24} H_{20} O_{20}$.
Dextrine	$C_{24} H_{20} O_{20}$.
Grape Sugar	$C_{24} H_{21} O_{21}$.
" " Crystal . . .	$C_{24} H_{21} O_{21} + 3HO$.

The first three being identical in composition, their altered properties can only result from a new arrangement of their particles; their conversion into the last two, it is equally as clear, depends upon the fixation of the elements of water.

The following are his comparative analyses of unmalted and malted barley, showing the changes that have taken place in the quantities of the proximate principles by the operation:

	Barley.	*Malt.*
Gum	5	14
Sugar	4	16
Gluten	3	1
Starch	88	69
	100	100

A few years since, our agriculturalists were desirous that the restrictions on the malting of barley should be done away with, so that, as they considered, the fattening of their animals might be more quickly and more cheaply brought about. In the investigations, however, instituted by Dr. Thompson at the request of the government, respecting the comparative value of malt and barley for this purpose, it was clearly demonstrated by him that the latter is to be preferred. It is quite true that animals manifest a desire for barley that has been steeped in water and allowed to germinate, because of the partial conversion of the starch into sugar, by which it is rendered more palatable; nevertheless, by the process a portion of the soluble nutritive constituents are removed. Indeed, Professor Thompson found the loss sustained by barley in malting amounted to 19 per cent., or nearly one fifth, consisting of

Water	6·00
Saline matter	0·48
Organic matter	12·52
	19·00

Moreover, two cows being fed by him, the one on barley and the other on malt, that fed on the first named *gained* eighty pounds in a given time, while the other *lost* forty-two pounds.

Each being allowed the like quantity of hay, that fed on barley yielded both more dry milk and more butter than that fed on malt; and the Professor therefore concludes that "malt is inferior to barley as an article of diet for cattle, as it gives less milk and butter, and diminishes the live weight, instead of increasing it, which barley does under the same circumstances." He was now naturally led to a comparison of the chemical composition of barley and malt, and these substantiated the positions he had laid down.

The last change we shall allude to is that which takes place during the digestion of farinaceous matters. This commences in the mouth through the action of the saliva, the result being their partial or complete conversion into glucose. This is brought about by catalytic action, induced by the *ptyaline* of the secretion, sometimes called *salivine* or salivary diastase, acting the part of a ferment.

"The saliva of the *dog* and of the *sheep*," says Brande, "have been analysed by Gmelin, and that of the horse by Lassaigne. The saliva of the *sheep* contained so much carbonate of soda as to effervesce with acids, and also sulphocyanide of potassium; its solid matter amounted to 1·2 *per cent.* That of the *dog* left 2·51 *per cent.* of solid matter, but yielded very slight traces of sulpho-cyanogen. The saliva of the *horse* afforded 3·5 *per cent.* of solid residue, and deposited carbonate and phosphate of lime. According to Schultz and Simon, the saliva of the horse contains a notable quantity of *caseine.* Simon found it composed as follows:

Water	982·0
Fatty matter, including cholesterine	0·1
Ptyaline and extractive matter	4·4
Caseine	5·4
Albumine	0·6
Extractive matter and salts	7·2
Loss	3
	1000·0

Bernard dried some shreds of the mucous membrane of a horse's mouth, and found that even in a desiccated state they had the property of converting moistened starch into sugar. His conclusions as to the action of saliva on the food are:

1st. That saliva mixed with buccal mucus has the property of converting starch into sugar at the ordinary temperature of the body. This was proved with saliva from man, the horse, and dog.

2d. That *pure* saliva taken from the parotid and submaxillary ducts of the dog will *not* of itself produce this change.

3d. That the transforming power of the mixed saliva is due to its admixture with buccal mucus.

4th. That in the living body, this power would be neutralized by the action of the gastric juice; and hence that the *chemical* uses of saliva are slight, but its physical advantages are very great, by its moistening the food: the evil resulting from the absence of this is seen in animals that do not masticate freely.

By some chemico-physiologists the peculiarity of the saliva depends upon the presence of sulpho-cyanogen; and they consider that when its salt is in excess in this secretion, it imparts to it poisonous properties.

In the stomach this change of farina is stayed, from the acid nature of the gastric juice; but should any escape into the duodenum unacted upon, the pancreatic fluid perfects the transformation, which also has another use in the system—that of forming an emulsion with fat.

We must however stop, the article having already exceeded our prescribed limits.

The physiologist knows that starch, as food, is placed among the heat-giving principles, which are as necessary for the maintenance of health and life as the flesh-formers. It must therefore be burnt up in the organism; but before this can be done, it has to undergo the conversion we have been alluding to, so that it may become absorbed. All that is not so changed may be viewed as waste. But should it not be burnt up, then it is deposited in the form of fat, which in excess is abnormal, or assumes the form of a disease. Well has Professor Thompson said, "When cattle are fed for the purpose of serving as human food, there ought not to be such a superabundance of fatty matter deposited as is usual with some of the animal monsters designated fat cattle. When they are fed properly, with a due attention to allowing them a certain amount of exercise, the fat and the lean are deposited in healthy proportions, and the cattle may then be employed without risk as human food."

ABSCESSES IN THE CEREBELLUM OF A HORSE.

By H. Corby, M.R.C.V.S., St. Louis, Missouri, U.S.

Communicated by Assistant-Professor Varnell, Royal Veterinary College.

Gentlemen,—I have just received a letter from my friend, Mr. H. Corby, late demonstrator of anatomy in this Institution. He has enclosed the particulars of a case, which he desires me to hand to you, with his compliments. He further informs me that he has commenced the practice of his profession in the large and flourishing city of St. Louis, state of Missouri, United States. The inhabitants of St. Louis may congratulate themselves upon having a gentleman of Mr. Corby's scientific attainments located amongst them; for I feel sure that he will prove an acquisition both to the town and its vicinity. I therefore hope he will receive that support which we all believe him to deserve.

I am, Gentlemen,

Your obedient servant.

To the Editors of the 'Veterinarian.'

A gelding, five years old, was purchased by his present owner early in January last; being, at the time of purchase, apparently affected with laryngitis.

In a day or two after the purchase, some swelling in the submaxillary space was observed, which gradually increased and extended around the angles of the jaw. A seton was inserted over it, and kept in for three or four days; but as it did not produce free suppuration, and the swelling continued to extend, involving the region of the parotid gland, it was removed and poultices applied. Nevertheless the intumescence became still greater, and now causing some difficulty of respiration, an incision was made through the lower part of the parotid gland, without however reaching the abscess; but on the next day, it being carried deeper, a large amount of pus escaped.

From this time the horse appeared to do well, eating heartily, and improving rapidly in condition; while the discharge from the abscess gradually diminished. On the 25th he was led out to exercise, when a slight staggering in his gait was noticed, but this being attributed to debility did not excite much attention. On the following day he was ridden by a boy, and appeared to be quite well; but on the morning of the 27th, he fell backward in his stall, and could not recover himself. With some difficulty he was got up, and removed to a loose box, when he appeared to have lost all power over the muscles of the left side.

When I saw him, he was standing, and apparently tranquil; the head was turned to the right side, and the pupils were dilated; pulse 48 and full, respiration undisturbed.

If any attempt were made to move him, he staggered and fell against the wall of the box, and an elevation of the head produced the same symptoms, while percussion over the parietal region caused him to evince acute pain.

These symptoms, together with the history of the case, led me to infer that an abscess had formed in some part of the brain, and therefore I gave no hope of the animal's recovery. Nevertheless a blister was applied to the upper part of the neck, and some purgative medicine administered; but in the evening he fell, and could not resume his standing position. Another practitioner, thinking he could effect a cure, applied fomentations over the parotid gland, which were continued until midday on the 29th without affording any relief. The horse gradually grew worse, and on the afternoon of that day, becoming violent and struggling very much, I destroyed him by a division of the spinal cord.

On the removal and examination of the brain, two abscesses were found in the cerebellum, separated by a thin central layer of brain substance. That on the right side was the larger one, and occupied nearly the whole right lobe of the cerebellum, encroaching also on the central portion. That on the left side, the smaller of the two, contained nearly an ounce of thick pus. The walls of the guttural pouches were thickened, and each pouch contained a small quantity of purulent matter. On the right side, the parotid gland and the adjacent parts were much swollen and thickened by interstitial deposits of lymph, but presented no other lesions.

MEMOIRS OF A VETERINARY SURGEON.

THOUGHTS IN THE SICK BOX.

By Thos. Greaves, M.R.C.V.S., Manchester.

(*Continued from* p. 202.)

Counter-Irritation.

The conviction forced upon my mind by observation is not in favour of severe counter-irritation in these cases. I have never been clearly convinced of the correctness of the theory, "that no two great inflammations can exist in the system at one and the same time;" but have constantly witnessed severe counter-irritation effected without the progress of death being checked in the slightest degree; nay, I have in several instances felt fully convinced that severe counter-irritation has in no small degree contributed to the loss of my patient. It has appeared directly to arouse the vascular and nervous systems, and, indirectly, by absorption to irritate the kidneys, bladder, and heart, causing confusion worse confounded, putting the whole system into a state of hostility that could very seldom be again tranquillized; but on several occasions, from the moment of the removal of the setons, rowels, and blistering agent, a perceptible relief has ensued, and ultimate recovery resulted. How often do we find that setons and rowels will not act at the time they are most wanted, viz., in the acute stage, and only begin to produce the effect required after the danger is over, and when we could do very well without them?

I have endeavoured to clear this point up by putting to the test a strong cart-horse, aged, but in good health. He had no cough or disease, but was condemned in consequence of an incurable lameness in his foot, which had existed for several months. I put a rowel in his chest, two long setons in each side, and also blistered his sides extensively and severely with cantharides and biniodide of mercury ointment. In twelve hours his pulse had risen thirty beats in the minute. The next day the blister was repeated, and the pulse rose twenty beats in the minute more; and on the third day he died. The severe counter-irritation appeared to sweep through his entire frame. But the reader may perhaps argue, "Is not this experiment a proof of that law you seem inclined to ignore? Was it not the absence of internal inflammation which enabled this external inflammation to produce such effects?" I would say, I think not; the impression on my mind is that the nature of its operation would have been the same in either case; but in internal disease it would in all probability have increased the constitutional disturbance, and materially aggravated the intensity of the malady. As it was, its power of working evil and destroying life seems perfectly plain, and I feel quite satisfied that thousands of suffering animals have been hastened to their end by the means which were employed for the sole purpose of recovering them.

The Duties of the Practitioner.

To arrive at professional eminence, we must exercise diligence and close attention, as we pass through the various stages of life, and glean from each the fullest amount of knowledge it is capable of affording us. Speaking practically, then, we will presume the practitioner has commenced with his patient, and is treating it, as indicated in the former part of these papers. At his second visit, he takes the pulse, and then referring to the pencil memorandum on the wall, made at his last visit, compares the number of beats, and finds they are eight, twelve, or twenty less, and the breathing is quieter. On his third visit, he finds the progress equally satisfactory; in such case, he may make a chalk across the case, and order that the animal may engage in the realities of daily life.

But, by way of arguing both sides of the question, we will suppose (and such a state of things will happen) that the practitioner on his second visit finds no improvement in his patient. It is his special duty to examine each point himself; in the first place, to inquire whether his patient has had the full benefit of fresh, cold air, cold water, hay tea, or linseed tea; and his ears, and legs, and feet are warm. The practitioner is guilty of gross neglect, if he does not examine with his own hands, and make himself quite sure, upon all these points. Are his bowels acting, and how? The attendant will very likely say, "Oh, his dung is as nice as it can be!" and here let me caution the reader not to rely upon such a statement, as it is quite possible he may be misled. He should see it himself, or have his patient raked before his eyes; when if he is constipated, throw up an enema, and order a freer allowance of hay tea or linseed tea; if the contrary is the case, order a more moderate allowance of fluid. We will presume the case is not really worse; on referring to the pencil memorandum upon the wall, the pulse is found exactly the same, 76 or 84, breathing not quicker; then persevere till another twelve hours have passed; the chances are, the excitement will yet yield, unless there is some chronic disease in the lung tissue. On the third visit the practitioner may find no improvement, and he is now justified in having recourse to other and stronger treatment, viz. a large rowel in the breast, mustard to the sides. Keep the animal eating, if you possibly can, some nice, soft, light diet, sparingly given. The mustard may be repeated every four, six, or twelve hours, according to the urgency of the symptoms; and its potency may be increased, by adding Liq. Ammon. Fortis. ℥iss to one pound of mustard and two quarts of warm water. Some practitioners would apply the mustard at the second visit, but in that case I would advise it to be used weak. At this stage, it is his bounden duty to spend at least twenty minutes or half an hour, each visit, with the case; to observe closely every symptom; let every phase of the malady have time to be fairly fixed on his mind, give the medicine, and perform every office himself. If it be a valuable horse, and within reasonable distance, he ought to be seen every eight or twelve hours. To this, perhaps, some of my readers will demur, and say, "It is all very fine, to attend twice or three times within twenty-four hours, and half an hour at once; if you had an extensive practice, you would find you could not do it." To this I would reply, that no man should be so circumstanced, as to be unable to attend as above indicated, when he has at heart the interest of an employer, who has placed in his care the life of his animal. I manage to find time to attend thus, although in charge of over five hundred cart horses, in contract, besides a miscellaneous general practice. It must be borne in mind, the disease is one of the most dangerous, and is just now in the most critical stage; and if it continues obdurate for four or five days, the amount of damage done to the tissues that are involved will be such as to defy our best remedial agents. In all such cases, the calamity to be most apprehended is hydrothorax, adhesions, or vomicæ; when, in the vast majority of cases, our best treatment is unavailing. It will be found that much benefit may sometimes be obtained by using a large horsecloth or thick grey rugging, one and a half yard wide, by five yards long. I immerse the whole of it in hot water, wring it out well, and then wrap it completely round the thorax and abdomen, and pinning it moderately tight, cover the whole with dry cloths, and allow it to remain on for two or three hours, and then renew it.

Hydrothorax.

We must presume the disease is still resolutely holding on its obdurate course, while day after day "hope still tells its flattering tale;" the close observer, however, cannot shut his eyes to the fact, that the difficulties are becoming greater and greater; but even yet our labours may be crowned with success, for nature when well seconded, and not having been sapped by artificial means, may make an effort, and our patient may yet recover. But let us trace the dark outlines of this case a little further. Day after day, by dint of great care and good nursing, the patient is sustained; but in the face of your tonics, belladonna, preparations of iron, hydriodate of potass, iodine, and everything else you can think of, the conviction will force itself upon your mind that the water gains, and the ship is gradually sinking. In this stage I have often been surprised at the difference there is in the symptoms in different cases. One will breathe comparatively tranquil even in the last stage, whilst another breathes in such a manner as to show the greatest possible distress. Again, some eat astonishingly well all through, whilst others loathe all food most obstinately from the first. To this latter may be attributed the fact that one lives much longer than the other; the one dies in about fourteen days, whilst another lives three or four weeks, and in some cases rallies after all. I have also observed where the pleura is chiefly affected, and effusion going on, that the horse maintains an obstinacy to stand—he will stand until he fall and expires; but where the pleura is not so much affected, but the bronchia and lung tissue is becoming disorganized and mortified, he will lie down for a short time at once, especially in the last stage. Percussion and auscultation are only correctly acquired by very careful and close observation, and even then the sounds are so variable that I have known our best practitioners to be wholly perplexed and at fault; and the operation of paracentesis thoracis must at all times be left to the intelligence of the practitioner; but all the while we behold our suffering patient obeying the laws of an immutable destiny, which seems to tempt one to ask—

> "Why preys the malady
> So slowly on this frame, when death is coveted?
> But lo! this death is here, it comes apace."

ULCERATION OF THE SHEATH OF AN OX.

By A. H. Santy, M.R.C.V.S., York.

Seeing in your February number an extract from the "*Journal des Vétérinaires du Midi,*" detailing the particulars of a case of ulceration of the sheath of an ox, I thought I would communicate to you a similar instance which I had under my treatment last summer.

A two-years old bullock was the subject of the disease, and had been so for some eight or ten months previous to my attention being directed to him. He had been very much affected with warts growing close to the sheath, for which, either by the owner or some farrier, a dressing, containing arsenic, was applied. This caused a great amount of sloughing, which was ultimately followed by fungoid growths.

When I saw the animal, there was a large fleshy substance hanging from the underneath part of the abdomen; and he was very much emaciated. The urine was being passed through an aperture situated a little more than one third from the end of the sheath.

I proceeded at once to dissect away the tumour, as close to the body as I could, when it was found to weigh several pounds. The inner surface of the sheath was now ascertained to be very much ulcerated, and discharging an offensive and unhealthy kind of pus.

I examined the opening whence the urine came, and withdrew from it some large dark-coloured sloughs, three or four inches in length. After well washing the parts with tepid water, some diluted chloride of zinc was applied, in the proportion of ℈j to a pint of water, and the outer surface was dressed with the terchloride of antimony. This dressing was only once repeated before the parts assumed a healthy condition, and ultimately healed.

The bullock, when I saw him a short time afterwards, was still going on well, and gaining condition fast.

TREATMENT OF LAMINITIS.—PREVALENCE OF CATARRHAL AND GLANDULAR AFFECTIONS IN NEW ZEALAND, AND THE STATE OF VETERINARY PRACTICE THERE.

By G. J. Austin, M.R.C.V.S., Auckland, New Zealand.

Located as above, I feel desirous to furnish from time to time, in the fulfilment of a promise long since made, some cases for publication in *The Veterinarian.*

The mode of treatment I have for some years past adopted for "laminitis," and which, if carefully resorted to before suppurative action commences, will be found invariably successful, is as follows. Were it necessary, I could send you a list of familiar names in London whose horses, affected with this disease, have been under my treatment.

I first take off the horse's shoes, frequently when lying down and unable to stand; then pare the sole moderately thin, and if necessary reduce the crust or hoof at the toe and quarters; next, immerse the feet in hot bran poultices in canvas bags, and have the feet, without removing the bags, dipped in a pail of hot water five or six times during the day. I then add ℨj of tincture of Aconite to ℥xij of distilled water, and of this I give one fourth part every three hours. This I continue until the horse has recovered. I need hardly say, it will be found necessary to change the bran poultices about every alternate day.

Since being in New Zealand, I have had three cases of this disease, which I have treated in the above way, and they have perfectly recovered. In a fourth, that suppurated, there were left the usual indications, viz., convex soles and a hollow and ringy wall, *principally* from neglect.

Horses, I think, suffer from catarrhal and glandular affections in this part of the globe even to a greater extent than they do in England; but, fortunately, bronchial and pulmonary diseases are much less frequent than at *home.* (We still use the latter word for old England.)

A little general information respecting this country may not prove uninteresting to your readers, although it be not strictly professional.

It is now the middle of our summer, and we have had a very fine year, except that too little rain having fallen the country is suffering from drought, which is unusual here. Our summers are not so oppressively hot as in England.

The nights are nearly always cool, so that the same amount of bed-clothes are required as in winter. Indeed, there is but little variation in the seasons, the principal being the great power of the sun in the summer's day, and a much larger quantity of rain falling in the winter. The greater portion of the good land in this province is in the hands of the native owners, who will not at present sell to the government; and this very much retards the progress of the colony; but the natives are very fast disappearing from the face of the country. At present, this colony offers a good chance of success to the agricultural labourer, and also to the farmer or man of large capital, as the really best lands are covered with under-bush or scrub, large forests, and high ferns; and clearing, fencing, building, &c., so as to get the farms into cultivation, involve an expense of at least £10 per acre.

The amount of veterinary practice here is not large, and it would not make me very busy, except during the two spring or breeding months. We possess a very good class of horses here, also of sheep, and we have likewise many very fine cattle; but no distinctive breed of them, except of short-horns.

I am residing in the suburbs of Auckland, and my land is thirty miles from here. There is a very good summer road to it, but it is almost impassable through the forest in the winter. A large quantity of the land around Auckland is not worth cultivating; it is a poor, white, sandy clay, with no top soil, and this is the case with many thousand acres. The situation of the town of Auckland is very pretty and picturesque, consisting of hills and valleys, with many bays and indentations formed by the principal harbour, and there are some very good streets and buildings, although the major part of them are of wood. The longest road properly made is about ten miles. The other roads are only tracks cut, and not mettalled or gravelled. If we keep free from quarrels with the natives, I have great hopes for the future of this country. It is more like England, perhaps, than any other part of the world.

CASE OF ABSCESS SITUATED BETWEEN THE MUSCULAR AND CUTICULAR COATS OF THE ŒSOPHAGUS.

By G. Mather, M.R.C.V.S., Doncaster.

A case came under my notice not unlike the one recently detailed by Mr. Stevenson, of Newcastle; his being an instance of abscess existing in the submucous tissue of the trachea, whereas mine was an abscess between the muscular and cellular coats of the œsophagus. The following are the particulars.

I was requested to attend a bay filly, which, the groom told me, had been very uneasy during the whole morning, and had been rolling. Being unable to go at the time, I gave him two antispasmodic draughts, with the necessary directions, adding I would come and see the animal as soon as possible.

On arriving there, about two hours afterwards, I found the filly much relieved, but still pawing the ground now and then. I gave her four drachms of aloes in a ball, and left her, with instructions that should she evince indications of being worse they were to let me know.

The next morning she appeared a little dull, but this I attributed to the aloes. She had eaten her mashes, had lain down in the night, and appeared anxious to join her companions in the yard. Such being the case, I told the groom I did not think it was necessary for me to see her again, and left her, to all appearance, quite convalescent.

On the following day, however, I was again requested to see her, as she had been pawing the ground all night, and the saliva was running from her mouth.

The symptoms evinced to-day were more those of sore throat than colic. The pulse was increased to 60, the breathing slightly disturbed, saliva flowing from the mouth, eye staring, head depressed, languor, and she was continually making slight attempts to swallow; she had not eaten anything, and on giving her a little water, part of it came back through the nostrils. I carefully examined the throat and the whole course of the œsophagus, but was unable to extract anything abnormal. The next day she was the same, and still had not eaten anything. I found it useless to give medicine, as it was all returned through the nostrils. On seeing the animal the day after, I was convinced that she would not live out the day. The pulse was imperceptible; and she was continually making spasmodic gulps, as if to get rid of something in the throat. I gave her some more water, which she tried to swallow, but the greater part of it came back as before, and caused intense pain; indeed, I thought she would have been suffocated. She walked round and round her box, gave one of those peculiar gulps, bringing her nose to her chest and shrieking out with agony. Having brought a probang with me, I determined to pass it down the œsophagus. I did not meet with any obstruction to its passage until I had introduced it to within a few inches of its whole length, when I felt a slight impediment, but by gentle pressure I soon overcame it. I then gave her a little more water, but with the same result, and she died within half an hour afterwards.

Post-mortem appearances.—Just at the termination of the œsophagus, I found an enlargement to exist the size of a large orange; and on passing the probang down, ascertained that with a little pressure I could get beyond it. I then cut down on this enlargement, and found, to my surprise, that it was an abscess, situated between the muscular and cuticular coats of the tube, containing about half a pint of purulent matter. Considerable thickening also existed for several inches up the œsophagus.

On opening the stomach at its cardiac orifice, there was the largest number of bots I ever saw in a horse's stomach. They were located within half an inch of the abscess, and all the surrounding parts were considerably inflamed. I also found some forty to fifty bots in the duodenum.

ACUTE ANASARCOUS DISEASE, CALLED BY THE NATIVES OF INDIA *ZURBARD;* AND THE BENEFICIAL EFFECTS OF THE IODIDE OF IRON.

By D. J. Hinge, M.R.C.V.S., and V.S. Royal Artillery.

The singularity of the undermentioned case has induced me to place it on record, particularly as it occurred in another country—India, where our resources, in a great measure, depend upon ourselves.

In April, 1858, during our march from Vauxstomb to Baroda, in the suburbs of the city of Surat, where we were detained seven days in disarming the rebels, my attention was called to a valuable gray horse, seven years old, of a strong constitution, that was attacked with what the natives term *zurbard.*

Symptoms.—The whole of the under surface of the abdomen is very much swollen; great heat of the skin exists, accompanied with pain; on the application of pressure, there was no indentation left, the parts being almost as hard as a piece of oak; the pulse is 120 in the minute; the respiration very much accelerated; and the general appearance of the animal similar to that of a horse which has undergone much exertion.

So great is the dread of this fearful disease by the native horse-doctors, that as soon as they see the least symptoms of it, they immediately place the affected animals to leeward, as the effluvium from them has been known to take off fifty or sixty horses before the ravages of this singular disease could be arrested.

The treatment adopted by me consisted in venesection, the constant use of fomentations, and a ball was given, composed of aloes and opium, in combination with nitrate of potassa.

The effect of the fomentations was to disperse the swelling, and to cause it to disappear from the abdomen; but suddenly the fore extremities and the chest became affected to such an extent that the animal was quite powerless.

On the second day, I found him relieved from that excited appearance; his respiration was also more composed, and the pulse had fallen to 90. I ordered the fomentations to be continued; and the bowels being still constipated, I directed injections to be thrown up frequently during the day.

On the third day, being still costive, I gave a ball containing aloes and nitrate of potassa. The swelling was still increasing, and also the excitement. The native practitioners were surprised to think the animal had lived so long, saying they never saw so severe a case.

On the fourth day the bowels acted slightly. I continued the fomentations, and gave the ball as before. The appetite was now voracious; he ate even his own excrement, and the dirt, or anything he could get at, and this to such an extent, that I was obliged to have him muzzled. I scarified the parts, but could get no blood.

On the seventh day, having succeeded in our object, we marched to Bevach, which is about six miles. This took him two days to accomplish. On coming to the river, eight men were required to lift him into a boat, he being so helpless. The reason we did not shoot him was, my captain wished me to try and see if so formidable a disease could not be overcome, our guides telling him they had known hundreds taken off by it at one time; in fact, seldom is one cured. In a few days the case became one of interest to all; I therefore exerted myself to the utmost, anticipating a successful result. The swelling continued present for about fifteen days, when all at once his enormous appetite entirely left him, and I now put him under a course of mineral tonics. But the swelling continued to increase until his head became three times its natural size, and move him we could not. I then tried the iodide of iron, giving it in half-drachm doses daily, which soon greatly improved his appetite, and reduced the swelling as if by magic. This so pleased my captain, that he gave me free use of his stores for port wine and bottled ale for my patient. These I gave him daily, and in a short time after using the iodide of iron, I perceived I was on the right track to master this formidable malady; for my patient improved rapidly, although he was on the sick list about three months before he was fit for duty.

When we arrived at Baroda, I had a great number of horses on the sick list, and amongst them several affected with *zurbard*, but in a mild form. All of these I treated with the iodide of iron; when I again saw I had in that valuable agent the means wherewith to stop the progress of the disease. I owe to Professor Morton my knowledge of it, and consider the profession is highly indebted to him for introducing so valuable a medicine into our materia medica.

EXTENSIVE DISEASE OF LUNGS WITHOUT ANY PREMONITORY SYMPTOMS — REMARKS ON VETERINARY OBSTETRICS.

By W. Furnivall, M.R.C.V.S., Kington.

On the 15th of February last, I was requested by Mr. W. Ward, builder, in this town, to see two bay cart-horses, which had been reported amiss three days before by the wagoner, who stated that they had a slight cough, and were off their feed. The owner, previous to my being called in, had given to each a pint of linseed oil and then Aloes Bbd. ʒviij, in ball.

On my arrival, I found the aged horse suffering from superpurgation; pulse 60 and weak, loss of appetite, accelerated breathing, flanks tucked up, legs and ears very cold, mucous tissues congested, submaxillary glands swollen.

I ordered mustard and ammonia to be applied to the neck and throat, stimulated the extremities with Lin. Tereb., using plenty of friction; gave starch gruel, and Pulv. Opii ʒij in haustus, and throw up enemas consisting of starch and oatmeal gruel. I also directed the patient to be well clothed, and his general comforts attended to.

Examining the six-year old animal, I found that the physic had but slightly increased the action of his bowels; but the pulse was intermittent, and 70 in the minute. By auscultation, I found the lungs extensively diseased; the breathing was quick and short, and accompanied with considerable fœtor; the head was perfectly pendulous, and the animal was unable to raise it; a hard and painful cough was also present; the mucous tissues were of a dark purple aspect, the submaxillary glands hard and tumefied; a râle likewise existed throughout the entire length of the trachea, the urine was high-coloured and scanty, and the extremities cold. He has eaten nothing since the 11th instant, but drinks gruel and hay tea.

Prognosis.—Unfavorable.

Treatment.—Apply the Ol. Mylabris Cichorii freely to the throat, neck, and sides; give Ammon. Carb., Potassæ Nitras et Pulv. Gentianæ in bol.; stimulate the extremities well, clothe the body, and allow linseed tea and gruel *ad libitum.*

February 16th, 9 a.m.—The aged animal is relieved, and eats a small quantity of hay. Exhibit a stimulant and astringent combined. Apply friction to the extremities, and bandage them; continue the linseed tea, allowing a small quantity of oats, if he will eat them.

The younger horse has all yesterday's train of symptoms aggravated; and the fœtor of the breath is unbearable. I removed him to a large airy box. He has eaten nothing, and will not now drink; but the attendant has given him plenty of gruel. Believing this to be a hopeless case, I advised the owner to destroy him at once, but he declined doing so, and death terminated his sufferings at 10 p.m.

February 17th.—Autopsy at 10 a.m.. The contents of the abdomen were normal in every respect. On opening the thorax, about a quart of sanguineous fluid escaped; the lungs were in a gangrenous condition, and abscesses measuring nearly an inch in diameter, and containing grumous fœtid pus, existed in their structure; the bronchi and trachea were nearly filled throughout their entire length with a dark-red frothy mucus, just sufficient space being left free to pass a probe down; the lining membrane was of a dirty purple hue, as was also that of the larynx and nares.

The only history of the case I was able to glean is, that the horse, fifteen months ago, was purchased for thirty pounds from a farmer, who bred him. Since he came into Mr. Ward's possession he had been liberally fed, and used daily through all kinds of weather, and he had never been off his feed or ill during all the time; the wagoner had not even noticed him cough or appear dull until the evening of the 11th, at 9 p.m., when he went to feed the horses as usual, ere he left for the night.

I cannot comprehend how such extensive disease should exist in the lungs so long without any premonitory symptoms being shown, especially as the horse was used for very heavy draught purposes.

By the exhibition of stimulants and tonics the aged horse soon recovered, and is now at work again.

I noticed with pleasure the remarks made on Veterinary Obstetrics in your valuable Journal for March, by Mr. A. Lawson; for, being located in a large breeding district, I am frequently called to difficult cases of parturition, but not as a rule until probably two or three neighbours have tried their hands at the case unsuccessfully.

During this month I was hastily summoned to see two valuable cart mares which had endeavoured to abort, and whilst the messenger was on his way here, a young farmer, supposed to be skilled in such matters, was consulted about them, and on his making an examination as to the position of the foals he at once determined to cut them away. On my arrival, I found him busy at work on the second foal, and I therefore declined to interfere in the matter. I perceived that he employed a large clasp knife to accomplish his purpose, and, as I anticipated, he not only brought the foals away piecemeal but divided the walls of the uterus in not a few places. This I ascertained on examination by the vagina, and from a portion of the intestines protruding through the apertures. I informed the owner of the consequences which would result, and refused to have anything to do with either of the animals, and took my leave. I was afterwards informed that they both survived for thirty-six hours nearly, when death terminated their sufferings.

During the four preceding years, I have not known in this district so many cart mares abort in one season as in the present one. I have excised nine healthy foals, and drawn away several from young mares, and am glad to be able to say, without losing a patient.

The agriculturists in this part of the country certainly prefer any one's services which will cost them nothing, though often at the loss of their animals, rather than employ a professional person in such cases; and therefore I do not hesitate to tell them that it serves them quite right. When shall we be duly estimated?

BOTANY AS APPLIED TO VETERINARY SCIENCE.

By W. Watson, M.R.C.V.S., Rugby.

(*Continued from p.* 149.)

Having made ourselves acquainted with this subject, we cannot fail to be struck with the wide field of improvement that is open to the agriculturist; and it would be well to avail ourselves of every opportunity to impress upon him the importance of paying more attention to the *quality* rather than the quantity of the grasses he cultivates, especially as food for horses. Much, also, as regards their nutritive value, will depend upon their proper management, particularly when made into hay.

The grasses should be cut down for that purpose when they contain the most nutriment, and that is, at the time when they first commence to flower. They have at that period generally attained their full growth, and contain the largest amount of the nutritious principles, starch, gum, &c., in their leaves and stems. If allowed to remain until their seeds ripen, the stems contain little beside dry undigestible woody fibre, the chief nutrient principles being then concentrated in the seeds. After being cut, the grass should be allowed to lie a short time, during which fermentation goes on, and then dried as quickly as possible, so as to check undue fermentation and remove the excess of water; afterwards it should be placed in the stack, and allowed to remain for about twelve months, during which period more moisture will be removed, and the fermentation, which has been slowly going on, attains its maximum. It is in this condition that hay is most fitted for all classes of horses. Horses generally appear to have a great relish for recently made hay; but it frequently proves injurious to them, producing indigestion, diarrhœa, &c., partly owing to the large amount of water it contains, and also to the fermentative action which is going on in it. When hay is put together before the moisture is sufficiently dried out, we get excessive fermentative action set up; great heat is evolved, and the dark-coloured, mow-burnt, or heated hay is produced. Or during a wet season it may be put together too damp, and become affected by vegetable growths in the form of mould. In either case it is unfitted as food for horses, but especially in the former, in consequence of the fermentative action passing on to the acetous stage, when a considerable amount of acetate of potash is produced, which, acting as a powerful diuretic, eventually produces great debility and permanent injury to the constitution of the animal. And yet how frequently do we hear farmers and others, when speaking on this subject, say that such food is good enough for cart-horses! This is a great mistake; and in no department is more attention required than in the present system of management adopted towards our ordinary cart-horses. Who has not observed, especially in the midland counties, a team of five or six great heavy, coarse, sleepy-looking animals, crawling along, resembling more some mechanical motion of a century ago, than the active, vigorous efforts of good horses? This, to a certain extent, may depend upon the breed, which I am glad to say is now being substituted by a lighter and more active class. But this is not all; much depends upon the general treatment of these animals. Who can be surprised at this, when we find them worked hard for several hours in the day, then brought home reeking with perspiration, and made to pass through a pool of water, partially to clean their legs; five or six of them being crowded together in a close, ill-ventilated stable, given a pailful of cold water, taken perhaps from a neighbouring pond, and which is almost black with the fluid excrements from the yard or dunghill being allowed to drain into it, and then fed upon new, ill-conditioned corn, with a large quantity of coarse, innutritious hay, chaff, straw, or malt-dust, and left to feed, sleep, and pass the night? The result of this is, that, to supply the wants of nature, a very large quantity of this material has to be consumed, the digestive system becomes overtaxed, and the brain, holding so intimate a sympathy as it is known to do with the stomach and digestive organs, soon becomes affected, the whole nervous energy impaired, the dull, heavy, sleepy efforts of the animal produced, and the foundation laid for those diseases which we find so prevalent amongst this class of animals, viz., indigestion, broken wind, stomach staggers, flatulent colic, inflammation of the bowels, œdema, &c., &c. Surely the loss the owner sustains, if the causes were properly pointed out to him, would at once induce him to consider this matter, and attend to the better management of these animals, so as to supply them with a more generous diet, and give these coarser foods to his cattle and those animals in whom the great exertion for laborious work is not called forth. Who can better fulfil this duty than the members of our profession, called upon as we frequently are to attend upon these cases, when disease is carrying off some valuable animal? And being fully impressed with the causes in operation, we can explain to the owner the means of obviating these losses to a great extent within his own reach. As the cause and prevention of disease is a subject which is now engaging the deepest attention of the most eminent practitioners of human medicine, has it not, I would ask, some claims upon our own?

(*To be continued.*)

FRACTURE OF THE HUMERUS OF A HORSE.

By A. Dunlop, Student of Veterinary Medicine, Veterinary College, Edinburgh.

Having seen in the *Veterinarian* for February last a case of sudden fracture of the humerus of a horse, contributed by Mr. William Field, jun., who asks—" How did the accident happen?" and " Could the bone have been fractured during the run?" &c. These queries have induced me to forward you an account of the following case, which I remember having seen in my father's practice.

A powerful draught horse was brought into the forge, lame in the near fore foot, caused by a nail in the shoe. At that time my father observed, and directed the attention of the owner to, a small, unhealthy wound, situated about the middle of the femur of the near hind leg, which had been occasioned by a kick from another horse. The owner considered it of no consequence, as no symptoms of lameness had appeared, and he was, therefore, under the impression that the wound would be all right by the time the horse was sound in the fore foot.

After being eight days in a loose box, the horse was taken out to work again, apparently quite sound, and continued so all that day. On going home from his work he stumbled, from the effects of which he was unable to proceed further, and on examining the wound my father observed a fractured bone protruding, and immediately caused him to be destroyed. A subsequent examination proved that the origin of the fracture was the kick already referred to, for the surfaces of the two parts of the fractured bone had, by the continual friction, become *quite smooth*.

This case, I think, warrants the conclusion to which I now come, namely, that Mr. Field's horse had received the fracture during the hunt, and the bone, although fractured, still retaining its position, was not displaced till he "blundered forward."

PLEURO-PNEUMONIA IN CATTLE, AS IT HAS RECENTLY SHOWN ITSELF IN AMERICA.

By C. M. Wood, V.S., Boston, Massachusetts, U.S.

Early in October, 1859, I learned that Winthrop W. Chenery, Esq., one of the merchant princes of this city, and a resident in the town of Belmont (seven miles distant), had lost a large number of his stock, by a disease which nobody appeared to understand. On the 26th of that month, I met and spoke to Mr. Chenery upon the subject, when he not only corroborated what I had previously heard, but also informed me that he had lost twenty-four head of valuable cattle, of various ages, and many of them imported at great cost. He likewise stated that one of a yoke of working oxen was then sick with the same distemper, and he feared it would die. Further, that he still had a number of valuable animals, which he thought would be likely to take the disease, and he should be pleased to find some person who understood the nature of the malady, so as either to cure it, or arrest its further progress. He added that Dr. George H. Dadd, of this city, had visited and administered medicine to many of the cattle, but that nearly every case had proved fatal. Dr. Dadd said that he had never before seen anything of the kind, but from the description he had read of it, he believed it to be a disease of Continental Europe, called "pleuro-pneumonia," and that medical treatment was of no use whatever, as the disease was always fatal.

One of my professional brethren, Dr. William Saunders, of Salem, in this State, a man of extensive practice amongst neat cattle, being present, we agreed to visit the sick ox that afternoon. On arriving at the barn, or cowhouse (which I will hereafter describe), we found the animal lying in a box or pen. He was eight years old, of the Devon breed, and exhibited the following symptoms: countenance dejected, eyes sunken in their orbits; pulse 70, small and wiry; respiration laboured, rumination and appetite lost, bowels constipated, breath offensive. He sighed heavily as he lay, and when urged to rise gave a loud grunt, and when up moved reluctantly and with much apparent difficulty. His body was emaciated, his hair standing on end, his skin adhered to his ribs, he drank but little, and when food was offered averted his head, as if hardly conscious of his own existence.

On examination of the chest, it was evident that there was consolidation of the lungs. I informed the owner that there was no chance of the animal's recovery, when he said that he wished him to be destroyed at once. He was forthwith led from the stable, and with great difficulty taken to a field some forty or fifty rods distant, and there knocked on the head. He had been sick about two weeks.

Post-mortem examination. — On opening the abdominal parietes, all the viscera were found to be healthy, except the liver, which presented a dirty-yellow hue, was quite soft, and when broken down exhibited a kind of disintegrated, coarse, granulated, degenerated mass. The diaphragm, on its abdominal surface, was healthy; on its anterior or thoracic surface it was ulcerated throughout. The chest contained several gallons of a straw-coloured fluid. The lungs presented an extraordinary appearance, being at least three times their usual size, of a dark-brown colour, almost black, and when cut into they were nearly solid in their whole substance, except a small part of their anterior or bronchial portions, in which softening had commenced, while their inferior presented, when cut, a chequered appearance, of a dark-yellow cast, but they were evidently tuberculated throughout their whole substance, and they adhered firmly to the walls of the chest. There was, however, a thick, tough, yellow lymph, of nearly an inch in substance, intervening between the pleura pulmonalis and the pleura costalis.

My employer seemed well pleased with my diagnosis, and also my demonstration, and promised me that of the next case which presented itself I should be immediately notified.

Accordingly, on the 14th of November, I was informed of the sickness of two animals; one, a three-year old Devon heifer, the other, a four-month old, female, pure-bred, Ayrshire calf. I immediately repaired to the spot, where I met Dr. E. F. Thayer. Upon examination, the following symptoms were presented. Pulse quick and oppressed; respiration hurried, and accompanied by a sigh during inspiration and a grunt in expiration; the visible mucous surfaces highly injected; rumination suspended; appetite much impaired; bowels unusually constipated, the fæces being granular. There was, on pressure of the intercostal spaces, extreme soreness evinced, particularly in the calf, with also a staring of the hair and a tightness of the skin.

I ordered a gentle aperient to be given of infusion of thoroughwort (*Eupatorium perfoliatum*), a remedy very highly valued in this country in the treatment of cattle, as a cathartic, with Pulv. Zingib. and molasses. Plugged their dewlaps with garget root (*Phytolacca decandra*) — another Yankee remedy—and ordered warm drinks and a moderate diet.

November 15th.—The bowels of both are responding to the medicine, otherwise there is but little change in either. Gave tonics combined with stimulants, in small doses, three times a day, interposing an occasional aperient, as above described, and continued this treatment until the 29th, when I pronounced them both rapidly recovering.

The heifer was, however, the subject of a malignant disease (carcinoma) in the right eye, which had destroyed the sight and also turned the eye out of its orbit, and likewise obstructed the nasal passage on that side. As there was no hope of her recovery from this disease, the owner wished her destroyed. This was deferred to a fair day, the weather now being very cold, and also to enable me to notify Drs. Saunders and Thayer to be present.

On Friday, December 2d, Mr. Chenery called to inform me that the mammoth cow, "Lady Washington," was sick with the distemper, and wished me to visit her immediately. I went accordingly, accompanied by Dr. Saunders, and meeting with Dr. Thayer there, I examined the animal, which I will now describe. She was six years old, of the pure Durham breed, and measured as follows: from the occiput to the tuberosity of the ischium, nine feet; girth around the brisket, eight feet eight inches; height, five feet four inches (sixteen hands); and weighed 3260 lbs. She gave birth to a calf two days before. She had, as I was informed, been delicate in her feeding since the Sunday previous.

On the morning after calving, the following drench was given her:

Infusion of Thoroughwort, Oij;
Sulph. Magnesia, ℥viij;
Pulv. Zingib., ℥j;
Molasses, ℥iv.

Upon examination, the following symptoms were presented: pulse rapid and oppressed, the artery having a peculiar vibrating or double action under the finger. Respirations 36; sighing during inspiration, grunting on expiration. There was also a kind of subsultus, or spasmodic twitching of the involuntary muscles about the chest. The rumination had ceased; the appetite was lost; she drank but little; the visible mucous surfaces were slightly injected, and a morbid sensibility of the spinal column existed about its connexion with the diaphragm. She coughed occasionally; lay down frequently, and rose up without any unusual effort. On the left side percussion was very dull, and also on the right, below the median line, above which a vibratory sound was most distinctly heard. The left lung was evidently consolidated, and the right partially so.

Treatment.—The bowels having responded to the medicine before given, I plugged the dewlap on both sides with the *Phytolacca decandra,* and gave tonic and stimulating agents combined, under the conviction that, as torpidity and debility seemed to be the leading features in the disease, this mode of treatment was fairly indicated. I ordered her to be kept warm, to have warm drinks given her, and a little food of any kind that she would eat.

It being now a fine day, and Drs. Saunders and Thayer present, we destroyed the Devon heifer, which, upon examination, showed no trace of the acute disease for which she had so recently been treated. The abdominal viscera were healthy, except the liver, upon the anterior superior surface of which was a small abscess, about the size of an English walnut. The heart was healthy; the lungs, also, with the exception of a small portion of the left lung, about five inches in length and four in breadth, which at the extreme inferior margin was consolidated, and, strange to say, it had the appearance of a band having been placed around it between the healthy and the diseased parts. It was hanging pendulous, as if about to slough away from the healthy portions. She had exhibited no symptoms of disease for a week previous to her being destroyed. She ruminated, ate, and drank well, took her rest regular, the excretions were healthy and spirits good, and, to all appearance, she had fully recovered from the recent attack of the disease, being killed only on account of the cancer in the orbit.

Dec. 3d.—I visited the mammoth cow. Symptoms the same as yesterday. She drinks a little gruel, but eats nothing; lies down and rises without difficulty. The sighing, grunting, and twitching of the muscles of the chest, still continue. The countenance is expressive of extensive disease; surface of the body cold; extremities, legs, ears, and horns, warm and cold at intervals.

Treatment.—I inserted two setons, of about ten inches in length, of Professor Morton's medicated tape, on each side, which were dressed occasionally, and renewed when needed; and at the urgent request of Dr. Thayer, several applications of the cantharides liniment were made over the setons, but it produced little action. The vital force seemed concentrated within the body, and the skin had become cold and insensible to the stimulating effects of the blister, and, indeed, even the setons were very tardy in their operation, and hardly effectual.

As this communication must necessarily be lengthy, I will be as brief as possible as to treatment. Suffice it to say, that it consisted of tonics and stimulants, given for about three weeks, the bowels all this time remaining healthy, when diarrhœa set in, which was succeeded by rapid prostration. I now ordered one pint of wheat flour and one of oatmeal, made into gruel, one half to be given that evening, and the remainder the following morning. From this time she was disposed to constipation, and required aperient medicines once in three or four days at the longest. A quart of infusion of thoroughwort always gave relief.

She continued in this way, occasionally rallying for a few hours, only to sink lower in the scale of health, until January 9th, a.m., when she died, after five and a half weeks' illness, with but little variation of symptoms from the first to the last. Nor did she during all this time eat a sufficiency of food to have supported her one day when in health.

As I had informed my employer at first that this animal was suffering from latent disease of the lungs (as the sequel will show), he was desirous that I should demonstrate my diagnosis by an autopsy of the animal.

Again accompanied by Dr. Saunders, I went to Belmont, where we met Dr. Thayer.

Post-mortem examination, seven hours after death.—The stomach and intestines were healthy, and they contained very little ingesta; the kidneys and bladder were also healthy, the latter was empty. The liver was pale and of a yellow hue, enlarged in size, flaccid, and appeared to contain a quantity of a semi-fluid or grayish matter. On opening the thorax the lungs were found to present a mass of disease, and the anterior and inferior portions of the right lung were so firmly adherent to the pleura costalis that it required a stout man to break down the adhesions. These organs, when placed upon the ground, were viewed with astonishment for their bulk, and were supposed by those present to weigh at least sixty pounds. Their anterior portions were solid, with tuberculous deposit, quite hard to cut. In other parts a similar condition was observable, but not to so great an extent. They contained no blood, when cut scarcely staining the knife. The pleura costalis was healthy, except the adhesions just mentioned. When completely eviscerated, the abdominal cavity of this large animal seemed capacious enough to accommodate a small family.

I would here state, that by the side of the animal just examined, lay an imported Dutch cow, which had died the night previous. She was imported in 1857, and had been sick since last June. On my first visit, October 26th, my attention was called to this cow. She was then standing by the side of another Dutch cow, which was imported in 1855. The former of these two was with calf by a celebrated Dutch bull, and the owner was desirous to keep her, if possible, until March next, her time of calving; but she was another victim to this tuberculous disease. On examination of this cow, the lungs were found to be a broken-down mass of disease and adhering to the pleura costalis throughout their whole surface. They were almost black in colour, and in the anterior and inferior portion of the right lung there was a large cavity, which had doubtless existed for a very long period, as it contained much offensive, streaky, black-and-green pus. The liver also presented extensive disease. The intestines too were discoloured. This, however, may I think be attributed to the animal's lying for twenty-four hours after death before examination. The one spoken of as standing by her side is still living, and well.

During my visits to the mammoth cow my attention was called to an aged cow, of the Durham breed, which my informant told me was as severely attacked as any he had seen among the herd. On examination, she exhibited the same symptoms as those I have before described, viz., the quick, small pulse; injected mucous surfaces; quick and laboured respiration; tight skin; staring coat; sunken eye; constipated bowels; loss of appetite; the same sighing and grunting; the surface of the body and extremities cold; rumination and appetite suspended.

I had the animal warmly covered, gave a diffusible stimulant, inserted setons in the chest on both sides, and ordered her to be well supplied with warm drinks. On the following day I gave a gentle aperient, which was followed by tonics and stimulants. In a few days she was convalescent, and is now apparently well.

I was informed that she had before exhibited slight symptoms of the disease, and had mustard poultices applied to her sides, which were supposed to have checked its progress for a time. This cow is the only surviving one of five which were purchased in the State of New York, and had never been housed until brought to this place.

I will now proceed to give a brief history of the disease from its commencement, together with a description of the stable or cowhouse in which the animals were kept.

The owner informs me that in the spring of 1859 he imported, from the north of Holland, four cows. They were shipped at Rotterdam on the 6th of April, and arrived in Boston on the 23d of May. Two of these cows were in bad condition at that time, supposed to be from neglect on the voyage. They were transported from this city to the highland farm in Belmont, seven miles distant, in wagons, being unable to walk. One of their number died on the 31st, eight days after its arrival, and a second on the 2d of June.

Presuming that the only disease of these animals was prostration, induced by injuries or neglect on shipboard, the symptoms were not noticed, only that they had diarrhœa, and that their evacuations were exceedingly offensive.

About the middle of June a third animal of this importation was observed to feed but little in the pasture, and to absent herself from the rest of the herd, appearing dull and dejected. These symptoms were succeeded by a hard, dry cough, ears cold and drooping, grinding of the teeth, short breathing, rapid loss of flesh and strength, and as the disease progressed, the breathing became more laboured, the animal making a sort of grunt at every respiration, and a fetid secretion took place from eyes, mouth, and nostrils. The respiration became more and more difficult, until in the last stage, when she stood with her nose elevated almost on a line with her back, and her mouth open, and thus she died, on the 29th of June, thirty-seven days after her arrival.

The next one was an imported cow from Holland in 1852, consequently she was fully acclimated. She dropped a calf on the 2d of August, about two weeks before her time, was taken sick on the 10th, and died on the 20th of the same month. Her calf is still living, and apparently in health, except that it has disease in the joints of the extremities. Under the influence of the Iod. Potass. externally and internally, it is improving.

During this month (August) an ox and a calf showed slight symptoms of the disease, but not an entire loss of appetite, and they both recovered.

About September 1st five or six animals were taken in the same manner, and in quick succession several others. During this month and the early part of October there were from five to ten sick all the time, and nearly all these cases proved fatal, twenty-four having died, and only eight, which were very slightly attacked, recovered. The average time an animal lived after the attack was about two weeks. In two or three cases they became tympanitic before death, and in one instance, of a two-years old heifer, the animal died in three hours after she was discovered to be ill. Strange as it may appear, no animal of the whole herd has died of this disease except those kept in the cowhouse, but the first two which died of the last importation, and they were not put there. Suppose a building standing on a hill-side, and commanding one of the most extensive prospects of any farm-barn in the state. You would think it in one of the most healthy locations. The cowhouse is fifty feet square inside; height from floor to ceiling, eight feet; with a cellar under the whole, for the purpose of making manure, having numerous small openings or scuttles in the floor for the purpose of passing down the excretions. These scuttles, having no hinges, would frequently tilt up and fall through upon the manure below, thus allowing the gases to ascend into the cowhouse. This, together with a badly ventilated place, with the cattle, forty-two in number, of all ages, standing nose to nose, I think you will admit was a sufficient cause for a disease of the character we have been describing, particularly when I again say to you that not a single head of cattle has died (except three out of the four, imported in May last) which had not been kept the previous winter in that cowhouse. The mammoth cow was bred in the state of Vermont, and was brought to market for beef, but Mr. Chenery was unwilling that such an extraordinary animal should be slaughtered, and he therefore bought her for breeding purposes. She was kept in the cowhouse from the middle of February, 1859, until the 1st of April, when she was removed a short distance into a shed, from twenty-five to thirty feet square, high, dry and well ventilated. Nor was she after leaving the cowhouse ever in contact with any other animals on the place, but was kept in the shed; nor was she ever out of it during her life, except once by accident, and then she did not come in contact with any other animal.

However strongly disposed I might be to call this disease infectious, I have equally strong reasons for believing the contrary. During the early part of the summer Mr. Chenery had in pasture, several miles distant from his farm, six young cattle, which were born in the spring of 1858. He had also three other young cattle, which were born in the fall of 1858; these three were kept in a pasture about eighty rods from the barn or cowhouse. He had also two calves from imported stock, born in this cowhouse in the spring of 1859. In

July, when old enough to put to grass, they were *first* pastured with the three nearest home; then the five remained together about four weeks, when they were all removed to the pasture, several miles distant, with the six older above named. The eleven were here kept together several weeks, when one of the two youngest which were taken from the cowhouse, and which had been exposed to its contaminating influence, was discovered dead in the pasture, and the other was very sick. The dead one was immediately buried, and the sick one taken home, where it died in two days afterwards. But the nine which had not been exposed to the atmosphere of the cowhouse have continued well up to this time. I should state that one of the youngest of these nine animals was supposed to be sick in December last, after their return from the pasture, when the person in charge gave to it a single dose of the *Yankee* remedy, thoroughwort tea, which immediately restored it to its wonted health. And notwithstanding they were exposed for weeks with the two which died, they are now all well.

I would now again observe, that although there was slight diarrhœa in the large cow, upon the whole she was constipated, requiring aperients even up to the time of her death.

Remarks.—Many persons in this vicinity have heard of the loss of this most valuable stock of cattle, and doubtless they are interested to know the cause.

There are various opinions in relation to it, both among veterinarians and others. Although there are some facts which would lead many to think that the disease originated with the cows imported in May last, still there are many circumstances equally as strong which will lead to a different conclusion. I believe they died of phthisis pulmonalis, a disease resembling "Consumption" in the human subject. We have given a brief description of the building in which the cattle were housed, and we think it probable that the *last* importation might have contracted the disease of which they died on shipboard. Although they came from Holland, in many parts of which it is said there are a great number of diseased cattle, they might have brought from thence the germ of that disease with them, yet one of their number is still living and is well. We think, further, that we have discovered another cause of the death of so many valuable animals, viz., the building or cowhouse itself, with the practice of securing the animals with their heads towards each other; for thus each healthy animal was forced to inhale the breath of the diseased; and it is a fact that the healthy were the companions of the sick until the latter died and were removed.

Unhealthy air, expired by the sick and inhaled by the healthy, will often generate a general malady; and admitting any constitutional predisposition to exist in the animals, such contact must produce disease. The breath from putrid lungs cannot be inhaled with impunity. The cattle of which we are writing breathed into each other's faces. Disease in the respiratory organs of the healthy was thus generated by the expirations, exhalations, and excretions of the sick. And if there was an insufficiency of pure air admitted into the building to counteract this deleterious "miasma," we have a sufficient and reasonable cause for the loss which has been sustained.

I would further remark, that much of the external air admitted into the cowhouse came from the cellar beneath it, by the frequent opening of the scuttles for the removal of the excretions of the animals; this coming in upon their rear, and not in their front. Thus the foul air was near their nostrils, and because it was foul it impeded the admission of fresh air from the windows in the cowhouse, which probably were kept too frequently closed.

I suppose that a current of fresh air from above will rest upon a stratum of foul air below, if the specific gravity of the last be greater. And it must be greater because it is charged with the moisture of the fermentation of the manure below and the excretions of the animals within. I would here observe, that in regard to ventilation, the owner was extremely desirous to secure pure air in the cowhouse, and in the building of it impressed as much as possible on the minds of the mechanics its necessity. He had from twelve to fourteen windows on the east, south, and west sides, and also an opening in the roof, and the bottoms of the windows were about four feet from the floor. Hence a difficulty, as I have before described, in properly ventilating the building. Again, as the owner only visited the animals for about an hour each day, and that in the afternoon, he was not present at the closing or opening of the cowhouse, consequently he could not know the mode of ventilation, or if any existed.

Since his loss, the owner has had the cowhouse thoroughly cleansed and purified, and its ventilation improved by openings made through the walls, upon the surface of the floor, and by a funnel introducing pure air from without through a large grating in its centre, by which means pure air is now diffused over the whole floor, the foul escaping from a large ventilator through the roof, since which all sickness has entirely disappeared.

The whole number of cattle lost is twenty-seven.

Facts and Observations.

THE STATE OF MERCURY IN HYDRARGYRUM CUM CRETA.

Dr. Redwood has ascertained that the conditional state of the metal mercury in the above compound varies. It should be only a mixture of chalk and finely divided mercury; but being made by long-continued trituration, it is often the case that both the protoxide of the metal and the peroxide are present. To this fact he attributes the difference in action of different samples of the compound examined by him, some of them being harmless, while others, if not poisonous, were dangerously active compounds. The following table gives the result of his experiments:

	Hg.	HgO.	HgO_2.	
1 . . .	37·1	0·4	a trace	in one hundred parts.
2 . . .	32·5	3·74	1·45	,,
3 . . .	27·9	4·99	5·18	,,
4 . . .	20·4	13·1	4·86	,,
5 . . .	21·7	7·9	8·85	,,
6 . . .	13·1	11·64	14·25	,,

According to Pereira, the protoxide of mercury is one of the least irritating of the mercurial preparations, and therefore does not produce much disorder in the alimentary canal. The binoxide, however, is a powerful irritant, and when taken, often produces vomiting and purging. Large doses excite gastro-enteritis, and Orfila found that this, the red oxide, obtained by precipitation from four grains of corrosive sublimate, killed a dog in eighteen minutes.

The blue pill and mercurial ointment are stated to be compounds into which only the finely divided metal enters; yet is it not possible, as the same mechanical means are resorted to for making them, that the mercury may also in them be sometimes oxidized? Moreover, is it not well known that, by the addition of substances rich in oxygen, the *killing* of the mercury has been more quickly brought about? Further, it has been ascertained that, if the sub- or protoxide of mercury be otherwise obtained, and mingled with conserve of roses, so as to form the first named, and lard to form the second, equally efficacious compounds have resulted.

ON TANNATE OF BISMUTH.

By M. Cap.

Tannate of bismuth has been introduced in France as a remedy for obstinate diarrhœa. It is prepared by first precipitating the oxide of bismuth from a solution of forty-four parts of the crystallized nitrate, by means of an excess of strong caustic soda. The precipitate is collected on a cloth and carefully washed. It is then triturated in a mortar with twenty parts of pure tannin. The magma is then diluted with water, the whole is thrown on a cloth, washed, and afterwards dried either in the open air or in a slightly heated closet.

The salt has a yellowish appearance; is insoluble, and consequently almost tasteless. It is easily suspended in a mucilaginous vehicle, in syrup, or in glycerine, and can also be administered in the form of pills.

Some practitioners have thought that the tannate of alumina would be preferable as an astringent. It may be made by mixing together equivalent proportions of tannic acid and recently precipitated alumina.

EFFECTS OF LEAD ON ANIMALS.

M. Pecault Taschereau, of Tours, has published some curious observations relative to the effects produced by the salts of lead on certain species of domestic animals. These salts, which produce the most poisonous effects upon man, appeared to be perfectly innocuous with dogs. Horses, cats, and even rats, were, however, found to be susceptible of its poisonous influence. Cats that inhabit white-lead factories are exceedingly short-lived; the horses, also, employed in such factories suffer from a very curious malady, namely, a paralysis or obstruction of the larynx. The animals thus affected were subjected to the operation of tracheotomy, and with complete success, by M. Delaunay, a veterinary surgeon, who remarked that the horses thus operated upon were not attacked again with the same affection.

THE VETERINARIAN, MAY 1, 1860.

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

THE PROGRESS OF THE PROFESSION.

THE aspect of the times cannot be mistaken by the most superficial observer; and he must be mentally blind who does not perceive the advances that are taking place around him. In the words of the Wise Man we may say, "Doth not wisdom cry, and understanding put forth her voice?" That general knowledge is being increased in this our day is patent to all. The present age has been designated, not only one of progress, but also of reconstruction; an age of energy and of nascent life, and one in which everything is put into the crucible and analysed. It is therefore one calling for the most active employment of the faculties of the mind, which, like the body, is strengthened by what it feeds upon. Close attention is consequently required to enable us to keep pace with what is doing, and this the more since we perceive that scientific instruction is being given under the patronage of Government to the industrial classes, and sums of money are awarded annually to proficient teachers in various divisions of science, among which are geometry; physics, mechanical and experimental; chemistry, inorganic and organic; geology and mineralogy; with natural history, including the subdivisions zoology, physiology, and botany. Surely, then, there is a needs-be for those who are being educated for a profession to be ever on the alert, lest those below them should know more than they do, and thus in the end displace them in the social scale. We would therefore press upon all the advice given by Lord Brougham, in his well-known letter to Zachary Macaulay, who, when referring to the education of the son of the latter, said, "That the foundation of all excellence is to be laid in an early application to general knowledge. . . . . Equally so it is clear that professional eminence can only be attained by entering betimes into even the lowest drudgery, the most repulsive labours of the profession. . . . . A young man whose mind has once been well imbued with general learning, and has acquired classical propensities, will never sink into a mere drudge. He will always save himself harmless from the dull atmosphere he must live and work in, and the sooner he will emerge from it and arrive at eminence."

This was the counsel of the greatest man of the age, and as its adoption proved effectual in accomplishing great results in the late Lord Macaulay, so will it be equally productive of good to those who choose to labour—and labour they must—to acquire professional knowledge.

It has been observed that, to the ignorant ignorance is pleasant; but when the mind has once tasted of knowledge and found it agreeable, it will be sure to desire more. It is the business of education to produce the effect of olives at a feast, and thus to create a thirst for knowledge, and we have been told that "knowledge is easy to him that understandeth."

We have arrived at a period in which haphazard and conjecture no longer find a place. Explanations that once passed current are not now received unless they are based on truth. Medicine is being deprived of its mysteries, and scientific principles are alone the guide of the educated man.

We think it will be conceded, that greater researches are now made and closer inquiries instituted than heretofore, the beneficial effects of which cannot be foretold. As far as our own section of the community is concerned, we perceive some of the consequences in the greater desire manifested by the public only to give support to those whose treatment of disease is founded upon right principles. The ignorant pretender no longer meets with the encouragement that was once blindly accorded him. The "why and wherefore" are asked of him, and unless a satisfactory answer be given, he ceases to inspire confidence. Of course we speak generally. There are, however, few places that science has not reached, and wheresoever she finds a *locus standi* her light at once dispels the mists of ignorance, and error gives place to truth.

It is extremely gratifying to find that our division of medicine is thus gradually becoming more and more appreciated. Not only are its recognised practitioners, graduates of the Royal College of Veterinary Surgeons, dispersed throughout the British Isles and their dependencies, but in the present number it will be seen that America is becoming more awake to its importance, and one from out our more immediate circle, Mr. H. Corby, has located himself in a city in the far south-west of the United States, on the mighty Mississippi.

We doubt not of his success, knowing his abilities, and accept this his first contribution as an earnest of many that are to follow, anticipating others as subjects of more than ordinary interest may from time to time come under his notice.

Nor is it from his pen only that we have proof of the interest that is felt, and the advancement that is being made, in veterinary science, in that vast and rich continent, peopled as it is with the Anglo-Saxon race, and speaking one common language. To others we are indebted, as the present number likewise shows, and we are pleased to be enabled thus to express our acknowledgments, as we have but one common object in view, and science, like a commonwealth, knows no distinctions, but requires that each should contribute towards the general weal, since each will be alike benefited by so doing. When it is remembered that our journal finds its way, not only to North America, but to India, Australia, New Zealand—as also seen in the present number,—and wherever veterinary medicine is practised, both at home and on the continent of Europe; and that from all these sources we receive matter for its pages, it cannot fail to afford us high gratification, while at the same time it shows the marked progress that is taking place.

If this is not allowed to be an age of invention or discovery, it is, without controversy, as we have already said, one of progress; and the meanest affairs of life, equally with the noblest works of utility and elegance, are indebted to science, either for their origin, or, at least, for the fundamental principles out of which they spring. We banish darkness from our streets by the help of the chemist; we know the day and hour at which an eclipse or occultation will occur by the predictions of the astronomer; the sun paints pictures for us on media prepared by the photographer, and places separated by distance hold converse by the instantaneous communications of the electric wire. To speak lightly of scientific studies is to ignore the entire fabric of our social life, with all its amelioration for the body and the spirit; while to stimulate the spirit of research, is to help in the onward march of human advancement, and realise the idea of the poet, that "the thoughts of men are widened by the progress of the suns."

It has been well said, "Man at last is awakened to a reasonable use of his manifold gifts, and will never cease again employing them in restless activity for the furtherance of his own development and perfection. His aims are high, but so are his powers. No difficulties dismay him, nor does he feel astonished at the greatness of his own successes. We see enormous manufactories erected, and railways constructed over thousands of miles. Canals are forced through mountainous localities, and roads of communication established between points separated from each other since the creation of the universe. The depth of the sea no longer forms an impediment to the laying down of telegraphic cables. We hear of these wonders without surprise, looking upon them as almost a matter of course. Where the progress of our race is at stake, or the acquisition of wealth a desideratum, neither capital nor force are spared to ensure the auspicious end. Nature, subjected to man by dint of his continued investigations, has become the assistant of our race in the execution of those great works planned by human intelligence. No longer capable of hiding her treasures, Nature almost seems voluntarily to give them up to our use. Europe and America, standing as they do at the head of contemporary civilization, are not the only quarters of the world where progress is to be found and valued. The very islands of remote Oceania have become impregnated with the all-pervading fluid of this intellectual magnetism."

But it should not be forgotten that there is a law of progress downwards as well as upwards, and whether the one or the other obtains will depend upon ourselves. By science, energy, and combination, everything may be effected we desire; while the absence of these will cause us to degenerate. Onward progression alone is our safety. If we remain still, like stagnant water, we shall become foul, or as a heap of dead matter soon run into a state of decomposition, rot, and disappear. Those who attempt to oppose mind-progress are fast becoming extinct. Soon they will be "embalmed like the mummies in Egypt, or fossilized like the mammoth in Siberia. Their relics will be dug up in future days as the bulls were at Nineveh, or the earthen pots at Iximaya;" and they will be as things to be wondered at, and create surprise; while their efforts will be unavailing as the angry waves that dash themselves against the solid rocks only to be dispersed in foam—

"Vox et præterea nihil."

Extracts from British and Foreign Journals.

CHEMISTRY IN ITS APPLICATION TO AGRICULTURE AND PHYSIOLOGY.

By A. S. Copeman, Utica, N. Y.

Modern chemistry has discovered that the material world, or all that we see around us—minerals, vegetables, and animals, the grain of sand or the mountain, the lofty oak or the microscopic fungi, the monster elephant or the diminutive mouse, the luxuriant vegetation of the sea, with its millions of living beings, including that vast winding-sheet, the atmosphere, *all consist* of but sixty-one different kinds or species of matter, termed by chemists elements.

More than forty of these elements are *metals,* with which we shall have nothing to do. The great mass of our globe is made up of four substances, viz. silica (sand), alumina (clay) lime, and magnesia.

Plants require for their nutrition or support but fourteen elements; these are, carbon, oxygen, hydrogen, nitrogen, potash, soda, lime, magnesia, phosphorus, sulphur, silica, iron, chlorine, and iodine; these go to make up all the *vegetables* and all the *animals* found upon the face of the earth.

The carbon, oxygen, nitrogen, and hydrogen are supplied to plants by the atmosphere, the other elements are obtained from the soil. These four elements, by some extraordinary power of vital alchemy, form no less than ninety-four per cent. of the whole vegetable kingdom; for example, 100 pounds of wheat, if burnt, yield only two pounds of ashes or inorganic matter, the ninety-eight pounds which disappear into the atmosphere are called organic matter.

The chemist, by proximate analysis, ascertains that the grain of wheat contains, in 100 pounds, fifty-five of starch, fifteen of albuminous matters, fifteen of woody fibre, thirteen of water, and two pounds of ashes. By ultimate analysis, that starch and woody fibre are composed of carbon, oxygen, and hydrogen; and albumen, of the same elements with nitrogen.

When wheat or any other grain is burnt, the carbon unites with oxygen from the atmosphere and form carbonic acid, a portion of the hydrogen combines with nitrogen, and forms ammonia, and the remaining hydrogen with oxygen forms water, and all pass into the atmosphere.

If the vegetables are consumed as *food* by an animal, the carbon and hydrogen, by a process of slow combustion (oxidation), support the heat of the body and are eventually expired by the lungs and skin as carbonic acid and watery vapour; the nitrogen, after entering into the tissues of the body, is excreted as urea by the kidneys. Urea, exposed to atmospheric air, is rapidly converted into ammonia.

Lastly, if vegetables are collected into a heap, they ferment, and carbonic acid, water, and ammonia are found rapidly, escaping into the atmosphere.

Hence it is obvious, that it matters not what intermediate changes vegetable substances may undergo, their entire organic matters eventually reach the atmosphere as carbonic acid, water, and ammonia.

Now carbonic acid is a poison, and ammoniacal gas is also highly destructive to animal life. We naturally ask, if immense quantities of these poisonous gases are being constantly thrown into the atmosphere, how does it happen that the proportion found there of each is constant?

One man consumes by respiration twenty-five cubic feet of oxygen in twenty-four hours; ten cwt. of charcoal consumes 32,066 cubic feet of oxygen during its combustion (Liebig); so that a city like Utica, with about 21,000 inhabitants, extracts yearly from the air, by wood and coal employed as fuel, more than 551 millions of *cubic yards* of this gas. It has been established by careful experiments, that the composition of the atmosphere is *invariable :* 100 volumes of air have been found in every period, and in every climate, to contain twenty-one volumes of oxygen to seventy-nine of nitrogen.

A general notion of the manner in which the permanent character of the atmosphere is established may be gained from the following experiments.

The leaves of plants are their *exhaling* and *respiratory* organs.

For illustrating the function of *exhalation*, we need no other apparatus than half a dozen clean tumblers to try three little comparative experiments. Let us call the three experiments A, B, C, respectively. Each requires two glasses; fill one of each pair two thirds with water, the other to be left empty. Place a card over each of the three tumblers which contain the water so as to cover it, and then invert the empty tumbler over the card. Now make a thick paper cap to one of the glasses, say B; lastly, drill a small hole in each card to admit the stalk of a leaf, which should dip into the water in the lower tumbler, while the blade of the leaf is enclosed in the inverted tumbler, the card cutting off the communication between the two tumblers in each experiment. Place A and B in the direct rays of the sun, B with its cap on. Place C in clear daylight, but in the shade.

In five minutes the empty tumbler A will be clouded with dew, but in B and C as yet no dew has been deposited; the dew will now be seen to increase rapidly in A, in C very slowly, in B none will be found. Now A, in the direct rays of the sun, imbibes and exhales water rapidly; C, exposed only to ordinary daylight, very slowly; and in B, *in the dark*, it ceases altogether.

It is obvious in these experiments that the light of the sun is essential to enable the leaf to perform the function termed exhalation.

It has been ascertained that a "sun-flower," six feet high, will *exhale* forty ounces of water in the course of a single day.

Plants absorb by their roots not only the water, but whatever matters the water may hold in solution—salts, earth, &c. These are retained in the plant. Thus we may understand how such substances gradually accumulate in their tissues.

Perhaps I cannot make you perfectly understand the nature of that *contrivance* by which the function of exhalation is carried on, because it requires you should first take a peep into the hidden world, which is exposed to us only by the microscope; but I think you can obtain a good general notion of it by fancying you can see the skin (epidermis) on both sides of the leaf perforated by minute pores. Through these invisible pores the steam is exhaled. Imagine these pores to be formed by means of a pair of invisible sausage-shaped bladders, filled with vegetable juices; these bladders—*cells, as they are termed*—lying side by side, and attached only at the two ends; by pressing the ends toward the middle point, the bladders would curve outwards, and thus an opening like a slit or pore would be formed between them. We may consider this description of apparatus (forming the pores) as so many flood-gates which can be opened or shut at the command of the sun, in order that the steam may be exhaled or retained accordingly.

Now I do not pretend to assert that this is *precisely* the way in which the function is carried on by the mechanism I have described, because some of my physiological readers may have better notions of such structures. Under the microscope we may distinctly see these peculiar arrangements, by which the pores are closed and opened; these pores are named by botanists *stomata*, or "little mouths."

The leaves of a plant, whilst they are endowed with life and *stimulated* by light, are enabled to combine thirteen or fourteen out of the sixty-one elements into some one or other of the peculiar substances found in its juices, and distinguished as organic compounds. Plants are mighty chemists, surpassing Liebig himself in their power of effecting combinations among the elements of material substances. That justly eminent chemist, and many a one less than he, can now manufacture sugar out of brown paper, and bread out of saw-dust; and they can beat all the ablest conjurors of the good old times (when alchemy and astrology directed the undoubting faith of wondering admirers), by the marvellous extent to which they can carry their transmutation. But not one of all the chemists whom the world has yet seen has been able to contrive how he might combine the elements of "inorganic" matter so as to form out of them a single organic compound.

(*To be continued.*)

ROYAL VETERINARY COLLEGE, LONDON.

PRESENTATION OF A TESTIMONIAL TO PROFESSOR MORTON BY THE STUDENTS OF THE ROYAL VETERINARY COLLEGE.

The students of the Royal Veterinary College, knowing that Mr. Morton intended at the close of the present session to resign the Professorship of Chemistry and Materia Medica, which he had for so many years held, determined to present him with a suitable testimonial on his retirement.

For this purpose a full meeting of the students was held in their reading-room, and the following committee chosen:

Mr. C. Crowhurst.	Mr. William Burt.
Mr. J. Marsden.	Mr. Walter Burt.
Mr. M. Tailby.	Mr. J. Woodger.

Mr. W. B. Walters.

Mr. W. Pritchard, *Secretary*. Mr. H. Noakes, *Treasurer*.

All the preliminaries being arranged, on Monday, April 23d, 1860, the presentation took place in the theatre of the College, in the presence of the different teachers and nearly all the pupils,

The Principal, PROFESSOR SPOONER, in the Chair.

The testimonial consisted of a handsome carved oak library and reading chair, a splendid ormolu timepiece, and a microscope. On a silver shield, at the back of the Chair, was the following inscription:

PRESENTED,
WITH A TIMEPIECE, &c.,
TO
PROFESSOR MORTON,
BY THE STUDENTS OF THE ROYAL VETERINARY COLLEGE, LONDON,
ON HIS RETIRING FROM THE HIGH POSITION HE HAD SO LONG AND WORTHILY FILLED.
SESSION 1859—60.

The CHAIRMAN having made a few prefatory remarks in approval of the intention of the students, and on his being requested to take the chair by the Committee,

Mr. NOAKES gave the following address. It was extremely well received, and frequently applauded during its delivery.

Mr. Chairman, Professors, and Gentlemen,—It is with feelings of great diffidence that I appear before you this evening, fearing I shall not be able to do the important and yet pleasing task which now devolves upon me that justice which it merits.

But as my fellow-students have been pleased to confer on me the honour, I have been stimulated to make the attempt, knowing that I should have to address those by whom broken hints, if spoken with sincerity, would be far more highly appreciated than an eloquent speech of flattery.

The object of our meeting is, I am sure, one in which we all feel deeply interested, and which must excite in all of us feelings of great pleasure, inasmuch as it is for the purpose of mutually expressing our gratitude to one whose kindness of manner as a *teacher*, and acquirements as a *professor*, have justly gained our universal respect and esteem. I refer to PROFESSOR MORTON, who has for upwards of thirty years been labouring in this institution with great and distinguished success; his first object being the benefit of the student, to effect which everything that could assist has been brought to bear; and his second, though carried out with no less energy, the advancement of the profession at large.

Those branches of science which it has been the province of our worthy teacher to instruct us in are Chemistry and Materia Medica, two very important and highly useful divisions of our studies. That a knowledge of the former has done much to raise the profession to the honoured position it now occupies, cannot be doubted.

The applications of the discoveries of chemistry to the arts of life, and to the relief of animal suffering in disease, are, in the present state of the science, both very numerous and very important, and encourage the hope of still greater benefits from a more extended research. Chemistry also offers very material assistance to us in the study of that very interesting division of science, Physiology. It likewise tends to enlighten the mind and enlarge the ideas, and he who makes it his study will find that it elevates him in the scientific world, and raises him in the estimation of his professional friends, as well as places him in a position whereby he becomes a respected and useful member of social and private life.

Materia Medica teaches us the nature and composition of the agents we employ in the form of medicine, with the doses in which they should be given, &c. Without such knowledge, a veterinary surgeon knows but half his duty; for there are many cases which require a strict medical treatment, and unless the medicines are judiciously administered, the disease will be aggravated rather than relieved by them. It is a knowledge of such principles as these that distinguishes the *true* professional man from the charlatan, whose formulæ are a number of musty recipes, which his forefathers have left him as being really *wonderful* and *specific* in their action, and, like most quacks, it matters but little what disease he may be called to treat, for he flatters himself that he has among his treasures a *recipe*, which is usually puffed off with this, which to him is a most inviting expression, viz., *a certain cure*.

But to the educated veterinary surgeon puffing is hateful, and specifics he does not believe in. He has an ambition for something more noble than this, his basis being scientific principles, grounded on matters of fact; and having this for his foundation, he can in most instances explain the nature of the disease from which his patient is suffering, and foretell the action he expects to follow the agents given, and how they afford relief; which at all times entails on him a certain amount of credit, and gains for him both the confidence and respect of his employer.

I feel assured, gentlemen, you will all agree with me that we find quite sufficient in the conduct of Professor Morton towards us as a teacher, to claim our warmest thanks; but we likewise find that his active mind and enterprising disposition have rendered him useful in very many ways, which greatly increase our obligations to him.

It is well known that for many years he has taken an active part as co-editor with Professor Simonds in that popular monthly journal, the *Veterinarian*, which has been the means of diffusing much useful and scientific information.

Again, let us notice the books which our worthy teacher is the author of. First, we will refer to his 'Manual of Pharmacy,' a book which ought to be in the possession of every veterinary surgeon; and when we consider its *value* to the student, and its *benefit* to the practitioner generally, it must be acknowledged by all to be the best, the most useful, and most scientific work on the subject yet written by any member of the profession. It would be easy to enlarge on its merits, but it speaks too loudly for itself to require any compliments from me, since a proof of the estimation in which it is held will be seen in its having reached a sixth edition.

And then we have to notice that complete and valuable little work on 'Calculous Concretions,' and also his 'Toxicological Chart;' both of which reflect a great amount of credit on their author.

These being the first works on the subject brought before the notice of the profession, doubtless many difficulties presented themselves; yet amid all, they have made their way, and at the present time it may be truly said that the author is more respected, and his works are more popular, than ever they were.

Important as these divisions of our studies are, the student, while endeavouring to attain a knowledge of them, finds many things which appear to him very difficult, by which he is perplexed to the utmost; but by the particular mode which our worthy teacher has of imparting knowledge, by his affability, anecdotes, and numerous experiments, that which at first appeared difficult is rendered both comparatively easy and interesting. We have ever found him ready and willing to explain the subject to us at all times, not only showing us how to get out of our difficulties, but always evincing a disposition to render us every assistance. In a word, Professor Morton has proved a centre from which it would be impossible to estimate the amount of good that has emanated.

It is with great pleasure that we see assembled here to-night, and rallying around the banners of our *friend*, the faces of his esteemed and worthy colleagues; and I should not be doing justice to the feelings of my fellow-students, as well as those of my own, were I to allow this opportunity to pass without expressing our acknowledgments, and offering to them our sincere thanks for their kindness.

It will not be necessary for me to speak separately of the divisions of science in which we are instructed by them, because a knowledge of each is of the greatest importance, and indispensably necessary to enable us to fill with advantage those offices, and to perform those duties in the profession, which may subsequently devolve upon us.

Neither on this occasion will it be requisite for me to mention individually the kind manner in which our worthy teachers constantly treat us. Their conduct towards us is such as claims our warmest thanks, and has excited in all feelings of gratitude which can never be forgotten. We have numerous proofs that the energies of all our teachers are concentrated and brought to bear on one object, that being our benefit; and their desire is to make us *practical* and *scientific* members of the profession.

No time is too long, nothing is thought a trouble by them; but, on the contrary, everything is considered by them a pleasure that is likely to benefit us as students, either individually or collectively.

Gifted with talents that are the lot of few, armed with zeal and enthusiasm, yet withal careful and scrupulous in their research for *truth*, they have made many valuable and important discoveries connected with the profession, which prove them more than worthy of the distinguished positions they hold, and are in themselves calculated to transmit their names with honour to posterity.

They not only labour to instil into our minds the true and genuine principles of the veterinary art, but they also counsel us as to the line of conduct we should pursue in after-life, when we leave this institution, and are carrying out these principles in practice. They have trodden the path of life before us, and have seen the quicksands which so thickly beset the way, against which we are carefully warned; at the same time they remind us that the expenses of our professional education and the expectations of the public call upon us to search for *true* knowledge, that we may thereby fulfil our duty towards them, shed honour on the profession, and finally, after the necessary toils of life, retire into the bosom of our families honoured and respected. And if I might be permitted to condense into a few words their kind and faithful advice, it would be in the following way:

It is not the mere attainment of our diplomas, or being enrolled on the list of veterinary surgeons, which we should entirely aim at, although this in itself must be considered a very honorable position, a position which all who have obtained may well feel proud of, as it gains for us a standing and gives us confidence; but we should consider this as the starting point in our professional career. Yet unless our subsequent conduct be upright, we cannot maintain that status in society which it is our privilege to enjoy. We should always remember that he who acts his part well is more truly dignified, though his rank be lower, than he who stands upon a pinnacle but fails in the duties of his elevated station.

What is true honour? Not riches, not rank, not beauty, not learning, not courage; no, but virtue, whether it be clad in the garb of poverty or the robe of affluence, whether it hold the plough or grasp the sceptre, whether it be seated at the table or standing behind the chair. "Virtue is honour." Let us all write these sentiments on our minds, and ever act upon them as the prevailing principles of our conduct, and, in the language of the poet, remember—

"Virtue, not rolling suns,
The mind of man matures:
The man of wisdom is the man of years."

With these remarks I will resume the object which we have more particularly in view this evening.

Approaching seasons forcibly remind us that the wheel of time is swiftly rolling on; and as it passes it brings many changes, some of which are highly conducive to our happiness, while others are attended with a corresponding amount of anxiety and depression; and I am sorry to say even the pleasures of this meeting are mingled with those of deep regret, as it is the last time we shall have an opportunity of expressing our gratitude to Professor Morton as a teacher in this institution, impaired health having compelled him to retire from active life.

It is not that our worthy teacher has grown weary in the researches of science, nor that he has a less desire to benefit the student or advance the profession than ever he had, for we truly believe, instead of time detracting from this, it has tended to develop and mature those feelings, and at the present moment they are glowing more ardently than ever. But health is one of the greatest blessings this world can afford; hence it becomes, indeed it is imperative, on all to take every precaution to preserve it. And although this is a change which to our teacher is most painful, and which we as a class most deeply regret, yet it is highly pleasing to know that our respected friend is retiring with the good wishes of all, rich in professional honours.

And while we offer our sincere thanks for the zealous manner in which, sir, you have carried out all matters connected with the profession, we would at the same time warmly congratulate you on the success with which those labours have been attended. Be assured, sir, your kindness will ever be esteemed by us as students, and also by those who now stand as members; it will last, not only while your honoured life may be spared in this world, but even when the silver cord shall be loosened, and the golden bowl broken, your memory will ever be respected, and your name will rank with the worthy of our land, who now are not, but whose great aim through life was to do good and benefit society at large, thereby leaving this world better than they found it.

And now, Professor Morton, as the representative of the body of the veterinary students, a position which is to me highly flattering, in their name allow me to present you with this slight but honest testimonial of our esteem and gratitude; and I feel confident that I speak the sentiments of all present when I say it is our earnest wish, that the Timepiece may serve you to mark the passing of many hours and years of pleasure, and may the Chair in which you are now seated add to the many comforts which we trust Providence will ever continue to bless you with. And may the pleasing thoughts which must cross your mind when hereafter reclining in it, that you have honorably filled your position, and acted your part well, tend to make the last days of your life even more happy and mingled with more pleasures than any of those which are past. And to conclude with the words of Shakespeare—

"May you live
Longer than I have time to count the years;
Ever beloved and loving may your rule be;
And when old Time shall lead you to the end,
Goodness and you fill up one monument."

Mr. Morton, in reply, spoke nearly as follows:

Friends and Gentlemen,—I claim your indulgence, since it is with very mingled feelings that I now address you, for probably the last time; certainly it is so upon such an occasion as this.

We are told that "from the abundance of the heart the mouth speaketh;" yet I fear I shall be altogether unable to give expression by words to the sentiments that pervade my breast, among the uppermost of which, struggling to get free, is GRATITUDE. You will, then, accept my most grateful thanks for this, your last, best gift. Other gifts I have had from those who have preceded you, but yours must be esteemed by me the best, from its peculiar associations; and it is the last I shall ever receive from the students of the Royal Veterinary College. I know not how it was, but very soon after coming to this institution, it was my good fortune to gain the confidence of the students; and I believe I may, without any fear of contradiction, say I have, with equal good fortune, retained it ever since. If any proof of this be required, it is in the fact that this makes the twentieth presentation I have received from them, this number including five or six made by my *resident* pupils.

A period of five and thirty years is a long time to look back upon; yet this I can do, and that with some degree of satisfaction, not unmixed, however, with a consciousness of the existence of many failures. Nevertheless, I trust I can say I have *endeavoured* to do my duty. How far I have succeeded, I am contented to leave to others to decide. Would I could appropriate to myself the language of the poet, who says—

"There's a joy
To the fond votaries of fame unknown:
To hear the still, small voice of conscience speak
Its whispering plaudit to the silent soul."

Although this may not be, yet my desire has always been to be useful to the students of veterinary medicine; and that I have not altogether failed in giving satisfaction is amply proved by the recurrence this evening of one of those events in my life to be marked with a golden number.

It is an old adage that "like begets like," and thus kindnesses received awaken a desire to return them. I early thought that I saw no little disadvantage the pupil laboured under, in being obliged to occupy so large a portion of his time in going from place to place to acquire knowledge, and this, when obtained, was not always such as he needed.

Happily *you* know nothing of this, since a wiser and more advantageous system is now adopted. But it was not uncommon at the time I refer to for a student to have to walk to St. George's Hospital, Hyde Park Corner, early in the morning, to attend a lecture on chemistry or materia medica; thence he returned to the College, to Professor Coleman's lectures, which were given three times a week; after that he went to Bartholomew's Hospital, to hear a lecture on physiology, and in the evening to one of the Borough schools, for his surgical instruction. Now, what was this but a large occupancy of time without a corresponding benefit resulting? I will say nothing of the temptations to which the student was necessarily exposed, and how little the mind was likely to retain the impressions it had received, from having so far to go, both to and from the lectures. I am quite ready to grant that it was exceedingly kind on the part of those medical men, who thus threw open their schools to the students of veterinary medicine, especially in that the infant age of the art. It was not, however, to continue very long, for to some of these means of instruction a few pupils only were admitted, hence dissatisfaction arose among others, and the complaint was often made to me by them of their inability to acquire the necessary information, and the hint was thrown out that perhaps I could assist them.

Pondering over the subject, and disliking the system I have adverted to, I was induced to read in the year 1828, at the weekly meetings of the old Veterinary Medical Society, a series of papers on the medicinal substances used in the College. These were favorably received by the class, and I was presented with this inkstand, expressive of their obligation; so that my first and my last presents are before you. I now stood in a measure pledged to do something for the pupils. I therefore attempted a course of lectures, by prefacing my remarks on medicinal substances with an outline of elementary chemistry. It was perhaps an act of temerity on my part, for at that time I had received no instructions in the science, nor heard any lectures on it, except an occasional one or two. But the principles had been my early study, and at the close of the labours of the day I had been accustomed to perform, in a rude way it may have been, experiments, so as to impress the facts upon my memory, little thinking at the time that I should ever be called upon to apply them. The truth is, that the facilities for the acquirement of scientific knowledge were not so great then as they are now. But as it respected medicinal substances, it was quite another thing. With these I had been familiar from my boyhood, and took a delight in their investigation, both naturally and chemically considered. Still, in their therapeutic application to the lower animals, there was opened up to me altogether a new field of inquiry, and the labourers in it having been but few, I could not consequently gain from them much assistance, while I failed, most unexpectedly failed, in obtaining encouragement and support where I had most expected both; for I was told by those then in authority that the expenses connected with the experiments which I thought necessary to be instituted were to be borne by myself, unless they were carried out under their direction. This I could not submit to, as I did not entertain the same views they did as to the plan to be adopted. This was a heavy blow to my hopes and a great disappointment; nevertheless I carried on my investigations as well as I could, although not to the extent I had intended and wished.

I might also be permitted to add, that as far as chemistry was applicable to veterinary medicine, here another field presented itself, one also in which no one had preceded me, so that mine may be said to have been almost an entirely new and untrodden path, one in which I needed all assistance at the very commencement, and instead of which I met with that calculated to deter me from going onwards in it rather than otherwise. Yet I persevered, being supported by many friends in the profession, among whom was your chairman; and although I have not done what I purposed to do, and now never shall, yet "through evil and through good report" I continue to this day. I have sown, others will reap; nor will they have so much to contend against as I have had. I do unhesitatingly say, that had it not been for the kindnesses I have always received from the students as a class, that long ere this I should have directed my attention to some other pursuit. I rejoice, however, that I have been permitted to see this day, as it crowns my labours at their close, and is the reward of my feeble perseverance; whilst I have succeeded in gaining that for which I both fought and laboured hard. Nor do I now regret that some opposition was manifested, since there is no glory in an unfought conquest; no proof of either endurance or of speed in walking over the course; no triumph nor honour when no difficulty has been surmounted; a crown uncontested for is a crown unwon; whilst in proportion to the severity of the battle will be the triumph of victory.

It is too often the case that those who initiate a good often fail in their attempt to accomplish it; or if they do not, they leave to those who may succeed them the fruit of their toil. "A friend to progress necessitates reform." I have therefore endeavoured to clear away some of the ruins of the past, and have collected together a few materials for the temple of science for the future. Alas! they are but few.

It is with pleasure I can attest that not only in my department, but in others of your curriculum, the means possessed by the student for the obtainment of information are far, very far, superior to those that once existed. The same desire to concentrate information within the walls of this establishment has been shared equally by my colleagues, and by co-operation the object has been attained.

It has been said by some persons that the education, as now given here, is far in advance of the profession, and it ought not to be so. Now, this I hold to be a very great error. Those who have the conduction of schools should, both by their position and experience, and the benefits derived from long study, be able to move far in advance of the body; and they are morally worthless if they are not able to take the lead in all things that tend to the benefit of the general community. The standard of education can rarely be set too high. The present age is remarkable for mind-progress, and we must move onwards with it, or we shall be left in the background, and become laggards in the race.

On such an occasion as this, the last time that I can expect to address you upon these topics, I would be honest with you, and tell you that I believe my retirement will be of great advantage to the school, by my giving place to one abler than myself to fulfil the duties of the station I have so long attempted to perform. I have all confidence in the governors of this institution, who, being rightly advised, and of this I have no doubt, will appoint a person more intimately conversant with the science of chemistry than I ever professed to be.

As I have been the first-appointed teacher in these divisions of science, so I am the first of your teachers to retire into private life. I do so not a rich man, but I hope a grateful and contented one, a kind Providence having given me enough for my wants. I am in the "sere and yellow leaf of autumn;" many of your fathers I knew as pupils; my energies are not what they were, whatever may be my desires; it is time, therefore, that I give place to a younger and better man; still I shall ever feel an interest in the onward progress of the profession, and rejoice to know of the prosperity of a school with which I have been so long and intimately connected.

In 1842 I was appointed a public lecturer here; the former part of my time I was only a private instructor of the pupils, and the latter part of it was in concert with my colleague, Professor Spooner, both of us having been teachers out before we were appointed teachers within the College.

Thus have you heard the beginning of that which you have witnessed nearly the ending. Soon I shall have to say to you the parting word, "farewell." I shall feel the separation, though not regret it, for reasons already assigned.

And thus I have given you the history of more than half my life. If it has appeared somewhat egotistical, it has arisen from necessity. I have no self-love to foster, no fancied superiority to claim. I know I have often failed to do what I ought to have done, for imperfection is the lot of man.

Now, we are told that those who are putting on the armour are not to rejoice as he who puts it off. You, gentlemen, are about to embark in life. The world is all before you, where and what to choose, and Providence your guide. Suffer, therefore, the word of admonition from a friend. Improve the present opportunity to acquire knowledge. It cannot recur, for time once lost can never be regained. The dial of Ahaz is not ours, nor will the shadow on it go back for us. The present period alone belongs to us; the past is gone; the future we know not of. Nor delay to perform your duty; for you know the poet has said—

> "Procrastination is the thief of time;
> Year after year it steals, till all are fled."

Be early and late at your studies, and seize every opportunity to acquire knowledge. Yours is the spring-time of life, and "if the spring put forth no blossom, in summer there will be no beauty, and in autumn no fruit. So, if youth be trifled away without improvement, manhood will be contemptible and old age miserable." Spare moments have been compared to the gold-dust of time. Therefore waste them not. Poor Richard asks, "Dost thou love life? Then waste not time, for that is the stuff life is made of." Much, very much, may be done if time only be economised, and each section of study have given to it its allotted portion. Be assured that you will have to contend with difficulties hereafter. Fain would we have our pathway strewn with flowers, yielding perfume, joy; too frequently, however, we find the primeval curse is there—thorns and briars, causing both care and sorrow. Yet may all be surmounted by honesty of purpose joined to industry, the true philosopher's stone. We all have our cares, especially in early life, and he is a coward who is frightened at imaginary ills, and dares not face them through fear. Be bold, then, conscious of the justness of your cause, and strong from a conviction of your powers; and this will supplant presumption, which is only a proof of ignorance. Though difficulties as high as the Alps should arise, or barriers like the chains of the everlasting hills present themselves, yet I say, "Try again," for surmount them in the end you assuredly will by persevering.

Let science with practice be not only your motto, but your governing principle. It is this that will lift you above the pretending charlatan; it is this that will render your services of worth; it is this that will raise the profession you have chosen in the estimation of the public. And now, in drawing to a conclusion, I would borrow the eloquent language lately delivered by the Chancellor of the Exchequer in his inaugural address, and adapting to you, say, "I have been long enough among you to know that some are already fighting with a mature and manful courage the battle of life. When you feel yourselves lonely amidst the crowd, when for a moment you are disheartened by that difficulty which is the rude and rocking cradle of every kind of excellence—when conscious of the pinch of poverty and self-denial, be also conscious that a sleepless eye is watching you from above; that your honest efforts are assisted, your humble prayers are heard, and all things are working together for your good. Is not this the line of faith which walks by your side from your rising in the morning to your lying down at night—which lights up for you the cheerless world, and transfigures all that you encounter, whatever be its outward form, with hues brought down from heaven? These considerations are applicable to all of you. You are all in training here for educated life, for circles limited perhaps, but yet circles of social influence and responsibility. Some of you may be chosen to greater distinctions and heavier trials—

"And when he dies he bears a lofty name,
A light, a landmark, on the cliffs of fame."

And, gentlemen, the hope of an enduring fame is without doubt a powerful incentive to virtuous action, and you may suffer it to float before you as a vision of refreshment, second always, and second with long interval, to your conscience and the will of God. For an enduring fame is one stamped by the judgment of the future, that future which dispels illusions and smashes idols into dust. Little of what is criminal, little of what is idle, can endure even the first touch of the ordeal; it seems as though this purging power, following at the heels of man and trying his work, were a witness and a harbinger of the great and final account. So, then, the thirst of an enduring fame is near akin to the love of true excellence."

My easy chair! How pleasant it will be when, at the close of day the star-studded curtains of night are being drawn around, that I rest myself in thee, and, reflecting on scenes and events gone by, I am reminded of those who presented thee. And then looking on the moving hands of the Indicator of passing time before me, I am told that a few more of their revolutions at most will be all I shall witness upon earth. Thoughts such as these will make me both a wiser and a better man. Nor will the admonition be lessened when examining the Creator's works by the aid of this instrument, the Microscope; for as much His power is seen in the markings on the insect's wing as in the ponderous form of the mighty leviathan. Small and great are with Him terms unknown.

"'To Him no high, no low, no rich, no poor;
He fills, He bounds, connects and equals all.'

Thus, gentlemen, have you furnished me with means wherewith to add comfort and happiness to the declining years of my life, ere the grasshopper becomes a burden and desire shall fail, "or the pitcher be broken at the fountain, or the wheel at the cistern."

To you, Mr. Noakes, as the exponent of the feelings of your fellow-pupils, I beg to express my acknowledgments. Admirably have you performed your allotted task, and with all you have said I concur, only I could wish that I merited the high encomiums you have been pleased to pass upon me.

To the Secretary, to the Committee, and to all present, my best thanks are not only due, but sincerely given. Kindnesses such as these that have accompanied your last best gift will ever be remembered by me. They will awaken pleasing reminiscences, only to end with life. Again, and again, and again, I thank you. May it be yours to make the best of both worlds, that which now is and that which is to come; and with this I conclude, for I believe I cannot wish you anything better, or more in consonance with my feelings.

Professor Spooner, addressing Mr. Morton, said:

Dear Sir,—I should be doing an injustice to my own feelings, and I am sure also to those which equally pervade the bosoms of your other colleagues, were I to leave this chair without, on their and my own behalf, offering you our sincere and heartfelt congratulations on the receipt of this very handsome testimonial, which with so much good taste and kindly sentiment has been just presented to you by a grateful and, I think I may add, an affectionate class of pupils.

Be assured, dear sir, it affords us no small gratification to be permitted to be present on this very interesting occasion; but reflecting upon the near approach of the time when we shall be called upon, as fellow-teachers in this institution, to bid you farewell, we feel that our joy is mingled with deep sorrow. We nevertheless trust that, though we must shortly submit to be separated from you as a colleague, you may enjoy many years of health and happiness, and that we may continue to participate in your friendship and esteem to the latest period of our lives.

The meeting then broke up.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, held April 11, 1860.

Present: The President, Professor Spooner; Messrs. Jex, Helmore, Moon, Silvester, Wilkinson, Withers, and the Secretary.

The President, W. Burley, Esq., in the Chair.

The minutes of the previous meeting having been read and signed, Mrs. Turner's reply to the letter of condolence from the Council on the death of her husband was read, and on the motion of *Mr. Wilkinson,* seconded by *Professor Spooner,* the letter of condolence and Mrs. Turner's reply were ordered to be entered on the minutes.

A letter was read from *Mr. J. Gamgee,* of Edinburgh, respecting the examinations in Scotland, and on the motion of *Mr. Wilkinson,* seconded by *Professor Spooner,* the Secretary was instructed to inform Mr. Gamgee, in answer to his letter of the 9th inst., "that the bye laws of the Royal College will have to be complied with, respecting the fourteen days' notice and remitting of the examining fees, but that a time will be named for the examinations in Edinburgh, in accordance with the wishes of the Edinburgh candidates."

The annual report and balance sheet having been read and discussed, on the motion being put from the chair, they were declared to be unanimously received and adopted.

On the question of certain arrears of payment of travelling expenses by a member of the Board of Examiners, they were all ordered, on the motion of *Professor Spooner* and *Mr. Withers,* to be paid.

Mr. Withers gave the following notice of motion: "That the custom which existed previous to the time when the veterinary members of the examining board relinquished their fees, be reverted to."

E. N. GABRIEL, *Secretary.*

REPORT OF THE MEETING OF THE WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

THE usual Quarterly Meeting of the *West of Scotland Veterinary Medical Association* was held in the Tontine Hotel, Trongate, Glasgow, on the 28th March, 1860.

Mr. DUNLOP, in the absence of Mr. Cockburn, the President, in the Chair.

PRESENT: Messrs. Dunlop, Anderson, Marshall, Howatt, Robinson, Sharpe, Warfolk, Dobbie, McDougall, McKirdy, Gamgee, and Moir.—Mr. Aiken, of Kilmarnock, was present by invitation.

The minutes of the previous meeting having been read and confirmed,

The Secretary read notes of apology from Messrs. Steele, McCall, and Balfour of Kirkaldy, who were also invited to attend this meeting.

The revised rules were read and approved of, and on the motion of *Mr. Anderson,* seconded by *Mr. Robinson,* they were ordered to be printed and circulated among the members.

It was proposed and agreed to, that the present office-bearers do hold office till the December meeting, and that the annual election of office-bearers do take place for the future at the last meeting of the association in every year.

The Chairman then introduced Mr. John Gamgee, of the New Veterinary College, Edinburgh, who had expressed a wish to read a paper on 'Veterinary Obstetrics.'

Mr. Gamgee, during his remarks, called the attention of the meeting to a case of malpresentation in a mare, in which he was unsuccessful, from not having, as he alleged, proper instruments at hand, and also to the delay before he was called to the case. He also stated that he had been considerably misrepresented by several persons who had brought it before the public. He explained his reasons for causing the mare to be destroyed, and stated that he had relieved a case somewhat similar a few days after the former one, he being then provided with proper instruments.

Mr. W. Anderson narrated four different cases, in one only of which he was successful, and then only with the aid of two other veterinary surgeons. But he recommended all the known methods of abstraction to be applied, and all available assistance to be got, before destroying the parent.

Mr. Aitken, of Kilmarnock, related several cases in which he had been successful, and his remarks upon several of them were valuable. He stated, in answer to Mr. Moir, that he had taken away a foal, and the mare died some days afterwards; but the presentation was different from those described by either Mr. Anderson or Mr. Gamgee. He also gave a description of several instances he had met with where the womb was twisted, and on introducing his hand into the vagina, the parts felt as if a band was passed round the neck of the womb. When this was the case, he cut boldly into the side, the same as for the performance of the Cæsarian operation, and with a glove on the hand turned the womb.

Mr. Moir said that he could easily understand how Mr. Aitken had been so successful, as the cases he had described occurred mostly in cattle. He had met with a few of those himself, and was equally as successful; but, bad as these were, how much more difficult was it to extract a fœtus from a mare; the length of the passage, also of the neck of the foal, and the violence of the labour pains rendering it so.

Mr. Dunlop described a case in which the foal was so large that the mare had to be destroyed.

A few other cases were related and commented upon.

On Mr. Aitken being asked to become a member of the society, Mr. W. Anderson expressed a hope that they should have the pleasure of Mr. Aitken's company oftener, as from his long experience he would be a valuable member of the association.

Mr. Gamgee said that he was making a collection of all known instruments used for the extraction of fœtuses, and also endeavouring to make improvements in them, which he hoped would greatly assist the veterinary surgeon in obstetric cases.

CHARLES MOIR,
Hon. Secretary.

Veterinary Jurisprudence.

LOUGHBOROUGH COUNTY COURT, *January* 21.

(*Before* Mr. SERJEANT MILLER, *Judge*.)

OUTRAM *v.* WALKINGTON.

A JURY consisting of the following persons to try the case: Messrs. Thomas Hutchinson, Joseph Miller, Henry Henson, Joseph Foulds, and Robert Crane.

Mr. John Huish, barrister, instructed by Mr. Edward Gamble, of Derby, appeared for the plaintiff; and Mr. Staples for the defence.

Mr. Huish, in addressing the jury, observed that the plaintiff, Mr. Joseph Outram, was a timber merchant at Derby, and the defendant a butcher and innkeeper at Rempstone. The action was brought to recover damages arising from an alleged breach of warranty of a horse which the plaintiff had purchased of the defendant for £24, and which proved to be unsound. After due notice the animal was sold by auction, and realised £13 10*s.*; the deficiency, together with the expense of keep, sale, and professional attendance, made the amount of the claim £16 6*s.* 6*d.* The circumstances were these: In August last the defendant was possessed of a chestnut gelding, four years old. The plaintiff's brother was leaving the farming business at the place where the defendant resided, and was requested on behalf of the plaintiff, as his agent, to purchase the horse, which he did, arranging that the defendant should send it to the Kegworth station. On taking it away the same day, and before it got far on the road, it was found to be lame, in which state it walked to Belper, where plaintiff then resided. The next day the plaintiff tried it, and found that it went lame. On the 25th the horse was examined by a veterinary surgeon, who found that the lameness was in the fore foot. After apprising the defendant of the circumstance, the plaintiff sent the horse back again on the 4th of October; but the defendant refused to repay the money, saying he had got it and would keep it, and also that the horse was not the one he had sold. After other veterinary surgeons had examined it, the animal was sold by auction. The learned gentleman then called the following witnesses in support of the case:

Mr. J. Outram, brother of the plaintiff, deposed to buying the horse for £25, a sovereign to be returned. Told the defendant it was bought for his brother; asked if he would warrant him all right and sound, when he replied in the affirmative, and said he would give him a written warranty, if wished. As there was a witness present (Mr. Blount) he said he did not require that.

The Judge—You are a young man, and I give you this advice—never refuse a written warranty again if there be fifty witnesses present.

Mr. Perkins said he would admit the warranty.

Witness continued—Made arrangement for the defendant to take the horse to Kegworth station on the Saturday after the 15th of August. Went to the station himself the same day, and saw the horse in the stable, and remained there till the man (Thomas Barrow) came for it, giving him his brother's cheque for £25; gave defendant the cheque, and received a sovereign back. Defendant then said if he proved unsound he would take him back again. Shortly afterwards witness told defendant the horse was lame, and that his brother (plaintiff) vould write to him to send for it back. Defendant promised to go over with him to look at the horse, but afterwards refused, saying he had got the money and would keep it, and would not take the horse back again. The horse was brought back to Rempstone on the 4th of October, but the defendant refused to take it back, stating that it was not the same horse. It was then taken to the Ship Inn, where it remained till it was sold by auction.

By *Mr. Perkins*—Had known the horse for some time previous, but never noticed it going lame, or heard that it was unsound. Three days after it was taken from the station, told defendant that his brother (plaintiff) was so pleased with his bargain that he would not take £30 for the horse, but this was before his brother had tried him.

By the Court—Defendant asked him first how the horse went on, when he (witness) replied that if he kept sound his brother would not take £30 for him.

Mr. William Blount confirmed the last witness's statement as to what took place in his presence.

Thomas Barker, farm bailiff to Mr. Kiddy, of Belper, had permission of his employer to fetch the horse from Kegworth station for the plaintiff; it was pointed out to him by Mr. John Outram, and he took it away. When he got a short distance, on trotting it he perceived it to go lame, and thinking there might be a stone in its foot he got off, but could find none. Did not see plaintiff when he got home. Took the horse back on the 4th or 5th of October, and heard the defendant say he would not have him, for it was not the same horse. Witness replied that it was the same as he had fetched from the Kegworth station.

Mr. Joseph Outram, the plaintiff, said he was not at home the day the horse arrived, but the next day he tried him in a dog-cart for about a mile and a half; he appeared a little lame in the near fore leg, but thinking it might be through a little stiffness he took no further notice of it. Three or four days after he tried him again, driving him to Ripley, four or five miles, when there appeared to be the stiffness or lameness as before, which went off, but on his return the same lameness manifested itself. He sent it out to grass for a few days, thinking it would do it good, and then drove it to Derby, when it went very lame. He turned him out again for about ten days, when he gave him a fourth trial, but he was still lame. Mr. Lee, veterinary surgeon, then examined him, and pronounced him unsound. In consequence he wrote to the defendant on the subject (the letter was put in and read), but receiving no answer he sent the horse back by the same man who fetched him.

Mr. John A. Lee, veterinary surgeon, of Belper, said he examined the horse on the 26th of September; on pressing the flexor tendon passing over the navicular bone of the near fore foot, he flinched. He was of opinion there had been ulceration of the joint, and that the horse had got what was commonly called the "navicular disease," and which must have been in existence some time previously, no doubt before the purchase by the plaintiff.

By *Mr. Perkins*—There was no concussion of the coffin joint.

By the Court—When ulceration takes place in this joint, it might be from concussion; setting the foot upon a stone when trotting might cause ulceration. If the tendon had been lacerated on the 12th of August, it must have shown itself on a hard road. If produced by a hurt of that kind, it would be followed by inflammation; did not trace symptoms of inflammation when he examined the horse. If ulceration of the joint existed, it would never be sound, but might work.

Mr. W. Rowland, veterinary surgeon, of Loughborough, deposed to examining the horse at the Ship Inn, Rempstone, on the 14th of October. Found him lame of the near fore foot, but did not take off the shoe; there was a thickness of the crust of the hoof, and the walls were upright. From the appearances indicated, he was of opinion that the horse was lame of the navicular joint, of some months' standing; in such a state rest would alleviate it for a time; that disease might exist some time before it would develop itself, and might not show itself till pressed upon a hard stone. Never saw what was called a concussion of the coffin joint, that being now exploded. [Mr. Huish here quoted from a work of Mr. Turner, showing that, to all appearances, a horse might go out of the stable in the morning quite sound, and manifest the disease before its return.]

By *Mr. Perkins*—It was not a necessary consequence that horses suffering from that disease should have contracted hoofs. From the 12th of August to the 4th of October there might not be ulceration of the navicular bone; that disease could not have been produced between the 12th of August and the 4th of October. Did not say there was ulceration, but there might be; the navicular disease, which was a most singular one, did not always manifest itself alike in horses.

Mr. Perkins briefly addressed the Court for the defence, contending that the lameness was produced by the plaintiff's man, that the horse was now sound, and that from the evidence of Mr. Barlow, whom he should call, it would be proved that the lameness arose from an affection of the coffin joint.

Mr. Walkington, the defendant, detailed many particulars mentioned by previous witnesses, adding that he had had the horse nearly two years, and although he regularly worked him, he never showed any symptoms of lameness.

Thomas Bramley, John Haywood, Mr. Thomas Marshall, and *William Bradwell*, all deposed to the same effect.

Mr. Robert Barlow, veterinary surgeon, of Cotgrave, said he examined the horse on the 7th of October carefully; found him lame of the near fore foot, both hoofs being perfectly formed, and as much alike as any "twin sisters" could be. He found there was concussion of the coffin joint, and he prescribed a remedy, which he told them at the time would effect a cure; after the bruise, inflammation would take place. If the disease had been of long standing, the hoofs would have been contracted, which in this instance was not the case; had there been a rupture of the tendon, it would have been there at that moment. He saw the horse on Tuesday last, and again that very day; the two feet being as perfect as nature could possibly make them, and the horse was as sound as ever, and being in the town could be seen by the jury if they chose. In his cross-examination, Mr. Barlow ridiculed the work of Mr. Turner, designating the version of the "navicular disease" as a handle for the ignorant portion of the profession to which he belonged; contending that the disease would show itself as soon as it was in existence, whether at plough, at grass, or, if they pleased, upon a feather bed.

Mr. George Rossell, a veterinary surgeon, held the same opinion as Mr. Barlow, and said the horse was now quite sound, and that if it had been the navicular disease, it could not have been in the state in which he had that day seen it.

Mr. Huish having replied, his Honour summed up at considerable length, recapitulated such parts of the evidence as bore more particularly upon the question at issue, reminding the jury that the point for their consideration lay in a very little compass; if they were satisfied that there had been a breach of warranty, or in other words, if they thought the disease was in existence before the plaintiff bought the horse, he was entitled to their verdict; but it was incumbent upon him to show that such lameness had previously existed, which he had failed to do. If, on the other hand, they were satisfied that the lameness arose from some subsequent cause, then the defendant would be entitled to their verdict.

After a few minutes' consideration, the jury returned a verdict for the defendant.

BRISTOL COUNTY COURT.

Before Sir J. Eardley Wilmot, Judge.

JURY CASE—BROOKS *v.* HEMBER.

In this case, which it will be remembered was adjourned from the last court day, *Mr. Clifton* again appeared for the plaintiff, and *Mr. Stone*, instructed by *Mr. Dene*, for defendant. The action was brought for £11 6*s.* 6*d* for loss sustained by the plaintiff in the purchase of a horse of the defendant through his misrepresentation.

Mr. Clifton stated the case at great length for the plaintiff, but as it was reported at length on the former occasion, a brief recapitulation will suffice. The plaintiff, Mr. Wm. Brooks, was a gentleman farmer, residing at Hambrook, near this city, and the defendant was Mr. Edwin Hember, the well-known railway carrier and horse dealer, of Thomas Street, and the plaintiff complained that the defendant falsely and fraudulently represented a certain horse as being as sound as any horse in England; that he was not, in fact, sound, and that the plaintiff had thereby sustained damage to the extent of £11 6*s.* 6*d.* the amount sued for. The plaintiff went to the cattle market on the 3d of last November, and seeing a horse belonging to the defendant jumping some hurdles there, he treated with him (Mr. Hember) for its purchase, and the defendant then said that "he would not warrant the horse, but he believed him to be as sound as any horse in England." The plaintiff rode the horse home, but found him so lame that he was obliged to lead him part of the way; and the next morning he found that he was dead lame, and then wrote a letter to the effect that he had found the horse so lame, that unless he mended in a few days (the plaintiff thinking that he had probably been bruised by jumping in the market) he should unquestionably return him. The defendant did not reply to that letter, and the horse was sent first to Mr. Nathaniel Leigh, veterinary surgeon, who gave a certificate of his lame and diseased condition, and ultimately to the horse repository, where he was sold by Mr. Frank Bryant. He then called the following witnesses:—

William Brooks, plaintiff in the action, and a farmer residing at Hambrook, deposed to treating with the defendant for the chestnut horse in the cattle market, on the 3d of November. Said to him, "Now, Hember, is this horse sound?" And he replied "Upon my soul I believe him to be as sound as any horse in England." Plaintiff offered him £20 for the horse, but defendant said he would not be sold under £22, and walked away. While they were discussing the matter, a man named Carey came up, and asked how much was between them, and he said £2. Carey replied, "Neither of you know the value of a sovereign; you had better split the difference." They agreed, and he (the plaintiff) gave him a cheque for £21. The defendant did not give him a receipt, and he certainly did not ask for one. Plaintiff had his bridle and saddle put on the horse and rode him to the Talbot hotel in Thomas Street. Whilst plaintiff was in Smith and James's, he saw defendant walking in a hurried manner up the street, and it struck him that he was going to cash the cheque. As he rode the horse to the Talbot he perceived him to go a little limping. He went to the Bell inn, Thomas Street in the evening, and saw the defendant, and there told him he would not have had anything to do with the horse, if he had ridden him before he had purchased him. Defendant asked why, and he replied, " because he went lame." Defendant said that could not be, unless it was occasioned by his jumping the hurdles in the market, which was like jumping on a turnpike road, and he replied that he hoped he should find it the case. He staid and had a glass of brandy and water with defendant. Said to him, " You are a regular horse dealer, and must be up to most of the tricks; now you extracted the teeth from that horse in the market, to make him appear a year older." Defendant said that was nothing, and that he could put any horse upright if he were only lame in one foot; and described how it was done by a process of beaning, which was done by putting beneath the shoe of the sound foot a bit of iron, which he said could be carried in the waistcoat pocket, only he must mind to take it out before the horse was delivered (laughter). Plaintiff said, " Perhaps you have served mine so," and he replied " no, he had not." The same night he rode the horse home, and was obliged to walk him the whole distance; for when he attempted to trot, he went as though he would tip over. The next morning he had him taken out of the stable and attempted to be trotted, but he was equally as bad, if not worse. He wrote defendant a letter, wherein he told him that he had found the horse so exceedingly lame, that he had been obliged to walk him all the way home, that he would keep him a few days, and unless it turned out that it had been occasioned by his leaping the hurdles, and he did not get better, he should return him. He brought him to Bristol on the following Thursday. He went to the defendant, but as he would have nothing to do with him, he had him examined by Mr. Leigh, veterinary surgeon, who gave him a certificate. The horse was subsequently sold at the Repository, and he had sustained a loss, through the transaction, of £11 6*s*. 6*d*.

Mr. James Pearce, farrier, of Kingsweston, was next examined, and deposed to having purchased the horse in question in October or November last, and having returned him, because he was too small and lame. Witness gave £30 for him, which sum was returned to him.

Mr. N. Leigh, veterinary surgeon, was called, and deposed to the horse having been brought to him on November the 11th by the plaintiff; he knew the horse before, and had treated him for chronic disease in his internal parts and in both fore feet.

Mr. Stone addressed the jury on behalf of the defendant, and called Edwin Ember, the defendant in the action, who deposed that he sold the horse in question to Mr. Pearce for £30 on the Thursday previous to selling it to plaintiff; he warranted him to be sound, and believed him to be so then. Mr. Pearce returned the horse in a week; he said he was hardly up to his weight, and he thought he was a little bit lame. He (defendant) said, "If he isn't what I represented him to be, I will have him back and return the money." He afterwards received back the horse, and sent him into the market; whilst he was there, jumping some hurdles, the plaintiff looked at him, and he told him the price was £22. Defendant informed him that he had been sold to Mr. Pearce, of Kingsweston, for £30, and added, "He tells me the horse is lame; you are a judge, go and look at him; he is to be sold at a bad price." He bid £20, but they parted; Carey came up, and they closed the bargain at £21; they went into the Cattle Market tavern to a desk for the accommodation of dealers, and he drew a check for the amount, and he (defendant) gave him a receipt for the money, upon which he stated that "he warranted the horse good in harness and at hunting, but not sound;" told him he should sell the horse "for life." The defendant stated that at the interview at the Bell inn the plaintiff said he would not have bought the horse had he ridden him first, but afterwards said he was good enough for him if he could get a day or two of hunting out of him a week.

The witness was cross-examined; and Mr. Carey and Edwin Hember, jun., son of the defendant, were also examined.

Mr. Clifton replied upon the defendant's case in an able and powerful speech, and

His *Honour* having summed up at great length, the jury, after nearly an hour's consultation, returned a verdict for the plaintiff for the amount claimed.

OBITUARY.

We regret exceedingly to have to record the death of Mr. James Turner, M.R.C.V.S., London, on Tuesday, April 9th, 1860.

His name is familiar to all associated with the profession; and little did we think, when we announced the demise of his brother in our January number, that so soon after we should have been called upon to announce his departure hence. But the summons had been issued, the fiat gone forth, which all men sooner or later must obey.

We have known Mr. Turner long; he is among our earliest remembrances since our connection with the College, and we always looked upon him as an earnest and a sincere friend. There was an openness of manner in him, and a frankness of expression that we liked. It was English: he spoke what he thought, and if at times there was a want of agreement between us, the difference was soon rectified. With the profession he was bound up, and he ever manifested for it the warmest solicitude. What wonder then that he exerted himself to promote its interests, and was always found among those who wished to advance it? Nor was his pen idle: the journals of Veterinary Medicine contain many interesting and important papers written by him; while his work on the 'Foot of the Horse,' and his 'Physiological Experiments on the Blood,' give proof of his love of investigation and inquiry. In the latter he shadowed forth the theory which has recently been accepted as the cause of the coagulation of the blood. It may be that this is still a moot question; nevertheless it has been acknowledged that the experiments performed years since by Mr. Turner threw much light on this obstruse subject, although they did not wholly develop it.

In the practical part of his profession he took a prominent position, and he was bold. The firing-iron found in him a strong advocate; his expression was, "If you fire, fire." The furrowed lines he made were sometimes deep, and we have thought that now and then he carried this a little too far.

The mode of shoeing he introduced, called by him the unilateral method, he strongly recommended, and considered it to be the *ne plus ultra* of the art. To this, however, as to every other system, objections have been raised.

It is not our intention or desire to give a history of Mr. Turner in this brief notice of him. There are those who have been acquainted with him even longer than we have, and it will afford us much pleasure to insert their reminiscences of him; being convinced that an extension will only, by supplying our omissions, add to the just reputation in which he was held by those who knew him best. His memory will long be revered by us.

Mr. Turner died, after only a very short illness, of an attack of inflammation of the lungs. He had complained for some few days previous of sore-throat and pain in the chest, yet he was able to attend to his professional duties.

His diploma bears date May 18th, 1811. He had filled the offices of President, Vice-President, and Councilman of the Royal College of Veterinary Surgeons, and he was also one of the Board of Examiners of that body.

Since the above was written, the death of Mr. William Stockley, late of the Royal Artillery, has taken place. He was one of the oldest members of the profession, and his diploma bears date July 5th, 1794.

We hope in our next number to be able to place on record some particulars of one so long connected with us, and whose life must have been full of stirring incidents.

The departure hence of these the fathers of the profession, although to be expected as among the natural course of events, nevertheless awakens regret and excites reflection. Truly it may be said—

"Singula de nobis anni prædantur euntes."

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Communications and Cases.

VETERINARY OBSTETRICS.

No. 1.

May 5, 1860.

GENTLEMEN,—I herewith forward you a copy of the "*North British Agriculturist*," containing the 'Essay on Veterinary Obstetrics' I read before the WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION, and the discussion which ensued, drawn up by a reporter.

I shall esteem it a favour if you will introduce the same in the forthcoming number of the *Veterinarian*, as it contains, I venture to believe, a very satisfactory refutation of all that has been said to injure my professional reputation.

Aware as I am that you especially scorn the attempt of some to raise themselves by the detraction of others, I rely on your publishing the report above referred to.

I am, Gentlemen,

Yours faithfully,

JOHN GAMGEE.

To the Editors of 'The Veterinarian.'

"At a recent meeting of the West of Scotland Veterinary Medical Association, the following paper was read on 'Veterinary Obstetrics' by Professor John Gamgee, of the New Veterinary College, Edinburgh:

"GENTLEMEN,—The recent discussion on a case of difficult labour in a mare appears before us in a double aspect—in one in which it has been extremely objectionable, and in another in which it may, having assumed a professional character, turn out not unprofitable. I am only happy that I should have been unwittingly the cause of some stir amongst members of the profession, though the conclusions to be arrived at, from the several cases published, have not been fairly or satisfactorily stated. My part in the discussion has hitherto been very trifling, and simply because it appeared in its first aspect in that in which a professional man was attacked by his brethren, who dared not to confront him, and used an instrument, in the shape of a non-professional person, incapable of judging at all on the question at issue, in order, if possible, to shake his position as a practitioner. It is true that, in the second stage, a veterinary surgeon entered the arena, but equally in false colours; and it would have been as foolish in my position to discuss with him as with the working man whose name served the purpose of my foes. Some may fancy that I am placing the matter in a different light to the correct one. I am prepared to defend my position by most substantial testimony, and a few present might give me good assistance.

"But let us turn at once to the profitable view of the whole matter, and I have, in the first place, to relate the case hitherto misrepresented.

"On the 23d of April last, a little after 5 p.m., as I arrived at the Burntisland Station, on my way from Kirkcaldy to Edinburgh, I was met by Andrew Calley, blacksmith, Kirkton, who sought my assistance in the case of a bay cart-mare, six years old, which had been in labour at least since noon. Calley stated to me that attempts had been made to deliver the mare, and they found the head pushed back, with the fore legs protruding; that though they felt the head, they could not withdraw it, and they were anxious to see some means tried to save the mare. I at once stated that, from my experience of such cases, in the absence of instruments, and considering the length of time the womb had been violently contracting on a fœtus with head and neck displaced, the chances of success were infinitesimally small, but that he should make as speedily as possible a pair of hooks. With these we proceeded to Rossend Castle, where I found the mare, as usual in such cases, surrounded by many individuals eager to watch her fate, and to assist, if possible. That they had not been inactive, was proved by the mare lying on her side, with the fore legs of the fœtus protruding as far up as the middle of the arm. The throes were violent, the mare in great pain, sweating, with full-bounding pulse, bloodshot eyes, and anxious countenance.

"I caused the mare to rise, and the limbs of the fœtus dropped back into the vagina, but only as far as the knees. The vulva was swollen, cold, and the vagina red, and, as usual, irritated by the explorations already made and the irritant discharges. I pushed steadily on the legs, and sought assistance in this operation, having previously placed a small rope on each fetlock, should I require to push the limbs into the womb again. I introduced my arm with very considerable difficulty, and felt the sternum and the root of the neck. The head had been pushed far back to the right side, but this I could only ascertain by the direction of the last cervical vertebræ. The hooks that had been made could not be fixed through the skin, and repeated attempts were made by me to obtain a hold. I requested Calley to lengthen the handle to them, and made cautious but unsuccessful efforts to transfix the tissues, as far forward as I could, but all in vain. The uterine contractions were so violent, that the fœtus could not be moved, and not only my hand, but my arm also, were so firmly compressed as to render all successful manipulation impracticable. I decided on attempting to obtain space by removing the fore limbs which had all along served, but without avail, as means of pushing back the fœtus. I adopted the well-known plan to effect this, and divided the skin on the inside of either limb, separating it from the subjoining tissue as far as I could reach, and from the fœtus being turned back, and having no instrument to assist me, I could not detach the skin beyond the shoulder. Having attached ropes to the fetlock, each limb was pulled on with great force by the many assistants, but in vain. This I accounted for from the strength of the fœtus and the skin not having been fully detached over the shoulder. Any person having attempted this operation in the cow and the mare, must be aware of the greater difficulty experienced in dismembering the fœtus of the latter. Not to injure the mare by undue violence, I divided the muscle, as well as I could, round the shoulder-joint, and caused the assistants to pull. The capsular ligament of the latter stood enormous traction, and while assistants were pulling, I divided this and removed the limb.

"I then constructed a *repoussoir* or instrument to push on the sternum, and attempted to draw forward the neck. I first implanted the hooks, as well as I could, in the neck, pulling the fœtus forward by the skin of the extremities. Then, whilst pushing back the foal, I caused assistants to pull on the neck, but almost invariably with the result of the hooks losing hold, or the neck remaining immoveable. To complete embryotomy with the penknife I had, I found quite futile. Considering the exhaustion of the mare, though doubtless she had sustained the operation better than might have been expected, the small chance of recovery under any circumstances, but especially if I delayed till next day (Sunday), when instruments could be obtained, I recommended the mare to be put out of pain. The owner of the mare was ill in bed, but his son-in-law thought it was the best course to adopt, and urged to kill the mare at once.

"I am aware that many ring into our ears, so long as there is life there is hope; but as veterinarians, we know that there are many cases in which the destruction of the animal is far preferable to a slow but certain death. I remember a farmer calling me, at a considerable distance from Edinburgh, to see a recent case of compound comminuted fracture of the hock-bones, and I advised the horse to be at once destroyed. I was regarded as little short of insane, and was told that it was my duty to cure, and not to kill. The horse was slung, and with violent irritative fever lingered in torture about a fortnight, and died.

"I need not, however, depart from cases of difficult labour to prove whether my judgment in the foregoing case was correct. On the 3d of June I was summoned by telegraph to Glendeuglie, in Perthshire, to attend a mare. I was in the country when the despatch arrived, but left by first train next morning. One of my pupils, Mr. A. C. Muir, veterinary surgeon at Auchtermuchty, happening to be at Newburgh market the previous day, was requested by Mr. Laing, of Glendeuglie, to proceed to the latter place and attend a mare which could not foal. On arriving at the farm, he found a veterinary surgeon had been called by the grieve, and with the assistance of his father, was attempting to deliver. All these gentlemen were actively engaged in these operations, and seemed to need no assistance. Mr. Muir for some time stood by and observed what was being done. Several hours were spent with hooks and ropes, and other instruments, and the mare was left. Mr. Muir had protested on various occasions at the roughness with which the mare was handled, and was afterwards asked to attempt delivery. This he refused, in the first place, because his assistance had not been sought by the veterinary surgeon; and, in the second, as so much had been done he regarded the case as thus rendered perfectly hopeless. Mr. Laing telegraphed for me, and, on arriving at Glendeuglie, I found the mare standing, very much depressed, with sunken head, no throes, swollen vulva, lacerated vagina, and discharge of a most offensive nature from the latter. I found the presentation precisely similar to the former one, and stated that, provided as I then was with instruments, I could perform embryotomy, but the mare would certainly sink in the course of a few hours. Mr. Laing was anxious I should give her every chance of life, and with great care the fore imbs were removed, the sternum severed from its connexions, the thoracic and abdominal viscera pulled out, the neck amputated, the vertebral column and ribs cut off in portions, and at last the hind legs drawn out. The whole operation took nearly two hours. The vagina and womb were well washed out, and the mare supported by stimulants, but in vain; she sunk in the middle of the succeeding night.

"There have been many cases recorded in the annals of our science for the last century, in which veterinary surgeons have been perfectly successful in delivering mares when the presentation was similar to that I had to overcome. In all, the same plan of pushing back the fœtus by the limbs, and drawing in the head which is within reach, so as to be tied, hooked, or grasped, have been adopted; and when Mr. Balfour and others write as if they gave evidence of great ingenuity by adopting this very ancient plan, they were only trusting to the ignorance of the uninformed for praise, which they certainly are not entitled to, and cannot obtain from professional men.

"My experience, borne out by that of many more, is that, by the use of judicious means early, and by that I mean within the first hour or two of labour, many cases of malpresentation in the mare are overcome, but in protracted cases the difficulties are incomparably greater than in any other domestic animals, and embryotomy alone can be relied on. I shall have occasion to say more regarding this operation, meanwhile I may be permitted to refer to letters I have received from practical veterinarians, whose experience has been great with this particular class of cases.

"The person that has contributed most to our knowledge in Great Britain, on questions of veterinary obstetrics, has been that once constant contributor to the *Veterinarian*, Mr. W. A. Cartwright, of Whitchurch, Salop. I have not the pleasure of Mr. Cartwright's personal acquaintance, and am indebted to him for his valuable letter, from which I extract the following:

"'My experience, after thirty-five years' practice, has taught me that, when the head lies back in the position you mention, it is one of the *most difficult* positions we have to deal with, and I can call to mind that I have lost at least a dozen cows in getting the calves away in such a position, and in a case or two (when I was a younger hand) I have actually not been able to extract the calf, and had the cows destroyed.

"'I cannot say that I ever lost a mare from the foal being in this position, but I candidly admit that I have been fortunate enough not to meet with many of these presentations.

"'A case of the kind occurred last year to a veterinary surgeon in this neighbourhood. It was a cart-mare, with the foal presenting by one fore leg, the head and other fore leg lying back. The leg was got up and cut away, but after many ineffectual attempts to get the head up, the foal was pulled away by one leg, the head being on its side. The mare died.

"'Such a position of the fœtus in the cow is common, and even in her difficult enough, but there is a wide difference between a cow and a mare. In the latter the pains come on suddenly, are most violent, and repeated quickly. I perfectly recollect a case in a mare, where I had to put hobbles on, and pull the fore legs of the foal away, and cut all the ribs off one by one, before I could get at the head, and was obliged to pull the fœtus out backwards. The mare did well.

"'The obstacles to reaching the head are the length of a foal's neck, and the excessive straining of the mare. We must also consider the great distance to the fundus of the uterus in the large blood- or cart-mare. No person can reach the head in many cases, and the only method left is to have recourse to embryotomy, whether in the cow or mare, and after all death is most probable, from the extravasation of blood around the vagina and uterus, and from the prostration of the vital forces.'

"In commenting on the case I attended, as reported by Mr. Calley, Mr. Cartwright says, that considering the want of instruments, and the length of time the mare had been violently straining, and the foal displaced, he thought it was prudent and humane that she should be destroyed.

"Permit me also to read a letter from one of the ornaments of our profession, and who owes his position as a skilful country practitioner to sound common sense, a love for his profession, and the enlightened instruction of the late Mr. Barlow, whose particular friend, I understand, he always was. This gentleman, Mr. Robertson, of Kelso, one of the veterinary examiners for the Highland Society, says:

"'Kelso, 9th February, 1860.

"'My dear Mr. Gamgee,—During the season, I generally have a considerable amount of obstetric practice, and the majority of the cases in which my services are requested have proved too much for others.

"'I find that assistance is more frequently required in the *cow* than in the *mare*.

"'As regards the number of cases that succeed in my hands after having been roughly handled by others, I should say, that in 99 per cent. I find the fœtus dead, or only surviving delivery, while many of the parents ultimately succumb.

"'I have never met with a case of back-turned head in the mare, but very many in the cow. I have in her found the fœtus so wedged in the pelvis by the traction employed, that not only has the ordinary method (that of employing the free extremities as means by which to thrust), but every other which I could devise proved abortive to effect its displacement as a whole.

"'In all such the fluids have escaped some considerable time previous, the parts are dry and swollen, and the fœtus dead.

"'However, I have never, *as yet*, been baffled to effect delivery, having at once recourse to embryotomy.

"'In disarticulating the fore extremities, my practice is invariably to divide the integument over the lower metacarpal articulation, running the knife up the inside of the limb as high as possible, detaching with the finger as much of the skin as I can, while, by traction applied to the limb, its severance from the trunk is effected; very seldom indeed does the scapula fail to come away.

"'Having in this manner removed the fore extremities, the more difficult part I find to be the bringing of the head into the axis of the pelvis, to effect which I employ a hook, a cord, or both, with the former endeavouring to grasp some part of the head, employing the latter to pass round the neck.

"'However, it is needless detailing such matters to you; I have been prosy enough; if you desire any such *in extenso*, I shall be happy to give what I can. To say the least of these cases, they are unpleasant; I always feel the effects of the exertions they call forth for some days afterwards.

"'Yours sincerely,

"'William Robertson.'

"Of the general practitioners having very extensive practice in delivering animals in cases of difficult labour, I have to mention Mr. Charles

Hunting, of South Hetton, who probably sees as much practice during the year, from the very many animals under his charge, as any other veterinarian in the United Kingdom. He writes as follows:

"'South Hetton, 13th February, 1860.

"'My dear Gamgee,—I have met with many cases of difficult labour such as you describe, both in the mare and cow; in the latter, I only remember two cases in which I did not succeed in delivering the animal; in the *mare* the case is very different; my experience has proved to me that in eighteen cases out of twenty of malpresentations, that unless you can adjust the fœtus and deliver within the first six hours, all the powers on earth cannot avail afterwards; and by far the majority of cases in the mare, such as you state, you cannot adjust the head, unless you happen to be on the spot almost *immediately* after the membranes become ruptured—say within ten or fifteen minutes; then it is much easier; and if you cannot adjust the head in twenty minutes, you can in most cases remove the fore extremities from the trunk, which facilitates the adjusting the head very considerably; if several hours have elapsed, I have met with cases in which I could not get the shoulders off nor the head down, consequently could not deliver my patient. In some cases other professional men have been sent for, but in no single instance have they succeeded where I had failed. I also have been called in where others had failed; and I only remember one instance where either mare or foal were saved.'

"I am tempted to mention two other Scotch veterinarians, the Messrs. Conacher, of Perth, who state that in a case similar to those recorded by myself, they had recourse to embryotomy, but the mare died.

"Gentlemen,—I have applied for information from those gentlemen whose yearly opportunities to test their skill and that of others in the particular class of cases under our consideration may be termed unlimited, and how similar the opinions of gentlemen quite unknown to each other, at different parts in England and Scotland. Members present can, I am sure, defend my practice, and support the statements of the able practitioners whose letters I have transcribed.

"It is not my object to trouble you with many remarks, after having clearly stated the cases in which my practice has been called in question, and read you the opinions of practical veterinarians.

"Published works contain but scanty observations on the difficulties experienced by veterinarians in delivering mares in difficult labour. All refer to the rules of practice when the head is turned back, viz., pushing back the foal, and at the same time pulling on to the head. Gunther, and more particularly Baumeister, the most recent and accomplished author on veterinary obstetrics, refer to the impossibility of dragging forwards the head and neck, necessitating amputation, an operation requiring suitable instruments of considerable power.

"I think we must classify cases of this description under two heads—first, the simple cases, by which I mean those to which a veterinary surgeon happens to be called shortly after labour commences, and before unskilful interference has complicated the presentation. In all these instances the head of the fœtus can be grasped, and there is then no obstruction to a prompt delivery of the mare. In the second place, we have the severe cases, which may be classed under three heads, according to the unavoidable results attending them. We have the severe cases, in which the foal's life must be at once sacrificed to save the mare, necessitating the use of instruments, according to the rules which must be observed in performing embryotomy, and which have hitherto not been laid down by any British writer. Then another class of severe cases includes those in which, to save the foal, the mare has to be destroyed. However rare these cases may be, it is just possible that the birth of a foal, by a particular stallion, may be of more importance than the life of the mare. It is in this class of cases that the Cæsarean operation is alone justifiable, the chances of recovery in the mare being no more than when bleeding to death or dividing the spinal cord. Though deadly in all animals, this operation is constantly fatal in the mare, either shortly after its performance, from shock, or a few days after, from incurable peritonitis. Lastly, there are the severe cases which, like those recorded by myself, must prove fatal, either in consequence of the bungling of empirics, or delay in attempting delivery; and lastly, from the absence of instruments which are recognised as essential in many such instances.

"If I may be permitted to draw some general conclusions bearing on the whole subject of veterinary obstetrics, I should say that recent discussions afford the best proof that this branch of veterinary science, if possible, more than others, has been neglected in Great Britain. It has been neglected both as a science and as an art. As a science, I have only to draw your attention to the absence of any treatise on the subject of parturition in the lower animals. All that refers to the anatomy of the female generative organs, and the phenomena of pregnancy, &c., has not only not been written on, but not taught with any precision. Allow me to draw your attention to that very important and very difficult science, regarded as almost useless by veterinarians, many teachers included, and a complete acquaintance with what is essential as a branch of obstetric knowledge. I refer to teratology, or the history of monstrosities. But some individuals, when accused of ignorance in science, claim skill in art, and descant on their success in practice. When I first came to Scotland, the obstetric instruments that had hitherto been used, and those sold by only one veterinary instrument maker, amounted to three or four, and two out of the number little better than useless. The common hooks were so constructed as to be absolutely useless. For every instrument then used I have introduced half a dozen, and it is my intention to lay before this society, if I may be permitted, on some future occasion, a complete collection of instruments which have been devised in different countries to facilitate the operations of the veterinary surgeon in cases of difficult labour. The common experience of veterinarians throughout the country, at all events, so far as I have ascertained it, is, that much requires to be done in order to render success in these a matter of much greater certainty than it has hitherto been.

"I might here institute some interesting comparisons between human and veterinary obstetrics, one branch of which presents more difficulties in the latter than in the former, and that is, delivery in cases of difficult labour. With some animals, such as the sheep and dog, in which forceps can be used, delivery is commonly certain and speedily effected; but whereas the lower animals more rarely need assistance than the human female, in the latter the operation of delivery in cases of false presentation does not present the same difficulties.

"In conclusion, gentlemen, allow me to say that I estimate it a considerable privilege to have an opportunity such as that which this association alone can afford a veterinary surgeon in Great Britain, viz., to meet a body of veterinary practitioners, and obtain the judgment of that body on any practical question. In this particular instance I am well aware that your opinion can alone coincide with that of the gentleman whose letters I have read, and with whom I perfectly agree. Regarding the one point, of putting an end to an animal's sufferings when the chances of its recovery were gone, I think, on the score of humanity, is deserving of anything but censure, and I have yet heard no argument of any weight in opposition to the many in favour of such a procedure.

"*Mr. Anderson*, of Glasgow—I think it better that veterinary surgeons should make public their unfortunate cases as well as their fortunate ones, for the benefit of their professional brethren. In my experience of cases such as Professor Gamgee has related, I have met with four in which the head was turned backwards. In the case which I will relate first, the mare belonged to Mr. Clark, of Newhouse, and in this case I had the assistance of William Hall, who, I dare say, was the strongest man in Scotland, but I could not succeed in getting out the fœtus, though I attempted it for some hours, and at last Mr. Clark ordered the mare to be destroyed. In the second case I was assisted by the late Mr. M'Lean, and we worked from eight o'clock in the morning till twelve, but did not succeed in getting out the fœtus. I then went to Paisley, and brought up Mr. Donaldson in a short time. We then commenced again, and succeeded in bringing it away at four o'clock. This mare was very weak for some time after, but it ultimately recovered. In the third case I could not succeed in getting away the fœtus, and I called in Mr. M'Lean to assist me, but being still unsuccessful, we called in Mr. Cockburn, but we were still baffled, notwithstanding all our endeavours, so that we recommended the mare's throat to be cut. In the fourth case I succeeded in getting away the fœtus, but the mare afterwards died. I have sometimes seen them coming with the back first.

"*Mr. Dunlop*, the vice-president, mentioned a case in which, from contraction of the uterus, he could not get his hand in between the mare and the fœtus, and the mare, in consequence, was destroyed.

"*Mr. Macdougall* remarked that he also had had similar cases in which he was unsuccessful.

"*Mr. Aitken*, of Kilmarnock, then rose and said—I thought that some of Professor Gamgee's remarks about the papers in relation to the case which had been written were intended for me. I beg to say that the paper which has been communicated by me to the *Veterinarian* has no reference to Professor Gamgee's case at all; and that in it Professor Gamgee's name is not mentioned. I may say that I have had as much practice in cases where the head of the fœtus is turned backwards as any man in Britain. If you can get hold of the head you are all right. I was sent for, the year before last, by a Mr. Douglas, to assist him in a case.

It so happened that I was called to assist him in another case which he had, but as I didn't know what the case was, I had to return home for my instruments, but on coming back I found the calf was putrid. In that case I succeeded in removing the fœtus, after much labour, and the smell was so bad that I was unwell for some days after it. I then emptied two bottles of soda water into the uterus, to clean it out, and in such cases I have found spirits and water to act beneficially, by causing spasmodic action of the uterus. In such cases you should remove the limbs, without taking the whole shoulder. I have been called to a cow, and I found that it was a putrid calf, in the month of July. You should remove the limb at the knee-joint, taking care that the skin is not detached.

"*Professor Gamgee*—My remarks were not intended for Mr. Aitken, nor for any of the gentlemen who have written in the *Veterinarian*. My remarks were intended for persons who have put their names to that which they have not written themselves, and which had been penned for the purpose of damaging my reputation. I need scarcely say that I have no cause to heed such attacks, and my desire to-day is to draw attention to a most important subject, which, in the interest of science, should be fairly and satisfactorily discussed.

"*Mr. Aitken*—What I have written has been done with my own pen, and is, I hope, not detrimental to you. In a mare, I have seen the rectum presented three feet, and as thick as a man's body. The great loss to a veterinary practitioner is that he is not called in time.

"*Mr. Anderson*—I once lost a mare, in which the uterus was twisted. I lost it through ignorance, as I never had been taught this. But Mr. Cockburn and I discovered this on opening the mare. One of the ureters was thickened. If I had known that the uterus was twisted, I might have given it a quick turn, and have saved the mare.

"*Mr. Moir*, addressing Mr. Aitken—In cattle I have seen the fœtus with the head turned backwards; but I think that some years ago you had a difficult case of parturition in a mare, at Auchinleck, the result of which I do not exactly remember.

"*Mr. Aitken*—I have a distinct recollection of that case. I took three of the legs of the fœtus away, and then got the other parts away, but the mare died about the seventh or eighth day.

"*Professor Gamgee*—I am glad to learn that Mr. Aitken has met with a case in which he was unsuccessful, as it bears out the remarks of Mr. Cartwright and others. Mr. Anderson's remark about the teaching of obstetrics in our schools being deficient I can bear out, as the idea is given that the cases to be met with are very easy, and the difficulties which practitioners actually have to encounter are not explained. I would wish to know from Mr. Aitken whether he considers it best to amputate at the knees, or to take off the limb wholly.

"*Mr. Aitken*—I always amputate at the knees. I would not have gone to a case where the head was turned backwards without my instruments.

"*Mr. Moir*—I was called to see a cow in calf near Paisley. On arriving, I found she had a very bad smell. On introducing my hand I found the womb nearly closed, so that I could only introduce two fingers. I felt the nasal bones, and by working I gradually got them out, and then the head, and afterwards the other parts of the fœtus, and by working the opening was enlarged. I then washed out the womb with a little tepid water, and in the afternoon with a little chloride of lime, but the cow died about a week afterwards.

"*Mr. Aitken* remarked that similar cases he always left to nature, and in a few months the animals recovered.

"*Professor Gamgee*—In cases such as Mr. Aitken has related, where the fœtus dies, a very mild solution of chloride of zinc might be used, which would cause separation of the bones, and then they could be gradually removed.

"*Mr. Aitken*—I would prefer muriatic acid, which I think would have more effect on the bones.

"*Professor Gamgee*—I hope that out of this discussion we may have some practical result towards advancing the science of obstetrics in this country. I may mention that I have been endeavouring to collect obstetric instruments from all parts of Europe, and from different practical veterinarians in this country, which, when completed, will be the largest collection of obstetric instruments in the world. It is very essential that we should know what has been done by veterinarians in other countries, so that we may not be combating with difficulties which have been already overcome.

"A short discussion took place between Mr. Aitken and Professor Gamgee, as to the improvements which might be made in the forceps which are used in cases of difficult parturition. After which Mr. Moir moved a vote of thanks to Professor Gamgee, which was acknowledged.

"*Mr. Anderson* wished to know what the subject for discussion next time would be, and he thought if Mr. Gamgee could get the obstetric instruments ready it would be better not to delay with them, as it was of great importance to obtain as much information as possible on these points early. After some discussion, the choice of subject for discussion at the next meeting was left to the committee appointed to regulate the affairs of the society, and the meeting then broke up."

VETERINARY OBSTETRICS.

No. 2.

KIRKTON BY BURNTISLAND; *May* 9, 1860.

GENTLEMEN,—I shall feel obliged to you to insert in your next number the inclosed copy of a letter, which I felt myself called upon to publish in consequence of Mr. Gamgee's remarks at Glasgow—which have been copied into your Journal of this month—relative to my case of "*A mare destroyed from difficult foaling,*" which appeared in the November number of the *Veterinarian* for last year.

I remain, Gentlemen,
Respectfully yours,
ANDREW CALLEY.

To the Editors of the 'Veterinarian.'

KIRKTON BY BURNTISLAND; *May* 9, 1860.

At a meeting held at Glasgow of the West of Scotland Veterinary Medical Society, the proceedings of which appeared in the May number of the *Veterinarian,* Mr. Gamgee, of the New Veterinary College, Edinburgh, expressed a wish to read a paper on "Veterinary Obstetrics." Mr. Gamgee, during the course of his remarks, called the attention of the meeting to a case of malpresentation in a mare which had to be destroyed, as, being from home when he was called, he was not provided with proper instruments. He also stated, "that the case had been protracted for a length of time before he saw it." He further remarked, "that he had been considerably misrepresented by several parties, who had brought it before the public through the medium of the newspapers." Mr. Gamgee's remarks refer to a case the history of which was written by me, and was published in the November number of the *Veterinarian,* last year. I am the party wholly responsible for the printed account, having attended the case from first to last, and heard and witnessed all Mr. Gamgee said and did on the occasion; and as he complains of having been considerably misrepresented, although he carefully evades telling his professional audience one single point upon which he had been so, I trust you will—not less in justice to me than for the important bearings of "Veterinary Obstetrics," in a practical point of view, the promotion of which must have been one of the chief and laudable objects for the institution of the Veterinary Society whose members Mr. Gamgee was addressing—insert in an early impression of your Journal the following explanatory observations.

1. With regard to Mr. Gamgee's statement, that the case "had been protracted for a length of time before he saw it," I have only to remark, that

the case was protracted *longer after* he saw it than *before* he was called in. The facts are, that the mare brought a cart of coals home from a distance of five miles on the forenoon of the day she was taken in foal. I was sent for, and saw her about two o'clock, not long after labour had commenced. Mr. Gamgee arrived shortly after five, and remained in attendance from that time till between ten and eleven o'clock at night (I speak within the hours), when he destroyed the mare by "pithing" with a knife which he got from me.

2. With regard to the want of instruments which Mr. Gamgee complains of not being provided with, he was told soon after five o'clock, on his arrival, and ascertaining the presentation, and expressing a wish to procure them from home, that if he telegraphed for them he would get them by the seven o'clock boat; but he declined sending for them, saying he would try and do without them.

The operative proceedings he afterwards resorted to in the various attempts to accomplish delivery, may be shortly summed up. He first amputated the extended two fore legs of the foal about the knees. I ask if it was not malpractice to remove the natural pulleys, which the presenting fore legs are, by which traction can in the most effectual way be made to effect extraction after the necessary means have been used to push back the malpresenting parts? Was the next step he adopted a justifiable one, of endeavouring to push backwards the preternatural presentation, which had, by jamming up the passage, obstructed delivery, by the introduction of a piece of wood? Or was the application of iron hooks, which he caused me to forge and to fix into the neck of the foal, and by which violent efforts in extraction were made, in place of being a means to facilitate the foal, not rather one which rendered delivery impracticable by jamming up the parts more fixedly within the pelvis? Is not turning the mare on its back the best position in which assistance can be most successfully applied in difficult parturition; and when I proposed that to Mr. Gamgee, and to disarticulate the head from the neck of the foal—an operation I had performed a few years before with a strong knife, in foaling a mare, whose life I saved by it, for she speedily recovered, and the only manual help I received was from the physical strength of two farm-servants; and I put it to the veterinary profession to decide, if Mr. Gamgee was justified in rejecting to try what I proposed to him before he destroyed the mare? Can Mr. Gamgee defend, as scientific practice, the unsuccessful attempt made by the introduction of a piece of wood for the purpose of pushing back the malpresentation? and would not the continuance of violent force so applied, which could neither be regulated nor directed safely, end otherwise than in laceration of the soft parts, or rupture of the uterus, without altering the preternatural position of the parts? And lastly, I put it to Mr. Gamgee himself, what knowledge has he gained from this case, and to what purpose would he apply it in the prelections he gives to his students for the management of similar cases? Whether he recommends them to do as he had done in the case I have described—to abandon delivery and destroy a mare under a similar duration of labour, that was strong and healthy, with a regular pulse, and which had manifested no symptoms of exhaustion, without employing the different remedial treatment which various respectable veterinarians have successfully employed, in cases published by them in reply to my communication for information as to the best practical management in difficult parturition from preternatural presentations; or whether, before putting in execution the last sentence of the law, a man should be condemned on his own judgment, without consulting with others who may possess more practical skill, manual dexterity, and that moral courage and physical power, qualities which are indispensable to enable the veterinarian to accomplish operations with safety, however long and arduous, and prevent him from relinquishing their performance in despair? If such considerations do not warn Mr. Gamgee, it would be well for him to reflect in time, whether the unnecessary sacrifice of the lives of valuable mares might not subject him to a legal action of damages. I am, &c.,

ANDREW CALLEY.

CASES OF PRETERNATURAL PRESENTATIONS IN MARES.

By M. E. NAYLOR, M.R.C.V.S., Wakefield.

IT is long since I contributed anything to veterinary pathology through the pages of the *Veterinarian*, nor should I probably have been induced to do so now, but that I have felt somewhat disappointed in not seeing the subject of protracted parturition taken up by yourselves, who are so well qualified for the task, in answer to the gentlemen who have reported cases of this kind.

Often have I heard you say, that it was an unsuccessfully treated case which made a man reflect, and in many instances, if fairly reported, that such could not fail to be of essential service to our fellow practitioners. Permit me, then, to detail a few cases of difficult parturition, in which my assistance has been required, and to give you the results of my treatment of them.

You are aware that we are rarely called in until all the neighbours and farm-servants have tried what they call "their experience."

Case 1.—April 20th, 1836.—I was called to a village about five miles distant, to attend a three-year-old Suffolk cart-filly, that could not foal. On my arrival I found that both the fore feet of the fœtus were protruding from the vagina, without any appearance of the head.

As the filly was down, my first attempt was to get her on her feet, but in this I did not succeed. I then tried to return the presenting limbs of the foal, but was equally unsuccessful.

From the time the filly had been in labour and the cold, clammy feel of the fœtus, I felt sure it was dead; and, as such, I told the farmer that I saw no chance for her, but by extracting the foal in parts. I at once proceeded to skin the off fore leg from the knee upwards, and had just ordered an assistant, who had hold of the limb, to pull it well forward, as I had then partially removed the skin of the forearm, when in an instant of time the uterus acted with great violence, and half expelled the foal. We immediately took advantage of this, and with a tolerably vigorous pull brought the fœtus away, with its head resting against its side.

All attempts to get the filly up were ineffectual, and an examination showed that a rupture of the sacro-sciatic ligament on the right side, with other lesions, had taken place. I, however, did not despair of her recovery, and therefore gave her

Æth. Nit., ℥ij, et Ol. Lini, Oj,

mixed with some warm gruel, and ordered a mustard plaster to be placed upon her loins. In the afterpart of the day a mild aperient was administered, and she was ordered to have a mash diet, with a full allowance of gruel, &c. In two days she was on her legs, and tottering about the yard.

Suffice it to say that she ultimately recovered, and though for two years the off quarter was less in size than the other, she ultimately got quite well, and had had two or three foals, after which I lost sight of her.

Case 2.—March 30th.—I was sent for in haste to see a mare that could not foal. She was a hunter, and this was her first foal. On my arrival I found her standing.

I placed two stout men, one on either side of her, with a sack under the body to keep her up. On examination, I found the foal lying on its back, with its head pressing against the brim of the pelvis, and the fore feet against the upper part of the uterus. I first placed cords on the fore feet, and committed them to the care of an assistant, with orders to use a little force. I then put my hand behind the head, and the assistant pulling at the same time, we were enabled to alter the position of the foal. As there were no parturient pains, additional assistance was procured, and we were soon enabled to extract a fine, lively, filly foal. Before, however, it was well quit of the vagina, the abdominal muscles acted so violently as to expel, not only its hind limbs, but the uterus also, and likewise a quantity of intestine. These were returned with difficulty, but having succeeded in so doing, I placed a truss upon the labia, to prevent a reprotrusion. In a short time, however, the mare died. A rupture of considerable extent was found, post-mortem, at the base of the uterus. The foal's life was preserved.

Case 3.—In May, 1851, I was called to a mare belonging to a poor carter, which had been kept at her daily work, but which he now thought had indications of approaching parturition. When I saw the animal, she was grazing in a field, and did not appear to be uneasy; and as she was vicious, and would not allow any one to go near her, I waited half an hour to watch her movements. During this time there did not seem to be anything the matter with her, but her owner said that he thought "she was about a week off her proper time of foaling." Two hours afterwards I visited her again, when I found her in the same state, and learned that she had given no other indications of pain.

Two days subsequently to this I was sent for a second time, there being now unmistakable symptoms of labour. They had got her into the stable, and with the aid of a twitch and a rope placed on both her hind heels, and fastened round her neck, I was enabled to make an examination, when I found the foal to be placed on its back, with its hocks presented towards the os uteri. With difficulty I succeeded in getting one of the legs forward, and subsequently to amputate the other at the hock-joint. A hook was placed within the pelvis of the foal, and both hind limbs being secured, I used all my force to turn the foal back upwards, which, with the assistance of those present, was at last accomplished. We were obliged to use considerable force in extracting the fœtus, during which the perinæum gave way. A few stitches, however, sufficed to bring the edges of the laceration together after delivery, and to arrest the hæmorrhage.

Before leaving, I administered some sedative medicine, combined with a gentle aperient. She rallied quickly, and I left her eating a mash. Saw her next day, when all appeared to be going on pretty well. The bowels were acting satisfactorily, but the pulse was rather quicker and weaker than could be wished, and the swelling of the injured parts was attended with an unpleasant fetor. Fomentations and the use of a weak solution of the chloride of zinc were ordered.

On the next day the swelling was diminished, but the pulse was even more rapid and weaker. She was also frequently straining and voiding the urine. On the following day she died.

Case 4.—May 10th, 1840.—I was sent for in a great hurry to a large, black, cart-mare, which the messenger reported to be straining most violently. The place was eight miles distant, and I remarked that I feared she might be dead before I got there. My first step on my arrival was to ascertain the nature of the presentation, which I did with great difficulty, as the mare was very violent. The foal was lying on its back, as in the former case. The abdominal muscles acted so violently, that the vagina gave way, and the intestines protruded from between the labia. We succeeded in extracting the foal, but it had not sufficient strength to stand, and both it and the mare were lost.

Case 5.—May 10th, 1857.—Went near midnight to a mare about three miles from my place. Found both fore feet of the fœtus protruding, but no head. Got the mare on her feet, and supported her by two strong men. On examination, I found the head lying by the side of the foal, but could not move it from its situation. While I was attempting to adjust the fœtus, the mare threw herself down, and strained so violently that the fore limbs and shoulders of the foal were expelled. In this position there seemed to be an entire stop to further progress. We could not move the fœtus in the least. More help was obtained, and the foal was advanced a little. At length a noise, as of something cracking inside the mare, was heard, and out came the foal with the placenta and the uterus, the latter being attached to the fœtus, around its abdomen and loins. In a short time the bowels followed, having escaped through a lesion in the womb, and the poor animal soon sunk.

On inquiry, I was told that the mare had received a hurt in the autumn of the preceding year, from the giving way of a bridge when she was upon it. She was got out of the water with difficulty, but did not appear to be much hurt. A few days' nursing and rest was all the treatment she received.

I have seen a calf adhering in a similar manner, but could not learn anything of the previous history of the cow.

I have often met with deformed foals, as this one also was, and have always found upon inquiry that the mares had sustained some injury or accident about the middle period of utero-gestation, or sometimes earlier.

There is one other case, which, from its peculiarity, I wish to report, even if I trespass a little on your space. It is one also of a more satisfactory kind, being attended with success.

A gentleman and friend of mine, living nearly ten miles from my residence, came at night just as I was retiring to rest, and said: "Naylor, you must go back with me; my favorite old mare cannot foal, and she has been uneasy all the afternoon. I have not touched her, nor would I allow any one else to do so. So come along."

This mare had had three or four foals.

On arriving at the place and examining the position of the foal, I found it lying on its back, with its hind feet presented at the os uteri, and its croup resting firmly against the pubis of the mare.

I obtained some small, but strong cords, which I placed on the fetlocks, brought the feet into the passage, and by assistance and a little manipulation, succeeded in turning it back upwards, and soon afterwards extracted it with but little difficulty. The mare did well, and by using ordinary care and precautions, was fit for work in a week.

In concluding this brief description of cases of preternatural labour, I would wish to impress upon the members of the profession, as the result of my experience, that in all cases of malpresentation, the *first* object is to get the fœtus, if possible, into its proper position. To accomplish this no effort should be spared. A standing position of the parent will materially assist the manipulations of the operator, and a living fœtus will be more easily adjusted than a dead one.

No one should ever attempt the placing the parent animal on her back, nor be guilty of such barbarity as hanging her up by the heels, as is frequently the case with practitioners of the old school, and is, I fear, sometimes done by those who belong to us.

I have always been able to extract the fœtus after removing the fore legs at the shoulders, without further mutilation of its body.

CHRONIC DISEASE OF THE HEART ASSOCIATED WITH LAMENESS OF THE FORE LIMBS OF A HORSE.

By J. R. Dobson, M.R.C.V.S, Kettering.

In the early part of the year of 1858 I was consulted by an M.D. in this neighbourhood, respecting a chestnut horse which he had recently purchased for the purpose of hunting, he having been sold at a reduced price in consequence of being affected with chronic lameness in both fore feet, as was supposed, and therefore useless for the road.

On examining him I found a considerable degree of lameness present. When trotted on the hard road, he went *stilty* on both fore feet, but especially with the off one. His feet, however, although small, were perfectly well shaped. There was no contraction, and the heels were wide and the frog well developed; there was, moreover, not the least unnatural heat present. As he had a slight bony enlargement round each pastern, I was more inclined to suspect his lameness arose from that cause than from navicular disease.

In about two months afterwards I was again requested to look at the horse, but not on account of lameness, but in consequence of his rapidly losing condition, without apparently sufficient cause. He had always been a bad feeder, and especially after a day's hunting, when he would remain off his feed for a day or two. Besides this, latterly he had become unusually *irritable,* and had almost altogether ceased caring for his food.

The doctor, who is very fond of a little amateur veterinary practice, had been putting him through a course of calomel, from which salivation had resulted, as was evidenced by his discoloured gums and fetid breath. By the most careful examination I could find no satisfactory evidence of disease in any vital organ. The pulse was feeble and somewhat quick, but this I attributed to the salivation the animal had undergone. His owner told me he suspected the horse was suffering from disease of the heart; and that, judging from analogy, he thought it not improbable that the lameness proceeded from that cause, for in the human subject a diseased heart would often cause a numbness of the extremities, and sometimes be accompanied by pain. This being a view of the matter quite new to me, I did not agree with it, and the doctor himself confessed that it was only an hypothesis which had sprung up in his mind in reflecting on the cause of the lameness. Mild tonics were prescribed, and as soon afterwards as possible the horse was turned out to grass, when he soon rapidly gained flesh and his lameness almost entirely disappeared. When he again came into the stable a discharge of a very unhealthy character was observed to be coming from one nostril, and upon a close examination, one or two ulcers were seen upon the Schneiderian membrane. An enlargement of the submaxillary and parotid glands on that side was also present.

A few nights after this, a profuse discharge of blood took place from the nostril, and which, although soon arrested at the time, returned, in diminished quantities, at intervals of a day or two. Taking into consideration his almost valueless state, as most of his former symptoms of disease were returning, I recommended that he should be destroyed, and this was done on the following day.

Owing to a misunderstanding as to the time of making the post-mortem examination, I did not see the viscera until they had been removed from the body, and the lungs I did not see at all. Upon a very careful examination of the feet and legs, nothing whatever could be found to account for the lameness. The *feet* were perfectly healthy, and although the *ossa coronæ* of both legs were somewhat larger than they ought to be, yet the periosteum was white and free from any abnormal appearance; the tendons also glided freely in their sheaths, and the sesamoid bones were likewise in a perfectly normal condition.

The heart was found to be extensively diseased, and I cannot but think that from this cause, not only the constitutional symptoms arose, but also the lameness. The right ventricle was much diminished in size, while its walls were greatly thickened. They presented in their substance a gritty and mortar-like deposit, which Assistant-Professor Varnell, who subsequently examined the specimen, pronounced to be *tuberculous*. The other viscera were healthy.

Lameness from *liver* disease, as is well known, is not uncommon, owing probably to the nerves from the hepatic plexus uniting with those which supply the fore limbs. As nerves from the cardiac plexus are also mingled with the axillary, it is not unreasonable to suppose that lameness may occasionally be a consequence of *heart* disease as well as of liver.

CASE OF DIFFICULT PARTURITION IN A MARE FROM PRETERNATURAL PRESENTATION OF THE HEAD, WITH THE FOUR FEET; SUCCESSFULLY TREATED.

By James Brydon, V.S., Peebles.

The profession is very much indebted to you for the liberal space given in your valuable Journal to the important subject of difficult parturition in mares, and its operative treatment. The papers of Mr. Calley and of Mr. Balfour have had the effect of calling forth useful practical contributions from other veterinary surgeons, and perhaps you will not consider my communication unworthy a place in your columns, as the case it details belongs to the same order of labours, and corroborates the rule of practice now sought to be established, viz., that the life of the mare ought not to be sacrificed, as was done by Professor Gamgee, but that much may be accomplished by proper management to save both the life of the mare and the foal.

The mare I was called to treat was purchased by a farmer in Peebleshire, last November twelvemonth, but the seller could not give the proper time of her foaling. On the morning of the 21st June I was sent for to see her, as assistance in foaling was required. I found her lying, and all four feet of the foal protruding externally from the vagina. I was told she had been in the same state for some hours previously. Uterine action was violent. I had her raised for the purpose of examination, and on gently introducing my hand I found the foal so doubled together as to allow of its four feet entering the vagina at the same time, but without the head. The straining was so violent that I could not return the presenting parts. The head of the foal was doubled over and resting upon the shoulder, with the crown downwards. The jaws were completely twisted aside from pressure against the pelvis of the mother. The mare was in labour with her first foal, and I considered that she had gone her full time. I administered a sedative draught, consisting of three ounces of tincture of opium and half a pint of linseed oil, and ordered her to be left quiet for a short time.

In the space of an hour or so I found the uterine action less violent. The mare was then raised, and, with the help of an assistant, I succeeded in returning the presenting parts into the uterus. I next inserted a small parturition hook, with a cord attached to it, into the nose of the foal, and I gave an assistant instructions to gently draw at it, while with my hand I was raising the head into its proper position. By these means the mare was speedily delivered, and in comparatively an easy manner. I see no difficulty, with a little care and time, and by the same treatment, in delivering similar cases safely. I should never once have thought of amputating the legs of the foal at *the knees*, as was done by Mr. Gamgee in the case to which Mr. Balfour refers. I regard the legs as the principal or only parts by which manual assistance can be applied to render delivery at all practicable.

I have had several similar cases, both in cows and mares, which were all treated in the same way, and successfully so. I have never found that opium increased uterine action, but, on the contrary, that it always diminished it. I consider the removal of the legs at the knees to be worse than useless. It is malpractice, because, if the pasterns are taken off, a cord cannot be applied, and one of the facilities afforded for getting the head into the proper position is thus lost. If the legs are amputated, the operation ought to be effected at the shoulder—removing the scapula. In this way you give more room internally, and facilitate delivery. By inserting strong iron hooks into the back of the neck of the foal you might pull the mare out of the stable, but would never bring away the foal. So much pulling, when you can have no yielding, can only be productive of injury. In my opinion, all means ought to be tried before destroying a valuable mare. The Cæsarean operation may even be had recourse to, as in this way you might at least succeed in saving the foal, which, in some cases, may be considered of even more value than the mare.

Facts and Observations.

STYPTIC PROPERTIES OF ELM-BARK.

Messrs. Editors,—Allow me to direct your attention to the styptic properties of the inner bark *(liber)* of the slippery elm. In two or three instances, when hæmorrhage has taken place from a vascular tumour on my own person, I have found a free application of its powder immediately to staunch the blood.

The shops, I believe, are supplied with it from America; where, from its mucilaginous and astringent properties, it is often successfully given in cases of dysentery and diarrhœa.

I am, yours, &c., Amicus.

[Modern practitioners, from the feeble powers possessed by the elm, have discarded it. Its action is dependent principally on tannic acid, 13 grains of which were found by Sir H. Davy to exist in 480 grains of the bark, besides which it contains some gum and mucus.]

POISONOUS EFFECTS OF FERNS ON CATTLE.

A farmer in Westmoreland, in consequence of the scarcity of fodder during the last winter, collected the young sprouts of brackens (ferns), chopped them, and mixed oilcake amongst the chopped mass, which he gave to his stock. His experiment proved fatal to his cattle, for in a very short time six of them died.

FATAL EFFECTS OF INOCULATION WITH ANIMAL MATTER.

M. Caillieux, one of the most eminent veterinary surgeons of Caen, in France, has lately died from the inoculation of virulent matter, after the amputation of his arm had failed to arrest the inoculation of the system.

UREA IN CHYLE AND IN LYMPH.

Guided by the idea that urea must be formed, not, as is sometimes thought, in the capillary blood-vessels, but in the interior of the tissues themselves, wherever the materials of the organism have become useless to life, and are about to be eliminated by respiratory combustion, M. Wurtz determined to seek for this substance in the chyle and in the lymph. The author in the first place examined the chyle of a bull upon which a fistula had been opened in the thoracic duct. He coagulated about 600 grammes of this liquid by means of heat; the filtered liquid was evaporated, the residue treated with absolute alcohol, and the alcoholic solution filtered and evaporated. The alcoholic extract thus obtained was treated with ether as long as anything dissolved; the ethereal solution left to itself soon furnished perfectly colourless crystals of urea. M. Wurtz afterwards found urea in the lymph of the dog, the cow, the bull, and the horse. In these cases he determined also the relative proportions of urea contained in the blood, the chyle, and the lymph of the same animal by a combination of the methods proposed for determining urea by Liebig and Bunsen. The results obtained have been tabulated. The tables show that urea exists in the three liquids of a cow nourished on dry lucerne; 1000 grammes of the blood and 1000 grammes of the chyle containing 0·192 grammes of urea, the same quantity of lymph giving 0·193 grammes of urea.

LOCATION OF THE ECHINOCOCCUS.

M. Legrand says, "Echinococci have been found in the following organs: in the brain; in the lungs; in the liver; in the spleen; between the layers of the omentum; in the eye, between the crystalline lens and the choroid; in the urine and in the kidneys; in the subclavicular cellular tissue; between the two layers of the tendons of the external oblique; and in the muscular tissue of the trapezius, and between the temporal muscle and the occipito-frontalis fascia."

TREATMENT OF TRAUMATIC TETANUS BY APPLICATION OF ICE TO THE SPINE.

Dr. B. B. Carpenter, of Suffolk County, New York, states that in 1833 he published two cases of traumatic tetanus successfully treated by ice, and that since that time he has similarly treated fourteen cases with a like result, except in one instance. His cases occurred in persons of good constitution and temperate habits. As specimens of the results of his treatment in the sixteen cases, he now publishes two examples, one of the acute and the other of chronic form of traumatic tetanus. It is a common and fatal disease during the warm months in the part of the country where he lives.—*New York Journal.*

MULTIPLICATION OF SPECIES.

There is no exception to the rule, that every organic being naturally increases at so high a rate that, if not destroyed, the earth would soon be covered by the progeny of a single pair. Even slow-breeding man has doubled in twenty-five years, and at this rate, in a few thousand years, there would literally not be standing-room for his progeny. Linnæus has calculated that if an annual plant produced only two seeds—and there is no plant so unproductive as this—and their seedlings next year produced two, and so on, then in twenty years there would be a million plants. The elephant is reckoned to be the slowest breeder of all known animals, and I have taken some pains to estimate its probable minimum rate of natural increase; it will be under the mark to assume that it breeds when thirty years old, and goes on breeding till ninety years old, bringing forth three pair of young in this interval; if this be so, at the end of the fifth century there would be alive fifteen million elephants descended from the first pair.—'*On the Origin of Species*,' *by C. Darwin.*

THE VETERINARIAN, JUNE 1, 1860.

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

VETERINARY OBSTETRICS.

A considerable portion of our present number is occupied with the subject of veterinary obstetrics, which at this time is being discussed with more than usual animation by the profession. We have hitherto purposely refrained from making any observations on this important division of practice, that we might not fetter the free expression of the opinions of others; nor should we, even now, have alluded to it but for the fact that, in our opinion, a great injustice has been done the profession by the statements which are put forth in a paper read by Mr. Gamgee, at the West of Scotland Veterinary Association, and published in our present number. Without doubt it is an unjust accusation to bring against the veterinary surgeons of Great Britain, that obstetrics have been "neglected both as a science and an art." On the contrary, we know of many who are *experts* in the treatment of these cases, and whose knowledge is founded on the *scientific and practical* information they obtained during their pupilage. For a long series of years we can trace back, without any break, the list of such men; while we find others of but yesterday's date; as throughout the entire period these instructions have been perseveringly given to the students.

It may be true that a small minority have profited but little by the teachings, because the good opinion of their own acquirements may have led them to repudiate the details of practice of this kind, and not only to turn a deaf ear to words, but a closed eye to the illustrations of cases. Self-sufficiency is the rock on which many make shipwreck. Such men in after life have not unfrequently had to regret the course they had adopted, and particularly when they have been called to attend cases of protracted labour from preternatural presentations. The want of a knowledge of principles has come with a crushing force upon them, and they have been compelled to bear the censure of the *mere man of practice*, while their humiliation has been completed by having to resign the patient to his experience and care. Now and then some of these persons have turned to their teachers for advice and information, and often have we supplied both of these; and to give them further assistance, have furnished them with a copy of an illustrated lecture which was delivered by one of us before the Royal Agricultural Society of England some twelve years since, and published in the tenth volume of the society's journal.

The anatomy of the female organs of generation, together with the phenomena of impregnation and fœtal development, were not omitted from this lecture, in so far as an abstruse and scientific subject of the kind could be made intelligible to a popular audience. May we not then rightly inquire of what worth is the assertion that all these things have been neglected, and have "not only not been written on, but not taught with any precision"?

For ourselves, we are frequently more contented that our labours should be unnoticed by some individuals, than that they should be recognised; but as exponents of the professional will, we cannot stand quietly by and see the members unjustly stigmatised and an attempt made to degrade them in the estimation of the public.

ANNUAL MEETING OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

At the annual meeting of the Profession which has just been held—and the proceedings of which are reported in our present number—little transpired to call for observation.

Official routine was formally gone through, with all the sedateness that the most zealous red-tapist could desire. Notwithstanding this, the embers of that strong party spirit which once raged with such fierceness that it threatened to envelop everything in its flames, were clearly to be discerned. When will men look away from self, and look to the interests alone of that Profession which as councillors they represent, and which they profess to serve? There are those still excluded from the Council whose position in society and professional reputation eminently fit them for a seat at the board. If harmony is to prevail, these things must not be so, and individual feeling must give way to the general good.

A little new blood was introduced because, forsooth, death and other causes had removed those from among us whom we could have wished had been spared.

We will hope for the best, and trust that the day is near at hand when we shall see that unity of action which can alone give strength, and thereby render secure that position of our Profession among the institutions of the country which its importance justly merits.

VETERINARY JURISPRUDENCE.

UNDER the heading of "*Veterinary Jurisprudence*," will be found the report of a trial, "*Wilden* v. *Stanley*," of more than ordinary importance to the majority of our readers. An eminent veterinary surgeon has been mulcted in heavy damages, in consequence of an injury being accidentally sustained by a horse while under his care for examination as to soundness. A verdict has been obtained on the *mere letter of the law*, as laid down by the Lord Chief Baron, before whom the case was tried. While, therefore, we express our sympathy with the defendant, we at the same time can congratulate him that his professional reputation has been in no way tarnished.

Accidents, over which we have little or no control, occurring to animals *pro tem.* in our keeping, we are, it appears, held legally responsible for, and consequently it behoves every member of the Profession to be doubly on his guard for the removal of every *probable* cause which may give rise to them. No human foresight can guard against every *possible* cause, and as such we should imagine the law deals differently with such cases as these. Customs prevail in all trades, and to that of the men receiving as a perquisite the parings of the feet of the horses sent to a forge to be shod is to be traced the present untoward result. See then that this, and all other customs, if allowed to remain, are so regulated, that injurious consequences are avoided.

Hereafter we may return to this subject, as we have forcibly thrust upon our minds the necessity of some means being adopted for mutual protection of the members of the profession, by the creation of a "defence fund," according to a suggestion put forth some time since by Assistant-Professor Varnell.

THE COLEMAN MEDAL.

In our number for March we announced the determination of the Governors of the Royal Veterinary College to appropriate the accumulated bequest of the late Professor Coleman to the purchase of silver and bronze medals, to be presented annually to the students of the College, for the best essays on a given subject, believing that by so doing the intention of the donor would be fulfilled—that of promoting the advancement of the science of veterinary medicine.

During the past month the competition for this year took place. The subject was, 'The Eye of the Horse, embracing its Anatomy and Physiology; the laws of light appertaining to vision; the chemical composition of the humours;

and the pathology, treatment, and results of the disease known by the name of Constitutional Ophthalmia.'

The conditions were—1st. That the essayists should write within the College. 2dly. That their papers should be daily in the custody of the Demonstrator of Anatomy. 3dly. That no references to books should be allowed. 4thly. That each paper should be superscribed with a motto, and be accompanied by a sealed envelope bearing the same motto, and containing the name of the writer.

Eight students presented themselves as competitors. This might be thought a small number out of more than a hundred in attendance; but the essays were all of a very high character, and redounded much to the credit of their respective authors. The following were selected by the professors, who, as the examiners of the papers, unanimously reported them to the Governors as being in their estimation worthy of the rewards:

1. *Motto*—"Qui scripsit." *Author*—Mr. Francis Talbot Sharp, Nottingham.

The Silver Medal.

2. *Motto*—"Un Aspireur." *Author*—Mr. Geo. A. Oliphant, Marshwood, Southampton.

The Bronze Medal.

3. *Motto*—"Dum spiro spero." *Author*—Mr. William Barker Walters, Birmingham.

Certificate of Merit.

Extracts from British and Foreign Journals.

CHEMISTRY IN ITS APPLICATION TO AGRICULTURE AND PHYSIOLOGY.

By A. S. Copeman, Utica, N. Y.

(*Continued from page* 289.)

The leaves of plants first prepare or form gum sugar, or starch, out of the crude sap introduced by the roots; these matters undergo various modifications according to the constitution of different plants, and become subservient to their nourishment and development. Thus the crude sap is merely instrumental in supplying the leaves with the materials necessary for the formation of "organic" matter; it is the proper juice (as the botanist calls it) manufactured by the leaves that forms the real nutritious fluid of the plant. The importance of the leaves of plants is sufficiently evident; not one of them can be abstracted or injured without the plant being deprived of a certain amount of *power* for generating its "proper juice." A man might as well expect to live without lungs, or a fish without gills, as a plant without leaves.

In endeavouring to explain the function of *respiration* in plants, I shall be obliged to draw rather more deeply upon your faith than in these experiments. The function may be thus expressed, that leaves decompose carbonic acid under the stimulus of light, fix the carbon of this substance, and discharge the oxygen into the atmosphere.

Let us try a little experiment.

Fill two or three glasses with water. Place a leaf or two under the water, in each, with a split shot or a small piece of lead on each edge, which will cause it to sink in the water, and yet retain a vertical position. Place one in the shade and the other in the direct rays of the sun; in the former you will observe no effect produced, in the latter numerous little bubbles of air (oxygen) will make their appearance under the surface of the leaves.

The bubbles of air observed under ice in winter in pools and ditches, the bottoms of which are covered with growing plants, consist of pure oxygen given off by the leaves of the plants under the water.

Both these functions of the leaf are exerted by the same cause, viz., light.

From these experiments we may infer that the leaf prepares all the nutriment upon which root and branch and every other part of a plant depends; this is quite in contradiction to the commonly admitted notion that the root directly nourishes the leaf, and not the leaf the root. I shall now attempt to show that the *ashes* of plants are their true food.

In 1846 I prepared an artificial soil—of burnt clay, sixty-two parts; ashes of mustard, one part. In this earth I planted mustard, the vessel containing this soil was put out into the open air, receiving *nothing* but the ordinary rains during the summer; in due season the mustard produced fine, healthy plants, yielding perfectly mature seed.

The Rev. Mr. Huxtable has grown turnips weighing four pounds in holes made in a plank, filled with nothing but the ashes of turnip and sawdust. If any one doubts the truth of this statement, I ask: From whence do our "maiden forests" obtain their *organic* matter?—not from the soil, for here it is constantly accumulating. This question is one of great importance to the agriculturist, especially those using artificial manures.

If we have in the atmosphere an inexhaustible supply of the element of which organic matter is formed, and it is proved that the air is the source from which plants obtain it, all that is required of the tiller of the earth is to supply or return to the soil the inorganic substances, the ashes.

The perfect development of a plant, according to this view, is dependent upon the presence of certain salts and earths; when these substances are wanting, its growth must be arrested.

If we examine those plants growing on barren soils, we find they contain but little inorganic matter; a hundred pounds of the wood of fir yield but six ounces of ash, oak, four pounds, wheat straw, seven pounds, hops, twelve pounds; the fir grows on a rock, or nearly barren sand, oak on good clay, wheat a rich loam, and hops on the best soils, requiring more skill and capital than any other plant.

Now it is well known that plants are incapable of *forming* these inorganic substances; hence the soil must be the source from whence they were obtained, and the rigid analysis of all soils known to be fertile without manure prove such to be the fact.

Wheat straw has a perfect coating of silica, and yields 7 per cent. of ashes, the grain only 2 per cent.; the ashes of the straw contain 65 per cent. silica and 8 per cent. phosphoric acid, while the grain of the wheat yields 45 per cent. phosphoric acid and only 1 per cent. silica; hence silica is rapidly removed from the soil by the straw, and phosphoric acid by the grain.

Now, if we grow wheat many years in succession, and make no return to the earth, it must sooner or later become entirely exhausted of these substances; or if only one, the straw, for example, the soil must in time become sterile from a want of *soluble* silica.

Animal excrements are derived from the vegetables or grain on which they feed; if these are rich in alkalies or phosphates, we may call the manures rich, because they produce a large amount of certain crops.

Guano, which is rich in phosphates, has been used with great success on some soils, while on others it is almost inert; on the former because the phosphates were exhausted, whilst on the soil less deficient it has but little power, especially if the other elements of plants are likewise deficient.

There are lands in Peru which have become perfectly sterile from the constant use of guano; the alkalies, potash and soda, being completely exhausted, and these lands have again become fertile by their application (Playfair). In almost all cases the continued application of only one or two ingredients must tend to impoverish the soil; in fact, the only means of keeping up the fertility of the soil is by replacing on the ground all the mineral ingredients taken out of it.

The land is subject to losses by the exportation of grain and cattle, which contain principally *phosphates*, and many a farm has been completely exhausted of these ingredients, and in consequence become nearly sterile. But even if it were possible for plants to perfect their seeds or roots without the "*inorganic* elements," iron, soda, potash, lime, phosphorus, sulphur, &c., it is evident such seeds or roots would not supply the wants of animals; for no blood could be formed without iron, nor bones without phosphorus and lime; no bile without soda; hence an all-wise Providence has so constituted the vegetables that they can arrive at perfection and maturity *only* in soils containing these inorganic elements. Thus wheat, corn, oats, or other plants yielding these articles of our daily food, cannot *ripen* a single seed or root in a soil totally deficient in any one of the following substances, viz., sulphur, phosphorus, lime, magnesia, iron, soda, or potash.

We will now turn our attention from the vegetable to the animal kingdom.

The following antithetical table has been drawn up by Dumas:

The Vegetable	The Animal
Produces gluten and albumen,	Consumes gluten and albumen,
,, starch, sugar, and oil,	" starch, sugar, and fat.
Decomposes carbonic acid,	Produces carbonic acid,
,, water and ammonia,	,, water and ammonia.
Disengages oxygen.	Consumes oxygen.
Absorbs heat and electricity.	Produces heat and electricity.

Vegetables, then, it is evident, generate the base of the matters which animals by assimilation render part of themselves.

You will remember the material world is composed of sixty-one elements, the entire vegetable kingdom of fourteen. Now, as animals are all *directly or indirectly* dependent upon vegetables for their nutrition, and since the body of an animal possesses no power of forming elements, or converting one elementary substance into another, therefore the elements of which the body of an animal is composed must be the elements of its food; hence it follows, as neither *silica* nor *iodine* enters into any part of the animal tissues, but twelve elements are found essential in the formation of their bodies.

For the maintenance of life in an animal certain conditional circumstances are necessary; the first is the assimilation of appropriate matters constituting nourishment, the second a continual absorption of oxygen for the generating of heat. From the mutual action of these, the one on the other, arise all vital phenomena.

Let us first examine life and nutrition in their simplest forms.

The food consumed by the horse produces two, and only two, effects necessary to his existence. These are, first, to supply him with that animal heat without which the functions of life would stop; and secondly, to repair the waste constantly taking place in his tissues, that is, in the mechanism of his frame.

The domestic fowl enjoys good health if fed with barley and chalk; in due season the hen produces a number of eggs; let us examine one of them; within its thin shell of chalk we find a yellow globe (yolk), floating in a transparent fluid (albumen), both very simple-looking substances, yet we know by the aid of heat *alone* they are built and fashioned into a perfect animal, with bones, tendons, muscles, lungs, heart, blood-vessels, skin, and even the finer set of feathers.

An embryo, as long as it retains its attachment to its mother, receives all its nourishment from her blood; at birth the fœtus "inhales the breath of life," *oxygen*, and now becomes an independent being.

What is its first food? Is the process of nutrition still simple in its character? It is, for life in the mammalia is maintained, and every organ and every tissue of the body grows rapidly, while the animal receives for its nourishment but a single fluid, *milk*.

The more exact analysis of the process of nutrition will show that the young animal receives in the milk every constituent of the blood of its mother. The constituents of milk are, caseine and fatty matter.

At first sight the nutritive process in the adult animal appears to be quite different; but chemical researches have shown, that in the seeds of the different kinds of grain, and of peas and beans, in the roots and juices of what are commonly called garden vegetables, there exist in larger or smaller quantity, three substances—these have been named vegetable caseine, albumen and gluten. The investigations of physiologists have established, as a rule without exception, that the food of the graminivorous animal always contains one or more of these compounds. It appears that if these be excluded, no other food can keep up in these animals the vital process.

If fresh-drawn blood be rapidly "whisked" with a few twigs of wood, a gluey matter will be found adhering to them; this substance is known as "animal *fibrine*."

If wheat flour is placed in a linen bag, and water allowed to flow upon it, and the flour squeezed with the hands until the fluid passes through perfectly clear, the water removes the starch and albumen, but leaves in the bag a gluey substance, called *gluten* or vegetable *fibrine*.

When the serum of the blood, which forms 80 per cent. of that fluid, is boiled and the water evaporated, a grayish-white substance, *albumen*, is obtained.

When the clarified juice of wheat is made to boil, a coagulum is formed, *albumen*, which it is impossible to distinguish from the substance which separates from the serum of the blood. If we rub down peas, beans, or green corn, to a thin paste, dilute this with water, and pass the mixture through a fine sieve, *caseine* is obtained in large quantities from the supernatant liquid.

(*To be continued.*)

ON NUTRITION BY BLOOD IN STARVATION.

By M. Auselmier.

Experimental researches made on animals subjected to a more or less absolute privation of food have shown that life may be maintained for a certain period at the expense of the substance of the organs, as is proved by the progressive diminution of the weight of the animal suffering from inanition. This mode of nutrition has long been termed *autophagy;* and M. Auselmier wishes to designate it as *spontaneous autophagy,* as a contrast to the term *artificial autophagy,* which he employs when the animal subjected to inanition is submitted to daily small bleedings, and his blood given him as aliment. He has made a great number of comparative experiments upon two groups of animals, resembling each other in every circumstance as far as possible—one group being abandoned to the effects of inanition, and the other exclusively fed with the blood drawn from the veins of the animals experimented upon. The following are the results deducible:

1. The absolute privation of food diminishes the production of caloric in all warm-blooded animals. This diminution is nearly uniform during three fourths of the duration of vital existance, that is, about 0°·2 C in every twenty-four hours. During the last fourth of the time it decreases very rapidly, and death occurs between the 23° and 24° C. 2. A relative privation of aliment causes a less rapid diminution of the production of caloric, proportionately to the rations. 3. In all animals of warm blood the temperature of the blood cannot descend below 26° C., without death being the consequence. 4. Death from starvation is the result of an arrest of nutrition produced by the progressive diminution of the temperature of the animal—the production and accumulation of a certain quantum of caloric being one of the conditions of nutrition in all animals of this class. 5. Death by starvation would not be the result of the consumption of all the materials which the organism can supply, if we could change the condition of cooling which is the consequence of inanition. In fact in the animals who have succumbed from absolute abstinence, the emaciation is on the average four tenths of the initial weight, while in relative abstinence it may attain six tenths. 6. The diminution of calorification arises from the inactivity of the gastro-intestinal absorbent system, the temperature of the animal increasing or diminishing according to the degree of the activity of this function, just as the latter is modified by

the temperature at which it effects its operation. 7. If we draw from animals subjected to inanition a certain amount of blood, and give it them as an aliment, we find the production of caloric continues, together with the gastro-intestinal activity, the daily loss of temperature being less considerable, and the emaciation becoming more complete, so that it may attain six tenths of the initial weight. 8. The bleedings and the rations which they supply should be diminished in quantity in proportion to the prolongation of the experiment; and digestion takes place more completely and more rapidly in proportion to such prolongation. In proportion to the frequency of the bleedings, the exhaustion of the organism, the nervous irritation, the diminution of the gastro-intestinal secretions essential to digestion, the monotony of the aliment, the diminution of the temperature, and the putrefactive condition of the aliment, the prolongation of this mode of nutrition becomes impossible. 9. The gastro-intestinal activity is indicated by the return of the excretions, the elevation and generalization of the temperature and pulse, an increase of muscular force, and the diminution of nervous phenomena, and of the sensations of hunger and thirst. 10. The calorification does not decrease more than a mean of 0°·1 C. in the twenty-four hours. 11. Artificial autophagy allows of excessive emaciation, *i. e.* allows of it being carried to six tenths in fat subjects, five tenths in medium subjects, and four tenths in the young; while the author's and Chossat's experiments show that in spontaneous autophagy it attains only five tenths in the fat, four tenths in the medium, and two tenths in the young. 12. Artificial autophagy thus considerably prolongs life, viz. for nearly one half more than its duration in spontaneous autophagy. The application of the author's views may be made in the case of shipwrecked persons, or others subjected to the horrors of starvation.—*Comptes Rendus.*

ARE FOWLS WHOLESOME WHICH ARE FED ON PUTRID MEAT?

Such is the question considered by Dr. Duchesne, in the January number for 1859 of the *Annales d'Hygiène Publique.*

It is well known that man cannot indulge in putrid meat with impunity, and numerous cases are on record where accidents have occurred from this kind of food. Little is known, however, of the effects produced by the flesh of animals otherwise in good health, but nourished with flesh in a state of putrefaction. Certain animals can undoubtedly be nourished on such putrid matters; but it is important, in a hygienic point of view, to determine the modifications which the exclusive use of putrid viands may produce in the quality and the preservability of fowls destined for the market.

On the occasion of a complaint against a farmer in the neighbourhood of Paris, Dr. Duchesne visited his establishment, on a warm day in July, and towards the afternoon. The food of the poultry he found to consist of flesh in a state of putrid decomposition, which had been obtained from the slaughter-houses of Paris. The fat is first removed by cooking, and bran is added; and this mixture is given morning and evening to the fowls, who fight for it with avidity. A very fetid odour came from the barrels in which the food was contained, from the vessels where it was supplied to the fowls, and also from the ground round about them. The fowls, however, appeared to be in perfect health. Dr. Duchesne supplied himself with three eggs laid that day, and also with a fowl and duck of a year old, which were killed before him. In three hours' time the poultry gave out a very strong odour, and the intestines were so offensive that they had to be removed to a distance. Decomposition rapidly set in. The fowl, at the end of twenty hours, after being cooked, had an unpleasant strong taste, and the duck at the end of twenty-four hours was in such a state that it could not be eaten. Next day, when the flesh was cold, and the smell abated, portions of the duck were partaken of by the servants. The eggs, too, were found, if kept a reasonable time, to become very unpalatable. In fine, it was shown that, though fowls nourished in this way were apparently healthy, and could be eaten at a pinch without great inconvenience, yet that it was most probable that the continued use of such articles of diet would be attended with danger. The Council of Health at once interdicted the sale of fowls fed in this objectionable manner.

Dr. Duchesne continued his inquiries at the great Knackery of Aubervilliers, where pigs and fowls are fed in great numbers on flesh raw and cooked, and where similar animals are reared on a mixed food, consisting of flesh and grain. The result of his observations are embodied in the following conclusions:

1. Fowls and pigs may be fed on sound flesh, raw and cooked; on flesh, raw and cooked, of animals affected with contagious diseases, as glanders, malignant pustule, hydro-

phobia, &c.; and even on flesh, raw or cooked, in a very advanced state of putrefaction, without any alteration in their health.

2. Chickens are reared with difficulty, if their food be restricted to flesh, raw or cooked, even when sound; and a larger number of them perish than when fed on ordinary kinds of food.

3. The eggs of fowls thus nourished are as palatable as the eggs of fowls nourished in the common way. The shell, however, is thinner, and more easily broken.

4. The flesh of fowls and pigs nourished on flesh, raw or cooked, is softer, more difficult to preserve, and the fat is yellow and more diffluent.

5. The doctor has still doubts as to the absolute wholesomeness of fowls and pigs fed on animals dying of glanders, &c., and recommends that the use of the flesh of such animals should be prohibited for the rearing of fowls and pigs.

6. The use of flesh in a state of putrefaction, for similar purposes, should be absolutely prohibited as unwholesome.

7. Fowls should not be fed too long or too abundantly on worms, caterpillars, beetles, &c., as such food communicates a strong taste to the flesh.

8. The continued use of flesh, otherwise healthy, and either raw or cooked, ultimately injures the growth of the fowls, and the quality of their flesh.

9. The best method of rearing undoubtedly is, to give flesh but once a day, and to finish with a meal of grain.

10. For market use, the use of flesh should be stopped, and the fowls restricted for some time to the use of a vegetable diet.

POISONOUS CATTLE FOOD.

"A FEW weeks ago, Mr. Singlehurst, of Firbeck, near Tickhill, purchased of the representatives of a late extensive dealer in agricultural cakes, manures, and seeds, a quantity of linseed cakes, together with a few bushels of accumulated *sweepings* of the warehouse floors, under the impression that the latter would be a useful and warm food for cattle. A small quantity of the sweepings (which, as will be seen hereafter, consisted of a very varied admixture) was given in troughs to the sheep on turnips; some was also given to the farm horses, amongst their cut fodder, and a little to some cattle in the yards. The result was, that in the course of a few days, thirty-five sheep, three horses, and a pony, died in great agony. The cattle were very unwell, but recovered—probably owing to their having had less of the mixture. Unremitting attention was paid to the suffering animals by a skilful veterinary surgeon, but unfortunately without avail. A portion of the sweepings was sent to Professor Voeleker, of the Royal Agricultural College, at Cirencester, for the purpose of analysis; and with the view of *warning others against the incautious use of food, the properties of which they are not acquainted with,* I request the favour of your inserting the following report, which I have received from Professor Voeleker on the subject.

"I am, Sir, your obedient servant,

"John Horncastle.

"The Yews, Feb., 1860.

"*To the Editor of the 'Sheffield and Rotherham Independent.'*"

"Report.

"'Royal Agricultural College, Cirencester.

"'Sir,—The examination of the sweepings of a warehouse has occupied my attention until this day, and the result is, briefly, that I have been unable to detect any mineral poison, except a trace of copper. The traces of this metal in the fine portion of the meal, however, cannot possibly have done the mischief. I have carefully and repeatedly examined the meal for arsenic, mercury, lead, antimony, zinc, and other mineral poisons, but have not been able to find any mineral poison. My attention was therefore directed to find out, if possible, whether the warehouse stuff contained any organic substance injurious to health; but though I have searched for many matters, I have not succeeded in identifying any. I may remark that very little is known respecting the properties of, and chemical tests for, most organic poisonous substances. Unless, therefore, distinct symptoms, that characterise certain organic poisons, such as strychnia or opium, point in a definite direction, the labours of chemists to identify vegetable poisons are unavailing. My own belief is, that the meal contains some strong, poisonous, oily bean. Cureus beans (the seed of *Fatrophii cureus*) would produce the disaster described in your note. This seed is used by oil-crushers, and the cake sold as manure. It is an exceedingly poisonous seed. Possibly, the sweepings contain this or a similar oily seed. I find in the warehouse stuff all sorts of oily seeds, and innumerable weed seeds, many of which may be poisonous. Accidents with oil-cakes, in the preparation of which foul linseed has been used, have been brought repeatedly under my notice. Amongst other oily seeds, I find in the sweepings linseed, rapeseed, black and yellow mustard, in considerable quantity (mustard is decidedly injurious to animals), hempseed, Niger seed (the seed of *Guizotia*), earth-nut (the seed of *Arachis hypogæa*), and cotton seed. Besides these seeds I can distinctly recognise the following matters :—Indian corn, Irish moss, locust beans (*Silique dulcis*), common beans, peas, vetches, dari-grains, rice, wheat, barley, oats, starch, clover seed, Italian rye grass, and a great variety of grass seeds, and the excrement of rats. There are, of course, other seeds (of weeds) present; but I am not sufficient of a botanist to distinguish the species. I am surprised that any dealer should venture to sell such a material for feeding purposes; for it is a well-known fact that poisonous oily seeds are pressed by oil-crushers for the sake of the oil which they contain. The great variety of oily seeds in the warehouse sweepings shows that the party who sold the sweepings dealt not only in feeding stuffs, but likewise in oily and other seeds. To sum up this report, I may recapitulate—1. That I have not found any mineral poison. 2. That the animals have died, in all likelihood, from the effects of a poisonous (probably oily) seed.

"'Believe me, Sir, yours faithfully,

"'AUGUSTUS VOELEKER.'"

LECTURES ON PALÆONTOLOGY.

PROFESSOR OWEN has lately concluded a course of lectures on Palæontology at the Government School of Mines, Jermyn Street. The chief subject of this discourse was the extinct quadrupeds whose remains have been recently discovered in the caverns of Australia, and in the auriferous and other tertiary deposits of that country. All the species which he had re-constructed from these fossils belonged to the same low group of mammalia, with small brains, wanting the connecting apparatus called the "great commissure" in the rest of the class to which the living marsupial quadrupeds belong.

Not any marsupial species is indigenous to the continents of Europe, Asia, or Africa. On the discovery of America, some small quadrupeds of that continent became known to naturalists, as being peculiar by possessing a pouch in which the young were protected and carried for some time after birth, whence the name *Marsupialia,* signifying "pouched beasts." The American species all belong to one genus, called *Didelphys,* or opossum. They are small insectivorous quadrupeds, and most of them dwell in trees.

When Captain Cook and Sir Joseph Banks returned from the circumnavigatory voyage in which Botany Bay was discovered, they brought information of other curious marsupial animals which lived in Australia, and especially that called the "kangaroo," so remarkable for the length and strength of the hind legs and tail. The subsequent travellers and settlers in Australia soon transmitted additional information, with specimens of the peculiar marsupial quadrupeds of that continent, so that the *Marsupialia* are now known as an extensive order, the species of which are restricted to America, Australia, Tasmania, New Guinea, and a few islands extending thence towards Asia.

The principal genera were then described, some being carnivorous, others insectivorous, others frugivorous, or feeding on buds and leaves, others herbivorous, others burrowing and living on roots. The opossums (*Didelphys*) are peculiar to America; none are found in Australasia. The greatest number and diversity of marsupial quadrupeds exist in Australia and Tasmania.

Of the present known existing *Marsupialia,* the largest species are the great kangaroo (*Macropus major*), familiar to most by living specimens in menageries and zoological gardens, and the thylacine, or hyena of the Tasmanian colonist; the latter is carnivorous, and about the size of the shepherd's dog; most of the *Marsupialia* are smaller than the common cat.

Professor Owen then proceeded to give a history of the discovery of fossil remains of animals in Australia. The first which he noticed was that made by Major, afterwards Sir Thomas, Mitchell, the Surveyor-General of Australia in 1831. In his first exploring expedition this traveller discovered extensive caves in the limestone district of Wellington Valley, and in the breccias of the caves he found many fossil bones and teeth, which were submitted to Professor Owen's inspection, and described by him in the appendix to the account of the expedition published by Sir T. Mitchell in 1838. Among these cave fossils Professor Owen had discovered remains of the phalanger (*Phalangista*), the wombat (*Phas. colomys*), the potoroo (*Hypriprymnus*), the kangaroo (*Macropus*), the *Dasyurus* and *Thylacinus*. But, although the fossils were referable to the foregoing existing genera, they were all different from any species now known. Among the kangaroos were two species which were much larger than the *Macropus major;* the remains of the *Dasyurus* were larger than those of the *D. ursinus,* which is now the largest living species, and is peculiar to Tasmania. The *Thylacinus,* also, was by this discovery known to have formerly lived in Australia, as well as in Tasmania, to which it is now restricted. But, besides the foregoing fossils, there was a single tooth, an incisor or tusk of some quadruped, which must have equalled a large ox or a rhinoceros in size. In this tooth Professor Owen perceived such characters as led him to found upon it a new genus, which he termed *Diprotodon.*

In 1844, Professor Owen received some fossils from Dr. Hobson, of Melbourne, which had been discovered in sinking a well at Mount Macedon, near Port Philip. These fossils included a portion of the lower jaw, having an incisive tusk *in situ,* identical in shape and structure with that on which the genus *Diprotodon* had been founded, and also molar teeth, resembling in form those of the kangaroo, but with generic modifications. This confirmation of the former existence in Australia of a gigantic marsupial herbivorous quadruped allied to the kangaroo was communicated to the British Association, at their meeting in 1844, and was noticed in the *Annals and Magazine of Natural History* for October, 1844. In the same paper Professor Owen stated that he had received from Sir Thomas Mitchell some Australian fossils, indicative of a second genus of large marsupial quadrupeds, which he described under the name *Nototherium.*

Although the molar teeth in both the *Diprotodon* and *Nototherium* presented the same two-ridged type as in the kangaroo, they differed in wanting the smaller connecting ridge; and Professor Owen was led to infer, from the structure of the *astragalus* and *calcaneum* (two of the ankle-bones), that the hind limbs differed in a greater degree from those of the present kangaroos. The above-named tarsal bones had been transmitted, with other fossil bones, from Moreton Bay, by Sir Thomas Mitchell; they presented marsupial characters, and by their size might have belonged to either the *Diprotodon* or *Nototherium.* In the kangaroos these ankle bones have peculiarities associated with the very long hind legs; but the large fossil ones resembled more those of the wombat; whence Professor Owen inferred that the *Diprotodon* must have had the hind limbs more nearly equal in length to the fore limbs. Subsequent discoveries proved the truth of this inference.

In 1847, a Mr. Turner brought from Darling Downs to Sydney, New South Wales, a large collection of fossil bones, chiefly obtained from King's Creek, a tributary of the Condamine River, Darling Downs. These downs are extensive and slightly undulating plains covered with herbage developed from a rich black soil containing concretions of carbonate of lime. Ranges of low hills, with sudden slopes and flat-topped cones formed of basaltic rock, resting on a felspathic or trachytic base, accompany the shallow valleys, and bear an open forest formed of various species of rather stunted *Eucalyptus*. The plains are filled with an alluvium of great depth, wells of sixty feet deep having been sunk in it. The plains in which the fossils have been found are those distinguished by the creeks called Hodgson's, Campbell's, Isaac's, King's, Oakey's, &c. These creeks traverse the plains on the west side of the Condamine, into which they fall. The fossils are found in the beds of the creeks, particularly in the mud of the dried-up waterholes, or among beds of trachytic pebbles, which are overlaid by layers of clay and loam with marly concretions, above which is the rich black surface-soil.

Fossil bivalve and univalve shells are found associated with, and sometimes cemented to, the bones; but they are of the same species as those still existing in the present creeks and waterholes.

The most extraordinary of the fossils brought from King's Creek by Mr. Turner was an almost entire skull of the *Diprotodon Australis*. The length was three feet; the two great anterior tusks, whence the name "Diprotodon," projected a few inches beyond that length. Behind these tusks were two smaller incisors in each premaxillary bone; but these six upper incisors were opposed, as in the kangaroo, by a single pair of large incisors in the lower jaw.

The characters of this extraordinary cranium were described by Professor Owen, and illustrated by drawings of the natural size. A descending process of the zygomatic arch was pointed out as illustrating the affinities of the *Diprotodon* with the *Macropus* or the kangaroos.

With this skull had been found a large bladebone, two feet four inches long, a humerus, two feet two inches in length, a femur, two feet five inches in length, remarkable for the great extent of the neck, several vertebræ, fragments of ribs and other bones, all agreeing in proportion with the skull, and belonging to the same species, and most probably to the same individual.

This collection of bones, when brought to Sydney, was noticed by the Rev. Mr. Clarke and by Mr. Macleay, in letters in the *Sydney Morning Herald*, and plaster casts were taken of the chief specimens. The whole collection was purchased of Mr. Turner by a Mr. Boyd, who was about to return to England. This gentlemen is stated to have died on the voyage, and the ship in which the fossils had been embarked was said to have been wrecked, and its whole cargo supposed to have been engulfed. A series of the casts of the fossils taken at Sydney was transmitted by the authorities of the museum there to the trustees of the British Museum. About the time when these casts arrived, a sale of fossil remains took place at Stevens's auction-rooms; these fossils were found to belong to large marsupial animals, were purchased for the British Museum, and proved to be the originals from which the casts in the Sydney Museum had been taken. The auctioneer stated that they had been the property of a Mr. Boyd. They will form the subject of a memoir by Professor Owen. Besides the parts of the skeleton of the great *Diprotodon*, they included a lower jaw of the same large extinct marsupial, which the Professor had previously determined under the name of *Nototherium Mitchelli*, and this jaw showed that there were two incisive tusks and ten molar teeth, five on each side, in that genus.

In January, 1858, Professor Owen received from Mr. George Bennett, F.R.S., of Sydney, sketches of a fossil cranium, which had been found in the same formation and locality in Darling Downs as the *Diprotodon*. This new skull was eighteen inches long and fifteen inches wide. It had three incisors and five molars on each side, and from its correspondence in size with the lower jaw of the *Nototherium*, the Professor believed it to belong to that genus. A cast of the cranium has been sent from Sydney to the British Museum, and has served to show that a fragment of upper jaw with molar teeth, in Mr. Turner's collection, belonged to the same genus These teeth show precisely that structure which Professor Owen had previously pointed out as distinguishing the teeth of the *Nototherium* from those of the *Diprotodon*. The lower jaw of the *Nototherium Mitchelli* in Mr. Turner's series, now in the British Museum, belongs to the same species as the cranium now in the Museum at Sydney. This cranium is chiefly remarkable for the great size and width of the zygomatic arches, which have also the descending process as in the *Diprotodon.* The facial bones in advance of the orbit form a kind of short pedunculate appendage to the rest of the skull, increasing in a remarkable manner in both vertical and lateral extents towards its fore extremity. The cavity of the nose was divided by a bony septum, as in one species of wombat.

Thus were established proofs of the former existence in Australia of two genera of herbivorous marsupial animals, resembling the pachyderms in proportions; one (*Diprotodon*) equalling or surpassing in size the largest living rhinoceros, the other (*Nototherium*) equalling the ox or tapir.

Professor Owen next referred to some fossils included in the collection sent by Dr. Hobson from Melbourne, Australia Felix, which belonged to a species of true wombat (*Phascolomys*), but four or five times larger than the largest known existing species. These fossils had been noticed by the Professor, and referred to *Phascolomys Gigas* in the *Transactions of the Zoological Society.* As early as 1842 Professor Owen inferred from the fact of there having been large herbivorous animals in Australia in former periods that a large carnivorous animal had co-existed with them. In a letter to the editor of the *Annals of Natural History,* November 1st, 1842, he writes, "Some destructive species of this kind must have co-existed of larger dimensions than the extinct *Dasyurus Laniarius,* the ancient destroyer of the now equally extinct gigantic kangaroo (*Macropus Titan*) whose remains were discovered in the bone caves of Wellington Valley." The Rev. Mr. Clarke, in his report to the Governor of Australia, No. 10, October 14th, 1853, 'On the Geology of the Basin of the Condamine River,' referring to this remark, observes, "The discovery of what *must have existed* cannot be altogether incapable of demonstration, and, therefore, such a verification of Professor Owen's anticipation is to be hoped for on many grounds."

In 1846 the Professor received from Mr. William Adeney portions of a fossil skull of a carnivorous quadruped as large as a lion. These fossils were discovered in the banks of the Timboon lake, situate 80 miles south-west of Melbourne. The lake is shallow and becomes almost dry in autumn, when its bed is covered with a pretty thick deposit of common salt of good quality. The surrounding country is volcanic. The fossils occur in a narrow white strip of calcareous conglomerate, traversing the clay cliff, which is here and there indented with capes of basaltic boulders. The fossil in question included part of the right maxillary bone, with the last two molar teeth. The first of these presented the trenchant or carnassial type of crown ; the second was a small tubercular tooth, situated, as in the lion and tiger, on the inner side of the back part of the carnassial. The crown of the carnassial was two and a quarter inches in extent, that of the largest lion being one and a half inch ; the margin of this flesh-cutting tooth is straight in the fossil, not indented as in the lion. A portion of the right ramus of the lower jaw contained two teeth answering to those above, the carnassial with an even-cutting edge of one and a half inch in length; the tubercular, which is directly behind, is only half an inch long, and it is followed by the socket of a second still smaller molar. On closely comparing this fossil with the skulls of existing carnivorous animals of the placental and marsupial orders, Professor Owen concluded from the structure of the occiput, of the organ of hearing, and of the bony palate, and of the orbit in reference to the position of the lacrymal hole, that the large carnivora represented by that fossil belonged to the marsupial, not to the placental, order. He had proposed for it the name *Thylacoleo,* or "lion with a pouch."

Thus were completed by evidence of species of quadrupeds that appear to have become extinct in Australia, the representatives in the marsupial series of the chief forms of the terrestrial Mammalia known in other parts of the globe.

The Professor, in conclusion, referred to the character, as one natural continent, of the vast tract of dry land now artificially divided into Europe and Asia, and he showed that all the fossil remains of quadrupeds from caves and recent tertiary strata in Europe, coeval with the ossiferous caves and strata in Australia, belonged to *genera* which still had existing representatives in Europe or Asia, such, *e.g.*, as the horse, the elephant, the rhinoceros, oxen, deer, bears, hyænas, felines, &c. The hippopotamus, indeed, had become extinct in Asia as in Europe, but still existed in Africa. He then made a similar comparison between the aboriginal quadrupeds of South America now living, such as the sloths, armadillos, ant-eaters, platyrhines, monkeys, llamas, peccaries, and the fossil megatheroids, glyptodons, glossotheres, large fossil monkeys, *Macranchentæ* and peccaries. Australia had already yielded evidence of an analogous correspondence between its latest extinct and its present mammalian Fauna, and this was the more interesting and striking on account of the very peculiar organization of the native quadrupeds of that division of the globe. The marsupials there represent analogously the chief land quadrupeds of the larger continents; the *Dasyures*, *e.g.*, play the parts of the foxes and marten cats; the Bandicoots (*Perameles*), of the hedgehogs and shrews; the Phalangers and Koolas, of the squirrels and monkeys; the Wombats, of the beavers; the Kangaroos, of the deer tribe.

The first collection of the mammalian fossils from the Bone Breccias of the Australian caves had brought to light the former existence of large species of existing marsupial *genera*, some of which, for example, the *Thylacinus* and *Sarcophilus*, though now seemingly extinct in Australia Proper, are still represented by species in the adjacent island of Tasmania; the others were fossil wombats, phalangers, potoroos, and kangaroos, but of different species. The fossils of the herbivorous marsupialia were of young or not full-grown animals, whence the Professor inferred that they had been dragged into the cave to be devoured. Subsequently, and at short intervals, fossils had been obtained from pliocene strata, and these had demonstrated the former existence of marsupial animals, representing the great pachyderms of Asia andthe megatherium of America, together with a marsupial beast of prey, rivalling the lion or tiger in size, and equal to cope with the diprotodon or nototherium.

Thus it was shown that, with regard to the last extinct (pliocene) kinds, as with the existing kinds of mammalia, particular forms were assigned to particular continents or provinces; and, what was still more interesting and suggestive, the same forms were restricted to the same provinces at a former geological period as they are at the present day.

Professor Owen next briefly stated the facts connected with the discovery of flint weapons, as yet the sole evidence of the human species that had been found associated with extinct pliostocene mammals, in caves or drift gravel. He concluded by summing up the principal generalizations in the fossil mammalia, and elucidated them by a comprehensive diagram, showing their geological and geographical distribution.—*The Times*.

WHAT WE EAT AND DRINK.

The readers of 'Herodotus' shudder when they come to his account of the Issedones,—a people among whom, when a parent dies, the son collects his friends and relatives together, slays cattle proportionate to his means, cuts up the dead father along with the sheep and oxen, and, mingling all the flesh together in one savoury mess, invites his guests to partake of the banquet. The reader dwells on the incident, which, although shocking for its barbarity, exhibits remarkable ingenuity in gastronomy and very singular ideas of filial regard. Singular! Not so singular, after all. Will it be believed that the citizens of London in like manner show their reverence for the dead by feeding on their ancestors? Not that they would eat a man plain boiled or palpably roasted. London is fastidious in its cookery; our city magnates have some little reputation as *gourmets;* and the human flesh was not more carefully disguised by the Issedones in a kind of enormous Yorkshire pie than the dead are transmuted by the aid of a rare gastronomy for our unhappy fellow-citizens. The kitchen where this art is practised is the churchyard; the cook is the sexton; a mattock and a spade are his ladle and knife; and day and night the steam of the hideous olio spreads around, the citizens breathe it contentedly, and Gog and Magog grin their delight as the odour reaches them. Let no one fancy that we are speaking metaphorically. There is no truth better ascertained, and which the physiologists of the day are more anxious to inculcate, than that the air we breathe is as much the food of man as the solids we eat and the liquids we drink. Many persons will, perhaps, sneer at the assertions of physiology, deny their truth, because not obvious to our senses, and hug themselves in the old indifference. These wise individuals forget the story of the Brahmin who thought it as heinous an offence to touch animal food as we do to taste human flesh. It was shown to him with a microscope that he daily partook of myriads of animalculæ, and he dashed the instrument to pieces. It is shown to the inhabitants of London that they daily, hourly, feed on the bodies of their fellow-citizens—fathers, brothers, and friends, and they laugh at science, and keep up the good old custom.—*Daily Press.*

Translations and Reviews of Continental Veterinary Journals.

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

Annales de Médecine Vétérinaire, Bruxelles.

FOUR CASES OF CHARBON (ANTHRAX) CURED BY PHOSPHORATED OIL.

By M. D. Guilmot.

Case 1.—A horse, eight years old, was suddenly attacked with illness. Large swellings appeared on several parts of the frame, but principally on the hind legs. The person who first attended the animal, mistaking the disease, bled him. The blood, which was still in the can, exhaled a fetid odour, and did not coagulate.

The symptoms present were a hot and tender swelling, which crepitated under pressure, and invaded all the extremities, and extended over the whole of the sterno-abdominal region, where it had acquired the thickness of, from three to four inches here and there. On the dorsal and costal regions existed a swelling, not diffused, but circumscribed and painful to the touch. A few drops of blood was seen to ooze out of these swellings. The membrane lining the nostrils was covered with petechial spots of various dimensions; there was also a slight discharge from the right nostril, of a reddish colour and an offensive odour; the glands of the same side were enlarged and painful on pressure; the lips were swollen, and the mucous membrane of the mouth and the conjunctiva were covered with petechiæ; the pulse was small and irregular, but there was no loss of appetite.

Treatment.—Forty minims of the phosphorated oil were administered in a mucilaginous decoction. In about half an hour after, perspiration had set in; but, in spite of clothing which was resorted to to keep it up, it became much less. In about four hours after, the like dose was repeated, and a generous diet recommended.

On the 11th, eighty minims of the oil were given in two doses. The pulse became full, and perspiration set in, which was kept up by clothing.

The symptoms were the same, with the exception of the upper lip, which was less swelled.

12th—Forty minims were given, the appetite continuing good.

13th—Under the influence of the repeated administration of the phosphorated oil the swellings became considerably reduced, the petechial spots paler, the discharge from the nostril less, and the fetid odour had also disappeared, but the size of the submaxillary had increased. Another dose of forty minims was therefore given. In three quarters of an hour after, so great was the perspiration, that it ran off the body of the patient. This was kept up by warm clothing.

On the 14th the swellings were insignificant, and the other symptoms had disappeared, but the appetite had become impaired and the thirst increased. Farinaceous water was allowed *ad libitum*, but the quantity of food was reduced by one half. Hand-rubbing was ordered to the legs.

15th—The swelling having nearly disappeared, the administration of the remedy was suspended. The animal ate its rations, but with less appetite than usual; the thirst, however, was diminished.

On the 17th the animal was discharged cured, and shortly after it was put to its usual work. The second case differed from the first only in the swelling about the hocks being greater and the existence of a sero-sanguineous oozing from the pastern took place, which had an offensive odour. The phosphorated oil was given for five days with the same happy result, when the patient was considered convalescent. But the next day the respiration became difficult and loud, the head was of an enormous size, the lips were thrust apart, and there was a coloured discharge from the nostrils, which exhaled a cadaverous odour, the legs began again to swell, and charbonous tumours were perceived on several parts of the body, which were circumscribed, painful, and phlyctenous; the visible mucous membranes were black.

This was a desperate case, but, as Hippocrates says, "for great evils energetic remedies must be resorted to;" consequently, 160 minims of phosphorated oil were prescribed, divided into four doses. The first dose was given at half-past two, with considerable difficulty, on account of the swelling of the throat. At half-past three a slight moisture of the skin was perceptible, and the difficulty of the respiration had increased. Another dose was given. At four o'clock the perspiration had increased, and the noise during respiration was less, but the pulse and the swellings remained the same. The animal tried to drink, but was unable to do so. At five o'clock another dose was given. In three quarters of an hour after, most extraordinary diaphoresis had taken place, which was kept up by warm clothing, and from that time the animal gradually improved, and was discharged in about a week afterwards.

The two other cases present nothing particular from the first recorded, except that in the last the dose of the phosphorated oil was increased to fifty minims.

FISTULA OF THE TEMPORAL REGION, CAUSED BY ONE OR MORE MOLAR TEETH.—OPERATION AND CURE.

By M. J. Macorps.

The author of this paper states that he has met with this affection in a foal ten months old, and in nine horses varying from three to five years old, and four in aged horses

The operation consists in making a crucial incision, and then detaching the skin so as to lay the parts open, and then with a chisel to remove the tooth, or at all events to raise it so as to be enabled to seize it with a pair of pincers.

Of fourteen horses thus operated upon by him, thirteen got well in about ten days. The fourteenth had to be operated upon twice in three months, and at each operation a tooth was extracted. The coronary surface of these teeth always points upward, while the fangs are downwards. This article is accompanied by a woodcut showing this form of these teeth.

ROYAL COLLEGE OF VETERINARY SURGEONS.

ANNUAL MEETING.

The annual meeting of the Royal College of Veterinary Surgeons was held on the 7th ult., at the College, Red Lion Square, W. Burley, Esq., President, in the chair.

The Secretary read the advertisement convening the meeting.

The minutes of the last annual meeting having been read and confirmed, the following Abstract of the proceedings of the Council during the past year was submitted to the meeting:

"The Annual Report of the abstract of the proceedings of the Council of the Royal College of Veterinary Surgeons, will this year produce but little either of interest or excitement. Veterinary politics remain unchanged. The balance in the hands of the Treasurer shows a slight increase on that of the preceding year, but the strictest economy has, however, still to be observed in every department.

"During the past year a long and severe attack of illness, mental and bodily, incapacitated your Secretary from attending to his usual duties; the prostration of mind and body was so great, that for months his recovery was considered hopeless. With deep and grateful thanks to the overruling Power above, and to the patient care and endurance of those around him, he is once more himself again; and he cannot omit this most favorable opportunity of expressing his warm thanks and deep gratitude for the sympathy expressed by his professional brethren—the untiring forbearance of the Council in dispensing with his services—and for the warm-hearted, friendly, and efficient manner in which the want of those services was compensated for by his friend, Mr. Braby—who for nine months so efficiently filled his place, as, at the end of that time, to receive the unanimous thanks of the Council for having done so.

"The number of deaths reported this year by the Registrar is 26. Youth and age have apparently suffered nearly alike; among them are several persons of eminence, whose vacancies will not easily be refilled. We have deeply to regret the loss of Thomas Turner, the first President of the Royal College of Veterinary Surgeons, and for seven succeeding years unanimously re-elected to that office. His untiring zeal and assiduity in carrying out the duties of his office, his constant and untiring attendance at the Council, Examination, and Committee meetings, will not be forgotten by those who participated in his labours. A clever, energetic, and successful practitioner, a warm and constant friend, and a pleasant and agreeable companion, his name is endeared to our memories; and, as long as his portrait remains adorning our walls, his services will not be forgotten.

"Fifty-two members have been admitted during the past year—43 from the Royal Veterinary College of London, and 9 from the New Veterinary College of Edinburgh. The number of members at present on the list is 1450.—The Registrar must again remind the Profession how very desirable it is that the list should be kept as perfect as possible, which can only be done by all changes of residence being communicated to him.

"Since writing the preceding portion of the Report, another sudden and unexpected loss to the Profession has occurred, in the death of James Turner, of Regent Street,—Thomas Turner died December 19th, 1859, and his brother, James, April 3d, 1860: thus, within a few months two brothers, both filling their positions to the entire satisfaction of the Profession, have been taken from us. James Turner not only filled the office of President, but that of Vice-President also, and was, from the time of its first establishment, a valued member of the Board of Examiners. His scientific monographs on the Circulation of the Blood, and his practical works on some of the most important diseases of the horse, have received the unqualified approbation of the Profession. Peace to his manes!

"Another loss to be added to the list still remains, that of our old and valued friend, William Stockley. In his case, however, the usual range of human life had been far exceeded. He passed the College in 1794, and died at the unusually advanced age of 84. Every faculty was retained to the last, and the incidents of his life are so numerous and varied that it would fill a volume to report them.

"In conclusion, it must, however unsatisfactory the statement may be, be admitted that the long-looked and hoped-for results of the obtainment of the Charter have not as yet been realised. Commissions in the Army are still given to candidates who have not passed their examinations before the Board of Examiners authorised by the Council of the College, and who, therefore, are not recognised members of the Profession. How much longer this system, so prejudicial to the advancement of Veterinary Science, and so injurious to the interests of the members, is to continue, can only be answered by those authorities at the Horse Guards who have the power to alter the system. Other privileges have failed to be obtained, and it is still necessary that every individual member of the Profession should manfully place his shoulder to the wheel, and, by one great and united effort, obtain those privileges and that position which are most justly its due.

"E. N. Gabriel, *Secretary.*"

E. BRABY, Treasurer, *in Account with the Council of the Royal College of Veterinary Surgeons.*

April, 1860.

Dr.	£	s.	d.	Cr.	£	s.	d.
Balance from last year	226	7	3	Fees to Boards of Examiners	46	8	0
Examination Fees	391	13	0	Rent	60	0	0
Copies of Register	1	17	0	Rates and Taxes	31	14	6
Allowance from Rent for Taxes	2	8	9	Allowance to Secretary	100	0	0
Interest	3	3	11	Advertisements	8	18	5
				Printing	14	6	3
				Insurances	4	14	3
				Coals, Gas, and Wood	7	5	0
				Stationery, Envelopes, &c.	6	10	4
				Petty House Expenses	10	0	0
				Balance in hand	335	13	2
	£625	9	11		£625	9	11

We, the undersigned, have examined the above accounts, and found them correct,

Alexander Mavor,
Richard Skelton, Jun.

After reading the Report, a ballot took place for six members of the Council, in place of Mr. W. Field, Mr. J. Turner, Mr. R. Pritchard, Mr. J. Legrew, Mr. G. Varnell, and Mr. W. Stockley, who retired by rotation: and one in place of Professor Morton, resigned. The following gentlemen were proposed:

Mr. William Mavor	by	Professor Spooner.
Mr. Moon	„	Professor Morton.
Mr. Legrew (2d Life Guards)	„	Mr. Gabriel.
Mr. Field, of London	„	Mr. Robinson.
Mr. Pritchard, of Wolverhampton	„	Mr. Dickens.
Mr. Hunt, of Birmingham ...	„	Mr. Cartledge.
Mr. F. Cherry, of London ...	„	Mr. Woodger.
Mr. C. Hunting, of South Hetton	„	Mr. Gamgee, sen.
Mr. Bailey, sen., of Leicester ...	„	Mr. Ernes.
Assistant-Professor Varnell ...	„	Mr. Sylvester.
Mr. Lawson, of Manchester ...	„	Mr. Wilkinson.
Mr. J. Hall, of London	„	Mr. Woodger, jun.

On the motion of *Mr. Gabriel,* seconded by *Mr. Robinson,* Mr. Carless and Mr. Hunt were appointed scrutineers. The return made by these gentlemen of the number of votes was as follows:—Mr. Legrew, 48; Assistant-Professor Varnell, 47; Mr. Field, 45; Mr. Moon, 44; Mr. Pritchard, 43; Mr Hunt, 35; Mr. Lawson, 34; Mr. Mavor, 28; Mr. Barley, 7; Mr. Hall, 6; Mr. Hunting, 2; Mr. Cherry, 1.

The President declared the election to fall on Messrs. Legrew, Varnell, Field, Moon, Pritchard, Hunt, and Lawson.

Professor Spooner—I rise to propose a vote of thanks to our Chairman and retiring President, and I am sure you will all cordially join with me in that proposition. (Hear, hear.) We have long known Mr. Burley as an old and highly respected member of our Profession. He has gone through the duties of his office to the satisfaction of the members of the Council, and I trust to the body generally. (Applause.)

Mr. Broad seconded the motion, which was unanimously adopted.

The President—Gentlemen, I feel greatly obliged to you, and to my worthy friend, Professor Spooner, for the vote of thanks you have so kindly passed. I feel too unwell to occupy much of your time; but I should be doing an injustice to my own feelings, and neglecting a duty I owe to you, if I omitted to say that I thank you most cordially. I know well my shortcomings. I am aware it is the practice to eulogise a man who does the best he can. There is one duty incumbent on me, it is to thank the gentlemen of the Council for the assistance they have rendered me in my term of office, and if there is one gentleman whom I should thank more than another it is Mr. Braby. You well know that Mr. Gabriel, through ill health, was prevented from discharging the duties of his office. You know the way in which he has always discharged them. You know how he has been identified with you from the earliest period of your Charter. I can speak of his constant attendance at your meetings, for I have had the honour of a seat at your Board for twelve years, and have travelled many thousands of miles to attend to the duties of the office, expecting and desiring no advantage beyond the honour you have conferred upon me. My friend Professor Spooner recommended me to call a special meeting in consequence of Mr. Gabriel's ill health—a most judicious line of policy. Mr. Braby then came forward and offered his services gratuitously to discharge the duties of Secretary, and I have to thank him for the admirable manner in which he filled that post in Mr. Gabriel's absence. Gentlemen, I am often asked in my provincial circuit, "What has the Charter done for us?" It is, perhaps, difficult to say; but I know what it is able to do for us. Parliament is now too much engaged with Reform and Free Trade to attend to us; but the time will arrive when we shall be able to secure all that is essential for us to obtain. Why should we have to dance attendance at Quarter Sessions and Assizes, kicking up our heels, four or five days, at our own expense? (Laughter.) Look at the case of Mr. Mavor, who, when a man on the race-course took the liberty of poisoning his friend, was detained ten days or a fortnight on the jury. What would have been his position, with his extensive practice, if he had not had the services of his brother to attend to his professional duties? It is time we were released from such a position. We have the medical profession in our favour, and in canvassing the members of Parliament, I have not found a dissentient voice. It was said, the only thing we wanted was unanimity. Well, we have it; for although, as the report tells you, little has been done this season to call for comment, that little has been done with unanimity and good feeling. (Hear, hear.) I feel pleasure in stating that the School and the Council have worked harmoniously together. That is the way in which we are to obtain what we require; and as to the application to Parliament, I have no doubt it would be a great assistance to us. As to our losses I need say but little, for you all feel them as well as myself. We have lost men who stood high in the Profession, not only for their scientific acquirements, but for their industry, zeal, and intelligence; but we must not forget that we have others who will worthily fill their places. (Hear, hear.) In alluding to the old Professors, let me say there is one whom I shall never forget, one whose pupil I was — I mean the first Professor, Mr. Coleman. I am trespassing, perhaps, upon tender ground, but I know that the oldest members of the Profession revere that name. The *Veterinarian* tells us that we ought to erect a statue to his memory, and I should much like to see it done. Honour to whom honour is due. He did single-handed what no other man perhaps could have accomplished, and we owe him a deep debt of gratitude. He procured us gratuitous admission to the lectures in Windmill Street, and I shall never forget my obligations to those gentlemen who lectured there—Pearson, Wilson, Cook, and one who has kept to us up to the present moment—Professor Brande. I should be glad to see the proposal carried out, and will, if it is found practical, gladly subscribe £50 or £100 towards its accomplishment, so anxious am I that worth should be recognised. (Applause.) I am not reflecting in the least degree upon the present Professors. I go every year to hear the Introductory Lecture, and I am pleased to see the improvement taking place. The Professors advance with the times. I shall never forget the last lecture I attended; it completely convinced me that if the Profession is to advance, it must be from the fountain-head. There is another subject to which I would allude for a moment, as important as that of a Bill of Exemptions—I mean the introduction of members of the Profession into the Army. I speak now in the presence of a man whose good opinion I value, who stands high in the Profession, and who has greater influence at the War Office than any gentleman who has ever held the post of Veterinary Surgeon-General of the Army. I remember well that at a Council meeting, when there was a question as to whether the Veterinary Surgeons would get the new Army warrant, which they so well deserved (as witness their deeds in the Crimea), it was proposed to form a small committee to wait upon the Secretary-at-War on the subject; and Mr. Wilkinson said, "I think you had better let things go on as they are." He knew what was going forward; and considering the high estimation in which he is held, I know no man who could accomplish the object we seek as well as he can. I hope he is going to occupy the seat which I have unworthily filled, and I hope he will never leave it till he has accomplished that object. I will not occupy your time any longer. Though I was fond of minute anatomy, I think I can wield the knife and fork better than the scalpel (laughter), and I hope to see as many of you at the dinner as can make it convenient to attend. (Applause.)

The proceedings then terminated.

Veterinary Jurisprudence.

WARWICK LENT ASSIZES.

Nisi Prius Court.

(*Before* Lord Chief Baron Pollock.)

IMPORTANT TO VETERINARY SURGEONS.

WILDEN *v.* STANLEY.

In this case Mr. Macaulay and Mr. Field were instructed for the plaintiff, who is an iron-merchant at Birmingham; and Mr. Mellor and Serjeant Hayes for the defendant, a veterinary surgeon, well known in practice in the same town.

The declaration affirmed that the plaintiff sent a bay horse to the defendant's veterinary stables to be examined, and whilst there to be taken due and proper care of for that purpose, but that in consequence of such due and proper care not having been exercised, the horse sustained injury. The defendant pleaded not guilty, and denied that the horse was delivered to him in the terms stated.

Mr. Macaulay, in stating the case to the Jury, said that the plaintiff (Mr. B. Wilden) purchased a horse on the 5th of February, last year, for £65, it being warranted to him sound, as indeed it eventually turned out to be. A day or so afterwards the horse was taken to Mr. Stanley's forge to be examined. Mr. Wilden was present, and Mr. Stanley tried him in the usual way, mounted him, and finally had his shoes taken off, for the purpose of measuring his feet. After the shoes had been removed, and before they were replaced, Mr. Stanley went into the office, for the purpose of writing his certificate of the soundness of the animal; but in returning with Mr. Wilden to where the horse was standing, it was found to be lifting up one of its fore feet, as if in pain. On examination, it turned out that a stub-nail, which had been amongst a lot of parings of hoofs, had got into its foot, and had caused the uneasiness of the animal. Mr. Wilden had then no intention of making any claim for the injury, because it did not appear that it was of any serious nature. Mr. Stanley, however, was exceedingly annoyed at the circumstance, and it was arranged that the horse should remain under his care, and it did so remain, in consequence of its becoming so lame that it could not walk, until April. In that month, on the suggestion of Mr. Stanley, the animal was sent to grass, and did not come back to the forge until June, where it remained for a short time, and was finally handed over to the plaintiff on the 11th of July. Since that time he had been gradually improving, but he was for a long time quite useless to Mr. Wilden, who in the mean time bought a gray horse at a cost of £45. The latter sold only for £32 afterwards.

Mr. Stanley having sent in his bill, charged £18 6*s*. 6*d*. for keep, professional attendance, &c., which he insisted on being paid. Mr. Wilden did pay it under protest, and now sought to recover it back, with the exception of 10*s*. 6*d*., which Mr. Stanley charged as the fee for examining the horse, and also the difference (£13) between the cost of the gray horse and the sum it fetched when sold, together with whatever amount besides the Jury might think proper to award.

The Plaintiff, being called, supported in every respect the statements of the learned counsel, and some other evidence having been adduced, the effect of which is also embodied in the foregoing—

Mr. Mellor addressed the Jury for the defendant. He observed that when they had heard the case throughout, they would probably be of opinion that the defendant, who was, as his learned friend had stated, a professional gentleman of considerable standing, was not liable. Now in this case he had to contend that there was no bailment, in other words, that there was no delivery of the horse to Mr. Stanley except for a proper and specific purpose. The horse was delivered to Mr. Stanley in no other sense than a patient who went to consult a doctor. It was sent to Mr. Stanley for the purpose of being examined, in order that he might certify whether or not it was sound, and for no other, so that there was no taking, legally speaking, beyond what is requisite for a professional examination.

His Lordship here interposed that there was a certain custody of the animal accorded to Mr. Stanley when he was given him to ride for the purpose of examination. He was desirous that the case should be divested of all technicality. The parties came there to try whether a veterinary surgeon, who also kept a farrier's shop, was bound to have the latter kept in such a condition as that a horse might be tied up in it with safety. If the floor was not properly swept, and substances were left lying about which ought not to be, and the horse in question sustained injury thereby, the veterinary surgeon was responsible either for his own negligence or for that of his servants.

Mr. Mellor said he had no wish to blink this question, but he wished to call the attention of the Jury to it as a question of liability. After going through the facts he should have to submit, the learned counsel called the defendant, Mr. Stanley.

He stated that he had been in practice as a veterinary surgeon for thirty years. When the horse was brought to him, something being said about its having small feet, he took the shoes off to measure them, and to see if the hoofs were sound. He discovered that the feet were naturally small, but that there was no disease. They went into the office for a few moments, and afterwards, on returning, he noticed that the horse was resting one of its fore legs on the point of the hoof, and before he could lift it up to ascertain what was the matter he limped more than once, and on examination he found that the horse had trodden upon a nail, and that he had forced it further into his foot by putting the latter down on the floor. A heap of hoof-parings were lying under the wall, about eighteen inches or two feet from the horse's feet, and he (the defendant) believed he must have pawed them, and so have got the nail into his foot; but whether the nail was on the floor or amongst the parings it was impossible to say. He told the men that he was surprised they had allowed the parings to accumulate. The practice in his forge was to have all the nails picked up from the floor, and put in a box distinct from the parings. This was an accident which would occasionally happen. At the time of the casualty, he (defendant) promised the plaintiff he would attend professionally upon the horse without charge under the circumstances, but he stipulated that Mr. Wilden must pay for the keep.

In cross-examination, the defendant said the parings were the accumulations of the previous week. He had continued the same practice as to the keeping of parings under the wall, as he considered it to be the safest plan to adopt.

A farrier in the employ of the defendant having been called to state that all reasonable care was taken to sweep the floor of the forge, and that the occurrence was inevitable,

The learned gentlemen offered a few further remarks to the Jury upon their respective cases, after which his Lordship summed up. In doing so his Lordship said it was important to the public at large that all who carried on a public business should be responsible for its being carried on with due carefulness. He afterwards cited imaginary cases to illustrate the point he wished to establish, which were decidedly unfavorable to the defendant.

The Jury found for the plaintiff damages to the amount charged for the keep of the horse, which amounted to twelve guineas.

Solicitors for the plaintiff, Messrs. Gem, Docker, and Sutton; for the defendant, Messrs. E. and H. Wright.

NEW MEMBERS OF THE PROFESSION.

The following gentlemen have obtained their diplomas at the meeting of the Board of Examiners of the Royal College of Veterinary Surgeons, held during the month of May:

England.

George A. Oliphant	Marshwood, Southampton.
William Barry	Chilton Grounds, Bucks.
George Stretton	London.
Thomas Horne	Barnsley, Yorkshire.
Joseph Coe	Ashford-in-the-Water, Derby.
Henry Noakes	Wadhurst, Sussex.
Walter Burt	Eastbourne.
Mark Tailby	Birmingham.
Edwin J. Hoyland	Wombwell, Yorkshire.
Thomas Collins	Bradford, Yorkshire.
Henry Withers	London.
Joseph Woodger	London.
William Charles Ison	Ashby-de-la-Zouch, Leicestershire.
Thomas Blott Fordham	Caxton, Cambridgeshire.
William Pritchard	Wolverhampton.
Francis Talbot Sharp	Nottingham.
John Marsdin	Snaith, Yorkshire.
Samuel Banks	Biggleswade, Bedfordshire.
Charles Crowhurst	Warbleton, Sussex.
Thomas Channon	Taunton, Somersetshire.
John Atkins Hoskison	Pattrington, Yorkshire.
William Barker Walters	Birmingham.

John Hardy	London.
Daniel Butler Howell .	Reading.
John Keely	Crumlin, County Dublin.
Charles Emmerson . .	London.

EDINBURGH.

William Robertson . .	Kelso.
James M'Call	Glasgow.
Alexander Pottie . . .	Renfrew.
Benjamin Smith . . .	Ulverston, Lancashire.
Andrew G. Ross . . .	Glasgow.
Godfrey Smith	Darton, Barnsley, Yorkshire.
Andrew Simpson . . .	Coupar Angus, Perthshire.
Henry Thompson . . .	Allonby, Cumberland.
John H. Burbage . . .	Manchester.
David Mackay	
George Beilly	

ARMY APPOINTMENTS.

WAR OFFICE, PALL MALL, *April* 27, 1860.

VETERINARY MEDICAL DEPARTMENT.

Thomas James Lang, Gent., to be Acting Veterinary Surgeon, *vice* Veterinary-Surgeon Hussey, Royal Artillery, who has resigned.

MISCELLANEA.

"THE perfection of human character is the result of a balance established between the faculties, not of the expansion of one." Hence, a man may be famous for one thing and ignorant of all others—he may possess all kinds of sense or knowledge but common sense.

IT is not party that is to be objected to but faction. Persons may and do combine together, constituting a party, for the best wishes and best ends; but when a mere faction exists, and when this supports itself by falsehood and acrimonious spirit, it is to be despised and therefore condemned.

THE

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Communications and Cases.

ON THE USE OF ARSENIC.

Such are the effects of habit, that some of the most active and destructive mineral substances, from long-continued use, have ceased to act perniciously on the system; nay, even, after a time, a want of them has been experienced. Markedly do we see this exemplified in the custom of the peasants of Styria, the Tyrol, and the Salzhammergut—principally the huntsmen and woodcutters of these places—who eat arsenic to improve, as they say, their wind, and prevent fatigue.

Mr. C. Heisch, in a paper on the subject, in the *Pharmaceutical Journal,* gives some very interesting illustrative cases. He states that—

"The arsenic is taken pure, in some warm liquid, as coffee, fasting, beginning with a bit the size of a pin's head, and increasing to that of a pea. The complexion and general appearance are much improved, and the parties using it seldom look so old as they really are, but he has never heard of any case in which it was used to improve personal beauty, though he cannot say that it never is so used. The first dose is always followed by slight symptoms of poisoning, such as burning pain in the stomach and sickness, but not very severe.

"Once begun, it can only be left off by very gradually diminishing the daily dose, as a sudden cessation causes sickness, burning pains in the stomach, and other symptoms of poisoning, very speedily followed by death.

"As a rule, arsenic eaters are very long lived, and are peculiarly exempt from infectious diseases, fevers, &c., but unless they gradually give up the practice invariably die suddenly at last."

Persons who are employed in the smelting of metals containing arsenic fortify the system and enable it to resist the influence of the disengaged fumes by daily swallowing doses of this mineral, while others, who refrain from doing so, quickly die when they are exposed for any length of time to the arsenical vapours. In this they have a royal exampler or follower, as it is said that Napoleon I was in the habit of taking arsenic to ensure himself against being poisoned by it.

The use of such an agent being so common, what wonder is it that death from it should frequently take place? This has often led to judicial investigations, and also to trials for murder, the accused being sometimes acquitted on the grounds of the party having been an arsenic eater, or the general use of it in the district leading to the belief that it was not considered destructive of life.

"Professor Schallgruber, of the Imperial Lyceum at Grätz, investigated, by order of government, various cases of poisoning by arsenic. After giving details of six post-mortem examinations, he says:—'The reason of the frequency of these sad cases appears to me to be the familiarity which exists in our country with arsenic, particularly the higher parts. There is hardly a district in Upper Styria where you will not find arsenic in at least one house under the name of hydrach. They use it for the complaints of domestic animals, to kill vermin, and as a stomachic to excite an appetite. I saw one peasant show another, on the point of a knife, how much arsenic he took daily, without which, he said, he could not live; the quantity I should estimate at two grains. It is said, but this I will not answer for, that in that part of the country this poison is used in making cheese; and, in fact, several cases of poisoning by cheese have occurred in Upper Styria, one not long since. The above-mentioned peasant states, I believe truly, that they buy the arsenic from the Tyrolese, who bring into the country spirits and other medicines, and so are the cause of much mischief.'"

Mr. C. Boner, of Ratisbon, avers that the use of arsenic by horse-dealers is very general in the East. They come across to Greece from Smyrna, or buy their stock in Macedon; and such adepts are they in the art of preparing their horses for the market, that he must indeed be a connoisseur who is not deceived by their blandishments by the time they appear in the Athenian market. They all, without exception, mix arsenic with their horses' provender. Some years ago, an apothecary at Athens had in his stable horses which, for sleekness and beauty and fineness of coat, were the admiration of every one: to these arsenic was given in their food.

As to the custom of giving arsenic to horses, it would seem to be even more general in Western Europe than the writer was hitherto aware of. He has spoken on the subject with a man of long experience; and on referring to arsenic, was rather surprised to find that the person in question spoke of the poison as he would of the usual horse-balls, or of any other well-known and generally received treatment. In Frankfort-on-the-Maine—so he told the writer—he had always understood that arsenic was used by horse-dealers to improve the looks of their animals. From what he himself had seen in different stables, he believed it impossible that certain appearances could be produced unless unusual means had been resorted to. Though he had always heard arsenic spoken of in stable-economy as something quite common, he had never employed it himself, nor had he ever actually seen it administered. The horses of Mr. R—'s equestrian troop were famous for the fineness and beauty of their coats, for their sleekness and general appearance, and he understood that such was owing to the use of arsenic. Indeed, at the season when he had seen them it would have been impossible for horses to have such coats, unless some unusual means had been resorted to.

On questioning an Austrian cavalry officer on the use of arsenic, the writer was again surprised to find that to give this poison to horses was considered quite a common practice. "I never give mine any," he said, "because it makes them sweat profusely, as soon as you require of them great exertion. It improves their looks, no doubt, and makes them sleeker. Mine are in good condition, and I am quite satisfied with them as they are. However, the use of arsenic is common enough, though I, for my part, don't like it."

It has been ascertained that all animals are not alike susceptible of the influence of this agent. Monsieur Gasparin experimenting with it on some sheep, found that it did not act as a poison on them, but actually became the means of curing *pleuritis*, under which they were then labouring.

The property possessed by arsenic of preserving animal bodies is well known; also its action medicinally as a tonic and alterative. In skin diseases of a chronic nature its use has been advocated, likewise in farcy, and those affections of the respiratory organs which, if not judiciously treated, oftentimes terminate in glanders. It should be given in small doses, as from five to ten grains daily; for although the horse will resist the influence of comparatively large quantities of this agent, nevertheless temerity in this respect has often been productive of serious consequences, it then operating as an irritant poison. In an experiment performed by us, eleven drachms and fifteen grains sufficed to destroy life; the dose having been gradually increased from five grains *per diem* to eighty grains, when all the symptoms indicative of poisoning by arsenious acid presented themselves, and, despite the employment of antidotal and other measures, a fatal termination took place in a few hours.

In chronic affections of the nervous system, as neuralgia and chorea, in chronic rheumatism, and some other diseases, a trial of arsenic has been recommended. In India it has been long celebrated for the cure of the bite of the cobra da capello and other poisonous serpents.

We do not intend to speak here of its action as a caustic. It is unquestionably a potent external application, and is said to combine with the gelatinous tissues; but the great objection to its employment arises from its absorption into the system, when its effects are as marked as if administered by the mouth. It has been stated that this only takes place when small quantities are applied, whereas a large quantity quickly destroys the organization of the part, and thus puts a stop to absorption. We are, however, of opinion that we have better and safer agents of this class. We remember an instance in which, for the removal of a warty excrescence at the base of the ear of a horse, some arsenical compound was applied, and it caused so much sloughing that the whole of the external ear came off. Many cases are on record of the topical application of this agent proving fatal.

Reverting to its therapeutic influence, we may be permitted to add—although this has been elsewhere recorded by us—that Mr. Lepper, M.R.C.V.S., Aylesbury, in a letter which is now lying before us, states that arsenious acid is with him a favorite medicine, especially in those cases of debility supervening catarrh, and where the nasal discharge continues for some time after the acute stage of the attack has passed off, and fears are entertained as to the results. He gives it in ten-grain doses, daily, in the animal's provender; *but never in the form of ball.* To this mode of exhibition he attributes most of its beneficial influence, or at any rate to his never having witnessed any unpleasant consequences arising from its use for many years, not even when he has doubled this quantity.

By some practitioners the *Liquor Potassæ Arsenitis, P. L.*, has been preferred. This is made by boiling *Arsenious acid* and *Carbonate of potash*, of each grs. lxxx, in *water* f℥xx, until they are dissolved, and when cold, adding *Compound Tincture of Lavender* f℥v, and as much water as may be required to make up the measure of a pint.

Each fluid ounce of this solution contains eight grains of the arsenite of potash, or four grains of arsenious acid in combination.

CASE OF LACERATED RECTUM OF A HORSE.

By J. Rowe, M.R.C.V.S., London.

The animal, a roan-chestnut gelding, about thirteen years old, had been in the possession of its late owner about four years, and was constantly used as a saddle-horse during that time. On the 7th of March my attention was called to him, he being lame in the near shoulder. Under the usual treatment he quite recovered in a few days, and was again ridden up to a recent period. The groom having put the saddle on, called him round as usual to put his bridle on, when the horse turned round, suddenly stretched himself out on his legs, and nearly fell down in so doing. The groom lifted his head, to help him to recover himself. The horse then began to tremble very much, and the groom, with his master's consent, gave him some pepper, in warm water; and as he continued uneasy, three hours after he administered some gin and ale. In the evening I was sent for, about half-past eight o'clock. On inquiry, I found the horse had passed both urine and dung several times during the day, of a natural character; that he had eaten his food, and drank his water as usual, but that he had not lain down since he was lame; he had fallen down once, and scrambled up with difficulty. I found his pulse only slightly accelerated, the breathing tranquil, the mouth cool, membranes of the usual colour, skin and extremities warm. On attempting to lay your hand on his haunch, he drew himself up, arching the loins, but did not flinch on pressure being applied either on the loins or down the muscles of the haunch. I considered that he might have in some way hurt himself over the loins, and it being then dark I gave no decided opinion until the morning, only administering an aperient draught, with Sp. Nit. Æther., ℥j.

I saw him at half-past eight the next morning, and found him the same as in the evening, but he moved himself more freely, although there was a slight straddling gait with his hind legs; after, however, going a few yards, it went off; he backed and turned either way as well as ever he did, and flinched nowhere on pressure; he had voided his fæces and urine during the night naturally. I was still of opinion that he had hurt his back in some way or other, and therefore sent some Lini. Saponis to be rubbed over his loins, with some cooling medicine, and thought that in a day or two he would be all right again.

On the third day, about half-past one p.m., the groom came, saying the horse was all but dead; he could scarcely keep him from falling down; he was trembling, constantly straining and making efforts to stale, which he did only in small quantities at a time. I took with me a draught consisting of Ol. Lini., Ol. Tereb., and Tr. Opii, and found the horse as he described him; the trembling, however, had partly gone off, the pulse was but slightly quickened, there was an anxious expression about his eyes, the membranes were rather more injected, the breathing quicker than usual, the abdomen very tense, and the mouth slightly clammy. The bowels had acted during the day, yet he kept stretching himself out, making efforts to urinate, and looking round to his near flank. I at once administered the draught I had brought, and proceeded to examine him, *per rectum*, which I found full of fæcal matter, of a fair consistence. *A few inches from the anus the rectum was lacerated.* Removing all the fæcal matter, with which was pus mingled with blood, I felt that the intestine was thickened, and detached portions of membrane were hanging about it, and on the left side there was a piece the width of my finger across the rupture. I at once told the groom I had no hopes of the horse's recovery, and left, with instructions to send for me again during the night should the animal become very much worse. Expecting him to become violent, at about nine a.m. I again saw him, and to my surprise found him much easier. He had passed his urine without any straining, but no fæcal matter had been voided. On examination I found the rectum empty and very dry, and a considerable amount of bloody, purulent matter issued from a sac formed by the outer coat of the intestine. I administered an enema, ordered soft food, of which he partook during the day, and saw him again at one p.m., when he was about the same. At nine in the evening I administered another enema, which he resisted, straining against it very much. The next morning I saw him about ten; he was then endeavouring to stale; the pulse was quicker, the breathing accelerated, and the membranes more injected; he pawed a good deal, looking back at his left flank, and had not passed any dung. I again emptied the rectum, which gave him immediate ease, threw up an enema, and gave Ol. Lini., ℥viij.

I went again in the evening, at half-past seven, and found him getting worse. He had eaten but very little during the day; was constantly straining to pass his urine; had fallen down once, but got up again directly afterwards. As I could give the owner not the slightest hopes of a recovery, he ordered him to be destroyed.

In a *post-mortem examination*, I found every organ in a perfectly healthy condition, except the portion of the rectum I brought for your inspection.

On further inquiry, I find from the groom that he has observed the horse give way a little when his master mounted him, otherwise he has never noticed anything amiss with him. If from this hurried description you can extract anything that you may think worthy of the pages of the *Veterinarian*, I shall be pleased.

REMARKS ON THE ABOVE CASE BY ASSIST.-PROF. VARNELL.

Diseases of the rectum of the horse are comparatively of rare occurrence, and, so far as I am aware, there are but few cases recorded in veterinary literature. In the years 1837-8, at page 48, of the *Abstract of Proceedings of the Veterinary Medical Association*, Professor Simonds has described some cases in which the death of three horses took place from a pointed stake having been maliciously forced up the rectum; and there are a few other instances of laceration of the rectum to be found in the same work.

Diseases of the pelvic portion of the alimentary canal especially, or, indeed, any other part of its course, whether they depend upon structural lesion or functional derangement, cannot be well understood unless the structure and physiology of the parts be duly considered.

Laceration of the rectum may be either partial or complete, that is, the inner coat or coats may, either one or both, be lacerated; or it may be that all of them are torn quite through. When the latter is the case, it most often occurs from external violence. We have known such injuries to have taken place through the brutality of individuals intentionally forcing fork-shafts, broom-handles, or similar agents, up the rectum; also by the accidental protrusion of foreign bodies into the same organ. We have likewise heard of its occurring at the time a horse is being "backraked," the parietes of the intestine giving way from the improper force used at the time. We have also known it take place in a mare when about to be served by a stallion. It is difficult to explain the reason why, but we know practically that from such causes as these the animal, as a rule, rapidly sinks, in spite of every treatment that can be adopted.

Partial laceration of the rectum may take place from impactment, for although this portion of the gut is capable of great dilatation, it nevertheless may, from the accumulation of fæcal matter in it, become so much over-distended as to lead to serious results. Some horses will not willingly void their fæces when being worked at a fast pace, and some, apparently, cannot perform the act even in the walk without stopping for that purpose; and there are doubtless other causes which may arrest this act, any of which might be the cause of over-distension of the gut, thereby tending to partial or total paralysis of the muscular coat, and which, if produced, would allow of a further accumulation to take place. Under such circumstances as these I can understand how, at the time a horse is lying down, or from a sudden fall, actual rupture of the two innermost coats of the rectum might take place.

I have conversed with those who are of opinion that inordinate contraction of the muscular coat upon the accumulated mass within, independent of other direct causes, is more likely to give rise to rupture. I am inclined, however, to think the former the most probable cause.

In the case in question, we find that the laceration was confined to that portion of the rectum which is not covered externally by peritoneum; therefore, the two innermost coats having given way, the external fibro-cellular one would constitute the only means by which the fæcal matter could be retained. This structure, from its increased vascularity, had acquired, on its inner surface, somewhat the character of mucous membrane.

In cases such as the above a cure can never be expected, and in those in which a laceration exists to a much smaller extent, the probability is that abscesses would form, which might result in the formation of incurable fistulæ.

RUPTURE OF THE BLADDER IN A MARE FROM FOALING, AND DISLOCATION OF THE FOAL'S NECK.

By W. Furnivall, M.R.C.V.S., Kington.

April 10th, 9 a.m., I was requested to attend at the Sheepcot Farm, distant ten miles from here, to see a brown, six-year old cart mare, that had dropped her horse foal fourteen days before her time, and who appeared to be in dreadful agony since a quarter past four a.m. I immediately responded to the summons, and on riding into the yard, saw the owner, Mr. Thomas Edwards, standing at the stable door. He told me the mare died half an hour after the messenger was despatched.

History.—This mare was in good condition, had gained prizes at three local Agricultural Meetings, for her symmetry and great power, and had had two foals prior to this one; but both were dead when dropped, although at their full time.

The waggoner entered the cart stable at four a.m., where the mare stood with five other horses, when he perceived the foal hanging from the mare, the hips being fast in the passage. He removed her at once into an empty stable, and called the owner. During the waggoner's absence the mare heaved violently (so the boy attendant on her states), and ejected the foal, which alighting on its head, dislocated the second and third cervical vertebræ, and it did not move afterwards. The mare then commenced throwing herself about and breathing quickly, striking at her abdomen with the hind legs, and when up, reeling like an intoxicated animal. She was bled, and had a bottle of "Day's Gaseous Fluid" (consisting principally of turpentine) given to her; after which she soon became worse, and fell down as if shot, and died shortly after.

Autopsy at 11 a.m.—Every organ was found to be perfectly healthy both in the thorax and abdomen, with the exception of the bladder, which was ruptured to the extent of three inches, and the urine it contained had necessarily escaped into the peritoneal sac; hence the great agony the animal evinced.

ACCIDENTS TO HUNTERS.

By W. Watson, M.R.C.V.S., Rugby.

Unavoidable circumstances having prevented my sending to you my usual paper on Botany for this month's Journal, I have ventured to forward you particulars of the following accidents to horses, which were brought under my notice during the last hunting season, hoping they will prove interesting to the readers of your Journal.

Fractured rib penetrating the right ventricle of the heart.

A black horse, six years old, the property of Colonel Harrison, of the Dragoons, was brought from Birmingham by rail to Rugby, on the morning of Thursday, November 18th, 1859, and ridden to the meet of the North Warwickshire hounds, at Bilton Grange, about two miles from Rugby. A fox was found, and the hounds went away fast. At the third or fourth fence, Colonel Harrison's horse fell with him, after getting over the fence; but on recovering, he appeared not to have hurt himself. The Colonel, however, being somewhat shaken, rode him quietly back to Rugby, fancying, as he did so, that the horse staggered a little, and had received a slight injury to the back. He was left at our stables, with orders to have some gruel given to him, and afterwards to be taken to the station to be put on the next train for Birmingham.

He had only been in the stable a few minutes, when a groom came in haste to tell me that the horse had suddenly fallen down, and he thought something serious was the matter. I went immediately, and was only in time to see the animal give a few faint sighs, and without a struggle expire.

By the request of Colonel Harrison, I made a *post-mortem examination* the same night. The only thing worthy of notice externally was the extremely pale and bloodless appearance of the visible mucous membranes, which, with the suddenness of death, induced me to come to the opinion that some large vessel in the vicinity of the heart had been ruptured. On removing the skin, bruises were found in different parts of the body, caused probably by the fall, but one in particular was noticed opposite the region of the heart, which induced me to open the thorax first, when I found the pericardial sac distended with blood. I next opened the sac, and having allowed the blood to escape, made a careful examination so as to ascertain what vessel had given way, but could find none, until upon removing the heart, I discovered a dark, ragged-looking wound near the apex of the right ventricle, sufficiently large to admit the finger, and which penetrated to the interior of the ventricle. Here was quite sufficient to account for the escape of blood into the pericardial sac; but the appearance of the wound contradicted the impression of a rupture of the heart itself; so upon making further search, opposite to the external bruise I found a comminuted fracture of the seventh rib, about three inches from its juncture with the sternal cartilage. The cause of death was doubtless the end of the broken rib having penetrated the heart at the time the animal fell, thus allowing the blood to escape and accumulate in the pericardial sac, until it mechanically obstructed the action of the heart, thus, as it were, drowning the heart in its own blood.

The cause of the fracture of the rib was some external violence, and might have been produced by the animal falling upon the stirrup-iron, or his own fore leg being doubled under him, and pressing against the part. Why I suggest these causes is from Colonel Harrison informing me that he examined the place on which the horse fell, and could find no stone or other hard substance likely to produce the injury.

Two cases of fractured Vertebræ.

On November 25th, 1859, a six-year old bay mare, the property of Captain Dettmar, was ridden by him from our stables a distance of ten miles, to meet the Atherstone hounds. At the second fence the mare dropped with her hind legs into a deep ditch, and was unable to get out. With assistance, however, after being in a considerable time, she was got out; and at first appeared unable to stand. After a time she rallied, and Captain Dettmar rode her quietly back to Rugby, a distance of nine miles. His exceedingly clever groom at once came to the conclusion that the mare's hind fetlocks had received a violent sprain, and proceeded accordingly to give them a good dressing with a powerful stimulating liniment known by the name of "White Oils."

On the following morning he found the mare lying down, and upon her getting up, he noticed that she reeled about and then fell down again. He became alarmed, and for the first time sought my assistance. I found the animal lying down in a state of comparative quietude, breathing natural, with a good pulse beating about 48 in the minute, and giving no evidence of anything serious being the matter with her, except the total loss of power in the hind extremities. It being evident that the back was the seat of injury, I ordered warm fomentations to the loins, gave a dose of laxative medicine, and made the animal as comfortable as possible. The mare fed well during the day on bran mash, &c., and appeared going on favorably at night, with the exception of a slight increase of the pulse. About three o'clock on the following morning, I was called up by the attendant, who said the mare was taken worse. I found her in a very restless and excited state, sweating profusely, pulse 120, breathing 40 in the minute. She continued in this state for about three hours, and then died.

Upon making a *post-mortem examination*, I found a fracture of the upper arch of the body of the fourth lumbar vertebra, the spinous and lateral processes of the same bone being broken in several places; also fracture of the spinous process of the third lumbar vertebra. The fractured portion of the body of the fourth lumbar vertebra was pressing upon the medulla spinalis, and its membranes, which were intensely inflamed, although not lacerated.

On January 19th, 1860, a black horse, seven years old, the property of the Rev. Mr. Cator, when hunting with the North Warwickshire hounds, received a suddenly injury to the back while galloping across a field. He immediately dismounted, and sent his servant with him to our stables. The servant had considerable difficulty in leading him a distance of three miles, in consequence of the animal reeling about, and being in danger of falling. Upon putting the horse in the stable, he almost immediately laid down, and in a short time, with a little difficulty, got up again; but in about half an hour he laid down again, and from this time appeared to have lost all power in his hind extremities. Entertaining but little hopes of his recovery, the owner requested that he might be destroyed, rather than prolong the animal's sufferings. He was therefore shot on the following day, and a *post-mortem examination* made, when I found a considerable bruise over the lumbar region, and, dissecting down, found that a separation had been produced between the sacrum and the last lumbar vertebra, the spinous process of which was broken.

It is somewhat singular that these two animals should have been able to have travelled such distances, the former being ridden nine, and the latter led three miles, after receiving such extensive injuries to the spine.

Effects of Coal Gas on a Horse.

A chestnut horse, eight years old, the property of Captain Dowbiggin, on January 24th, was left in one of our boxes at night, in a state of health, by his groom. Upon opening the door on the following morning, the man was almost overpowered by the escape of gas. The animal was then standing in the middle of the box, but he moved towards the door and pitched head foremost into the yard; he soon, however, got up again. I saw him shortly after, and found the body covered with perspiration, the animal breathing excitedly, pulse 80, feeble and oppressed, the *Schneiderian* membrane of a peculiar bright scarlet colour; and when made to move, he reeled about as if giddy. I had him placed in a loose open box, and gave him a diffusible stimulant, consisting of Spts. Ether Nit.; and although for a day or two he exhibited slight symptoms of giddiness, no further treatment was required.

It appeared that the animal (a mischievous one), during the night, had managed to reach the gas-pipe, and had broken it off, and the gas, not being turned off at the meter (as it should have been), had been escaping in considerable quantities into the animal's box. Moreover, the night being a cold one, the groom had stopped up the ventilators, so that the gas had no means of escaping from the stable. How long this had been going on we could not tell, but from the state the animal was in when found, it was evident the effects of the carbonic oxide and carburetted hydrogen gases would in a short time have proved fatal.

RUPTURE OF THE VESSELS OF THE MESENTERY OF A MARE.

By J. Anderson, M.R.C.V.S. and V.S. Artillery.

Dear Sir,—I sent to you, the other day, per South Western Railway, a box containing some morbid parts taken from a bay mare, eleven years old, belonging to No. 7 Battery, 8th Brigade, R.A.

She was taken ill on Saturday morning, the 25th February, when out at watering order. While going along the road, about one mile from the barracks, she dropped down suddenly on the ground, head foremost, kicked violently, blowed very much, and perspired profusely. The officer on duty ordered her head to be bathed with cold water, as he thought she had experienced an attack of megrims, and her body to be rubbed dry, as she was wet all over.

When first I saw her she was coming along the road, staggering like a drunken person, carrying her head very low, her nose almost touching the ground. She had to be supported by men on each side of her.

When she arrived at the barracks, I put her into a loose box. She immediately laid down, and remained very quiet for several minutes. The pulse was imperceptible, the visible mucous membrane were blanched, the eyes glassy, the mouth and extremities very cold; respirations intermittent, breathing sometimes at the rate of 60 in the minute, and then becoming quite natural. She appeared to be suffering very much, groaned occasionally, the perspiration running off the body, and she looked every now and then at her sides.

I came to the conclusion that she was suffering from internal hæmorrhage; I therefore gave the usual remedies, combined with Tinct. Opii in small doses, at intervals; had her legs well rubbed with stimulating liniment and bandaged, but could get no heat in them; wisped and clothed the body well, and threw up repeated enemas of tepid water. She rose several times, but was so weak that she could only with difficulty stand. She still kept her head low, and continued to get gradually weaker until one o'clock, when she made a tremendous rush towards the box door and there died. She lingered about four hours and a half.

I made a post-mortem examination shortly afterwards, and found her abdomen full of blood (five small pailfuls). The peritoneal lining of the abdomen was completely studded with ecchymosed spots; the mesentery of the small intestines was in several places quite black and thickened, and the vessels were ruptured; the intestine, opposite to the affected mesentery, was also black; on the external surface of the stomach, at its greater curvature, I found a fibrinous patch about the size of the palm of the hand, resembling in structure that found on the surface of the diaphragm. I was unable to find where the blood came from, except it was from the broken-up mesenteric vessels. It appeared to be venous blood. There was a large quantity of dark-coloured fluid in the pericardium. I had not the opportunity of measuring it, as the pericardial sac was cut through in taking out the heart.

I may state that the subject of this communication was considered one of the healthiest mares in the battery, was always in good condition and spirits, until two or three days before she died, when the driver observed her not to be so hearty as formerly. She had served in the Crimea, but since she came home has not been ill a single day.

REMARKS ON THE ABOVE BY ASSIST.-PROF. VARNELL.

There are only a few points in the above case necessary to be noticed. The conclusion come to by Mr. Anderson, at the time his attention was first directed to this case, namely, that the mare was suffering from internal hæmorrhage, was fully borne out by the post-mortem examination. Further, that the loss of blood depended upon a giving way of the coats of the mesenteric blood-vessels, there cannot be the slightest doubt. Indeed, an examination of the portion of intestine sent to us, with the mesentery attached to it, afforded us sufficient grounds to assert that such was the case. In proof of this, the space between the two layers of peritoneum, at the attached border of the intestine, was occupied by a quantity of effused blood, which had also become infiltrated between the coats of the intestine itself. Here and there were observed lacerations in the peritoneum, through which blood, apparently, had escaped; consequently the immediate cause of death is easily understood.

In a pathological point of view, the question that suggests itself is, What gave rise to this condition of the coats of the larger blood-vessels—for it was not confined to the capillaries—whereby a tendency to rupture was induced? Could it depend upon any structural change which had gradually taken place? or was it referable to the unhealthy condition of the animal generally, by which that part of the nervous system supplying the intestines became more particularly affected, thus inducing loss of function and its results?

We need not theorise upon what treatment ought to have been pursued beyond that adopted by Mr. Anderson, because the symptoms, as given by him, were of such a nature as precluded the possibility of therapeutics of any kind being of any avail.

DESIRABILITY OF THE ADVANTAGES RECENTLY OBTAINED BY VETERINARY SURGEONS IN THE ARMY AT HOME BEING EXTENDED TO THOSE IN INDIA.

India, *January* 16, 1860.

Gentlemen,—Allow me, through the medium of your pages, to suggest to the veterinary surgeons of Her Majesty's Indian army the desirableness of presenting a memorial to Government, in order to obtain the extension of the advantages of the recent warrant to our service. It is much to be regretted that we have no head to our department, or anything corresponding to the Principal Veterinary Surgeon of the British army. If we wish for anything, we must ask for it ourselves, as there is no person to represent us.

Why should we not draw up a petition at once, get the signatures of all who are interested in the matter, and forward it through the proper channel? The surgeons of the Indian army have done this, and I think the veterinary surgeons may safely follow their example. According to the present state of things, a veterinary surgeon of Her Majesty's British army out here, of five or six years' service, may rank senior to one of Her Majesty's Indian army of nineteen years' service! This is hardly fair. Again, one of fifteen years' service in the former may rank senior to a man of thirty years' service in the latter. It is rather humiliating, too, to know that a young beardless lieutenant of eighteen can take precedence of a veterinary surgeon of ten years' standing. By the new warrant this anomalous state of things is quite changed.

Surely we who serve the fifteen (at least) best years of our lives out in this detestable country can, with all fairness, ask to be placed on the same footing as the veterinary surgeons of the British army.

Trusting you will give this a corner in the *Veterinarian*,

I am, Gentlemen,

Yours very truly,

A Subscriber.

To the Editors of the 'Veterinarian.'

CASE OF INVERSION OF THE BLADDER OF A MARE.

By C. Moir, V.S., Glasgow.

On the evening of the 24th April, a grey mare was brought into my yard, labouring under symptoms of inflammation of the bowels. I abstracted blood, and administered a sedative draught. After she had been in the stable about an hour, she commenced straining violently, when I repeated the draught.

A short time after, I observed something protruding from the vagina, which I at first thought was a foal making its appearance; but on examination, I found it was a case of inversion of the bladder; the os uteri was also dilated about an inch. I tried to return the bladder, but the straining was so great that I could not manage to do so. I therefore sent for Mr. W. Anderson, to ask him if he could suggest anything; but before he came the owner made his appearance, along with Mr. Howatt, V.S., Pollockshaws, who could not believe it was the bladder protruding. When Mr. Anderson arrived, I requested him to examine the case, which he did, but was unable to get the bladder back into its proper position. The mare continued gradually to sink, and died about an hour after.

I went up the next morning to the knacker's to make a *post-mortem examination*, but my message, desiring them to keep the mare till six o'clock, had not been delivered. I was, however, just in time to see the last of her removed, and to obtain the bladder, which is now in my possession. I made inquiries of the man, who told me that the bowels were highly inflamed, but that the lungs, liver, and kidneys were healthy. So far as I can learn, the owner had the mare about three months, and about six weeks since she had an attack of cholic. She also had been struck by a cart tram somewhere between the hind legs, but to all appearance at the time this did not hurt her.

This case appears to me to be rather a curious one, as the bladder was turned completely inside out, and yet its neck did not appear to be dilated to any unnatural extent; for, on trying to return the bladder, I could only get the points of two of my fingers through the neck.

COMMUNICATION FROM MR. C. MOIR, HON. SEC. TO THE WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

GLASGOW; *June 12th*, 1860.

GENTLEMEN,—I feel sorry that I have to trouble you again about the last general meeting of the *West of Scotland Veterinary Medical Association;* but as Mr. Gamgee has seen fit to take upon himself (and that without permission) part of the duties of the secretary, and blown his own trumpet both far and near, and would fain make those believe, who don't know better, that his report is the only fair statement of what took place at the society's meeting, by stating that the report was drawn up by a reporter; now, the only reporter present was one for the '*North British Daily Mail*,' and he was so by Mr. Gamgee's invitation; but he had no right to introduce him in the clandestine manner he did. He ought to have given his name to the chairman, who alone had the right to grant admission to a stranger. I inclose you the report which was drawn up by this party, and which appeared in the '*North British Daily Mail*' the day after the meeting. I was called upon to contradict it, which I did; but they did not think fit to affix the prefatory matter I sent them, which I inclose a copy of.* Mr. Gamgee stated that he had no cause to heed the attacks which had been made upon him by Messrs. Cally and Balfour; if so, why does he take so much trouble to bring the matter before the public by means of the newspapers, and the profession through the pages of the 'Veterinarian'?

* *To the Editor of the* '*North British Daily Mail*.'

GLASGOW; *April 4th*, 1860.

SIR,—As I have not had any answer to my application, regarding the author of the remarks which appeared in your paper of Thursday last, headed "Veterinary Obstetrics," and as he has not seen fit to correct what he must know to be a gross misrepresentation of the society's proceedings (the society was got up expressly for the purpose of creating a friendly feeling of emulation among the members, and also for the mutual discussion of proposed subjects), you will easily perceive what an amount of dissatisfaction the publication of the article in your paper of Thursday last has caused, and is still likely to cause, among the members of the veterinary profession in the West of Scotland, if allowed to go uncontradicted. The following is an outline of the society's proceedings, which you will confer a favour by inserting at your earliest convenience.

[The paper referred to by Mr. Moir has not been received by us.—*Editors.*]

He also tries to make it appear that the members of the society coincided with him in what he had done, and, further, that he came off victorious in an affair which the association had nothing to do with. The only remarks which were passed upon his case were to the effect that, notwithstanding everything which could be done, life was sometimes lost.

Mr. Gamgee's report is far from correct, as one of the cases mentioned by Mr. Anderson was Mr. Cockburn's, and he went to ask the assistance of Mr. Anderson and the late Mr. M'Lean, and during his absence the owner had called in the late Mr. M'Robie, who had destroyed the mare by cutting her throat before they got back.

Again, he says, "Mr. Anderson's remarks about the teaching of Obstetrics in our schools being deficient, I can bear out," &c. Mr. Anderson never made use of expressions which would lead any person to suppose such was the case; he only said that he had never heard of a case of "twist in the womb" before he met with it himself, not even at the college. And Mr. Aitken was the only person present who appeared to have met with any such; and the way he operated was stated in the last outline of proceedings which I sent you.

Then, again, he makes it appear as if Mr. Aitken had said, he always amputated at the knees. The remarks Mr. Aitken made were to the effect that, after he had tried every means to bring the fœtus into a proper position for extraction, and those failed, he cut through the knee, leaving the lower part of the leg attached to the skin; he then separated the skin up over the shoulder, took away the whole of the leg from the knee up, and then, by means of an instrument fixed to the head and the lower part of the leg, which was attached to the skin, he drew the fœtus away.

A good deal more might be said, but I think this will be enough to show that Mr. Gamgee does not hesitate to "cook" a report, if it is to make himself appear clever in the eyes of the profession, and also to serve his own ends.

The members of the society did certainly sympathise with Mr. Gamgee when his name was brought before the public in connexion with an unfortunate case, but they as certainly feel annoyed at Mr. Gamgee's trying to make a tool of the association to suit his own ends.

Charles Moir,
Honorary Secretary.

To the Editors of the 'Veterinarian.'

A NADEAH CALF.

By Lieut. W. C. Mac Dougall, Stud Department.

Saharmpoor; *March* 9, 1860.

Dear Sirs,—If the inclosed is worth insertion in the *Veterinarian*, you are welcome to it. Few people in India are without animals of some kind, and many practical and experienced officers could give much valuable information to the veterinary surgeon, if they would only take the trouble. I have often seen page after page written in the *rough*, of strange and curious cases, but the *fairing* out has been procrastinated from day to day, until the papers have lost their interest, and never reached your journal.

Yours faithfully.

To the Editors of the 'Veterinarian.'

A NADEAH CALF.

As you do not hear much about Indian horned cattle, I send you a description of a calf, born on the 1st instant, by the government pure-bred Nagore bull, "Bahadoor Sing," out of my spotted cow, "Mary," her breed being half Hereford and half Scinde.

It was reported to me by my old servant, early in the morning of the 1st of March, that a calf had been born with a "tongue" on its back, and that in consequence I might hope for very much good luck; as the god "Mahadeo" had thought fit to select from my flock an animal for his own especial riding, and had marked the same in his own peculiar way. Upon my visiting my cow-house, I found that the calf was a very fine red bull, with an excrescence of skin, covered with white hair, hanging from the top of the hump, about seven inches long and of a soft nature, in appearance resembling a child's stocking, dangling from side to side as the animal moved, but in no way unsightly or repulsive to look at. The natives are flocking from miles round to see this calf, and I am told that if the fakeers (holy mendicants) can only get the chance, they will be sure to steal the animal, for the purpose of making money by showing it at villages and fairs.

Animals of this description are called "Nadeah," and are supposed to be very holy. They are usually exhibited covered with a kind of earth-coloured cloth, trimmed with cowrie shells, and the parties owning them derive a livelihood by showing them.

I have frequently heard of this malformation in cattle in India, but had never before an opportunity of seeing one; and I do not know whether the same is to be met with in England.

The calf is useless to me, as no native will drive or use a "Nadeah" bullock for any agricultural purposes, it being considered unlucky to use an animal upon which Mahadeo has placed his mark.

The god "Mahadeo" is believed by the Hindoos to have ridden upon a bull, called "Nadeah," who was capable of changing his shape, calling into play as many legs or horns for offensive or defensive purposes as he might find necessary; and thus any animal with unnatural or extraordinary marks is supposed to have some affinity to the great "Nadeah" of Mahadeo.

ON PLEURO-PNEUMONIA IN CATTLE IN AMERICA.

By C. M. Wood, V.S., Boston, U.S.

In a communication forwarded by me to the *Veterinarian,* and dated Feb. 22d, I described a disease in cattle appearing in the vicinity of this city. I have subsequently had reasons for believing that some opinions therein expressed by me should be modified; recent examinations having led me to this conclusion.

On the 27th of February I was requested to visit several herds of cattle, seventy miles distant from this city. They presented all the symptoms of "pleuro-pneumonia" as described by the most popular writers on the subject in Europe.

The disease was of a very malignant type, although its course was more protracted than it usually is in Europe. Nevertheless its insidious invasion, and its fatal termination, seem to bid defiance to the skill of all the ablest practitioners in the country.

Since my visit to the affected district a considerable excitement has taken place among the stock-owners, and they are holding meetings of the inhabitants of the towns to petition the State Legislature for indemnity, on the condition that, if this be granted, they will exterminate the whole of their herds, and thus rid themselves and the State of this pest.

In my former article I mentioned the importation of four cows from Holland, arriving in Boston on the 23d of May last. On their arrival the purchaser found them affected with a disease hitherto unknown in this country. This disease, as it now appears, was communicated to *his* cattle; for in June, one of the present sufferers bought of him three calves, and took them to his farm, seventy miles distant.

One of these calves, in a few weeks after, died of this disease, and communicated it to others of that herd. Thus, by an exchange of cattle from one farm to another, the malady has been propagated to six of the best herds in the State. Many have died, and many more are sick, and almost worthless.

Now, as it seems to me, unless the Legislature pass a prohibitory law against the introduction of cattle into the State, without a certificate from a practical veterinarian of their healthy condition, and especially of their freedom from this disease, I do not see how its course can be arrested until it dies out of itself for the want of subjects for its ravages. And also, if cattle are found to be diseased on their arrival, that they shall be subjected to a cattle *quarantine* until the danger of their spreading the disease has passed.

I am led to make these remarks, from knowing that many of our wealthiest agriculturists are yearly importing cattle from various parts of Europe ; and unless something is done, which will be obligatory on *all*, there can be no hope of keeping out of this country those diseases which are so fatal abroad.

Thus, it becomes the duty of veterinary practitioners, on the discovery of these foreign pests, not only to understand their management *à priori*, but also to advise those sanitary measures that will prevent their introduction; for, without proper attention be given to the subject, medicines, as we find, may be resorted to without any satisfactory results.

The disease described in my former paper, among Mr. Chenery's cattle, had, as it now appears, when I first saw it, on the 26th of October, run its disastrous course in that town. Compared with the present one, the disease that then existed was much less virulent; for since that time, with the attention given to ventilation and other sanitary measures, Mr. Chenery has lost no more cattle.

The disease being new in this country, and not having seen it in its most virulent form among Mr. Chenery's stock, I wrote my communication before the nature of the disease had been fully investigated.

By this confession, it will be seen that I am not anxious to shield myself if I have made a mistake, but desirous rather to spread abroad the truth, and dissipate error; therefore, when I discover any error in my opinions, I seek not to cover it, but to confess it, and thus prevent others from falling into the same.

> "I wish to know what is right; nor only so,
> But always practise what I know."

Facts and Observations.

THE SORGHUM SACCHARATUM, OR NORTH CHINA SUGAR CANE.

It was anticipated that the above new graminaceous plant would prove an admirable green food forage for horses and cattle.

It has been grown during the past season in many places in England, more perhaps in the way of experiment than otherwise.

At the Royal Agricultural College Farm, Cirencester, it was cultivated, and analyses made of it by Dr. Augustus Voelcker, who states that cattle seemed at first not to relish it, but ultimately they became very fond of it. This arose from the fact that, in the early period of its growth, and up to the month of August, there could not be detected any appreciable quantity of sugar in it. The taste of the plants was then anything but sweet, and horses and cattle, to whom they were given, at first refused them altogether, and only after some time partook sparingly of them.

The month of September happening to be warm, the plants continued to grow vigorously, and formed perfect stems; and when analysed on the 26th September, 6 per cent. of sugar was found to be present, and which was perceptible to the taste.

Cattle, being now supplied with it, ate it greedily, and to all appearance did well upon it. The proportion of sugar in the whole plant was about the same as that existing in carrots.

Professor Buckman observed that, whilst the main stem was quite sweet, the side shoots were still bitter. He therefore recommends that the central stem should be cut down, when, he says, the lateral shoots will make rapid growth, and gradually become sweet; by which simple expedient the full benefits from the whole of the crop may be secured.

The transformations that take place in the plant are very interesting. In the month of August more water existed in it than in September, with a total absence of sugar, instead of which mucilage and pectin were ascertained to exist. These principles gradually disappeared during the month of September, and gave rise to the formation of the sugar.

Dr. Voelcker considers the larger amount of nitrogen in the immature grass is also worthy of notice, there being one per cent. less in the plants analysed by him in September than in those examined by him in August. Respecting this, he observes: "We have presented to us a fresh proof that the nutritive value of food of the same kind is not regulated by the amount of nitrogen which it contains, but rather by the proportion of sugar. Indeed, I think it may be safely asserted that all green food, and likewise turnips and other roots, are immature, and more or less unfit for feeding, when they are rich in nitrogen. Fully ripe and very nutritious roots and grass always contain less nitrogen than the same food in an immature state, or than food of indifferent feeding qualities."

Dr. Sicard, of Marseilles, has produced from the Chinese sugar-cane many interesting substances, such as various kinds of flour made by grinding the seeds; specimens of sorgho bread; of sugars of different qualities; of beer, cider, vinegar, and brandy, from the juice; several coloured dyes, a peculiar acid—the sorghotic—and other preparations. He has likewise written and published two volumes, containing a description of the plant and of the processes by which it is to be utilised.

RAVAGES MAKING BY PLEURO-PNEUMONIA IN AMERICA.

In a private communication, dated the 18th of May, 1860, received by Mr. Varnell from his friend, C. C. Gricè, M.R.C.V.S., of New York, U.S., he states that "pleuro-pneumonia" is making such ravages among the cattle, that great numbers are being killed to prevent the spreading of this disease.

PREVALENCE OF RABIES IN AMERICA, &c.

In a letter received from Mr. H. Corby, of St. Louis, U. S., we are informed that "rabies has been very prevalent in the western country of late; attributable," he presumes, "to the large number of idle dogs everywhere kept, or, rather, allowed to prowl about without much keeping.

"In fact," he says that "the dog nuisance has become so great as to compel the sheep-farmers to apply to the legislature, both in this, the Missouri State, and also in Ohio, for some protection against the losses which they sustain by reason of the worrying of their sheep by dogs.

"In Ohio," he believes, "that an act to regulate the keeping of dogs was passed; but in Missouri the legislative body thought that the anti-dog movement had an anti-slavery tendency, and so feeling that the security of their nigger property ought to override all other considerations, they left the sheep to take care of themselves.

"Ohio, being a free State, was not troubled with any such scruples."

During the past month we are told that at Lyons, in one week, the thermometer suddenly rose from 5° to 35° C.; that serpents and vipers became all at once common in the country, and in the towns there were several cases of canine madness.

FORMATION AND DISAPPEARANCE OF GALL-STONES IN ANIMALS.

Audral states, on the authority of certain butchers, that when they open the gall-bladder of sheep and oxen, in the months of March and April, they frequently find gall-stones in it, but they rarely meet with them in the autumn.

The explanation, as given by the butchers, is as follows — From May to November the animals are fed on green food, but during the rest of the year on dry food. While freely wandering in their pastures they have no attacks of cholic, and no gall-stones, form; but when shut up in stalls, these gall-stones form, and they have attacks of cholic. Hence it follows that exercise both favours the removal of these concretions, and prevents their formation by burning up the fatty matters.

RELATIONSHIP BETWEEN THE BONE-CELLS AND THE GLOBULES OF THE BLOOD.

The cells of bone differ in size in almost every animal; so that the microscopist is enabled, by the examination of a section of a bone, from its structure to determine whether it belonged to a man, an animal, a bird, or a fish.

"We are indebted," says Dr. Lankester, "to Professor Quekett, of the College of Surgeons, for having pointed out a remarkable fact with regard to the bone-cells, and that is that they correspond in size with the size of the blood-globules. Animals contain a quantity of cells called blood-cells, which vary in size in different animals. In the human being the globules are the 3500th part of an inch in diameter, and the bone-cells are the 2000th of an inch. In birds the bone-cells are about the 5000th of an inch in diameter, whilst the blood-globules are the 6000th. In reptiles the globules are not more than the 700,000th of an inch in diameter, and the bone-cells not more than the 500,000th. There is then a general correspondence between these two bodies, but there are numerous exceptions, and the law does not hold in all cases."

GENERAL DIFFUSION OF ARSENIC.

Dr. Griffin, in a letter to the editor of the "*Chemical News*," says—"We live surrounded by means of unconsciously absorbing traces of arsenic. We breathe arsenicated dust from the green flock papers on our walls; arsenical *papier moure* lies soaking on dishes afterwards used for culinary purposes; arsenic is contained in glazed green papers which are often employed for wrapping cocoa and other articles of food, and confectioners supply it wholesale in their cake ornaments. The very drugs prescribed for our relief, especially the compounds of bismuth, are tainted with arsenic, and it has even been detected in carbonate of soda. Nay, more, even our vegetable food, as Professor Davy has lately pointed out, may be contaminated with arsenic derived from superphosphate manure, and there is probably no drinking water containing iron without a trace of arsenic as well. Now, metals are remarkably prone to become localised in particular organs; the "dropped joints" of painters are found to contain lead permanently combined with the tissue, and a course of iodide of potassium will bring off abundance of mercury by the urine years after its administration. It would appear by no means improbable that traces of arsenic occasionally introduced into the system may be stored up in like manner (especially in the liver), till in the course of years the amount becomes appreciable. Many aquatic plants contain much iodine, all gradually absorbed from the water in which they live, though it cannot be detected therein from the minuteness of its quantity; the vegetable tissue, however, accumulates it and retains it persistently. So may it be with arsenic in the human body; and I think toxicologists should pause before affirming that it had been criminally administered unless a proportionate amount of the poison is found."

PRODUCTS OF SLOUGHING WOUNDS.

At a recent meeting of the Manchester Literary and Philosophical Society, Dr. F. C. Calvert stated that he had been induced some eighteen months ago, by Mr. J. A. Ransome, to make some researches with the view of ascertaining the nature of the products given off from sloughing wounds, and more especially in the hope of throwing some light on the nature of the contagion known as hospital gangrene. He had, therefore, fitted up some apparatus to condense the various products given off from such wounds, but the quantity obtained was so small, that he deemed it advisable to collect the products given off from a large quantity of meat during putrefaction, and he had found these to be quite of a different nature from what has been hitherto generally supposed. For instance, he found that no sulphuretted nor phosphoretted hydrogen was given off, but, on the contrary, alcaloids containing the sulphur and the phosphorus. He further added that he had great hopes, in time, to be able to discover the nature of the products called miasms. He also stated that he was now engaged in examining the liquids and solids produced during putrefaction, and would at some future time lay the results obtained before the society.

THE VETERINARIAN, JULY 1, 1860.

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

ON VIVISECTIONS AND CRUELTY TO ANIMALS.

WE were much pleased, on reading the last "Report of the Annual Meeting of the Society for the Prevention of Cruelty to Animals," to find therein stated that, while it had sister societies in Scotland and in Ireland, branch societies were being formed in the large towns of England and also on the Continent. Further, that "the system of vivisection, as practised in the Veterinary Schools of France, has for a length of time engaged the attention of the committee, who, after much correspondence with the Paris Society, have come to the conclusion that the only way they can hope to do anything effective to stop the practice is by means of a deputation of their body to France, for the purpose of personal conference with the French authorities, or, if needful, with the Emperor himself on the subject. They have accordingly nominated the deputation, who have arranged the time of their departure so as to enable them to be present at the annual meeting of the Paris Society."

Sincerely do we hope they will accomplish that which is so desirable, if only on the grounds of common humanity. We possess no feelings in common with those who can needlessly torture God's creatures; nor do we believe any man has a right to do so, while he will be held accountable for it hereafter.

> "Many a crime deemed innocent on earth
> Is registered in heaven, and these, no doubt,
> Have each their record, with a curse annexed."

It was for our use, and not for our abuse, the lower animals were created.

We are also of opinion that no good—at least, no commensurate good—has resulted from the torturing pangs to which animals have been subjected experimentally by physiologists and others. Their writhings, and the altered action induced by the methods adopted, are as likely to lead to false as correct inferences, and perhaps even more likely.

Again, do they not tend to brutalize the mind, by hardening the feelings of the operator? It is true the surgeon should be firm and unhesitating in the performance of an operation, blending gentleness with decision; but this, surely, may be as readily acquired on a dead animal as a living one, and, indeed, we opine, more so, since it is his knowledge of the anatomy of the part that will enable him to act without wavering or fear; and this can only be acquired by dissecting the dead animal—portions of which have, over and over again, to be investigated by the aid of his scalpel, so that he may become conversant with their intricate structure. It is thus, and thus alone, that he will become a successful operator.

A writer in 'The Lancet' has said, "We have not the slightest hesitation in asserting that the vivisection of animals is altogether unnecessary to form the surgical operator. A thoroughly sound and practical anatomist, who has practised on the dead body, and who has acted the part of assistant to operating surgeons for a sufficient length of time, is fully prepared to perform, himself, all the operations of surgery without practising on live animals. Such a course *even we* should call unjustifiable cruelty."

It may, however, be advanced in extenuation,—It is not so much in an anatomical point of view, as a physiological one that vivisections are resorted to. This we have already, in some measure, met, by questioning the correctness of the inferences deduced. But, allowing the act to be a necessary one, and

"A necessary act incurs no blame,"

can the repetition of the same cruel experiments, session after session, be required? A fact remains a fact for ever.

It is to be feared, moreover, that too often some fancied theory has to be bolstered up; and the experimenter, becoming enthusiastic, bends and twists the result to suit his purpose. Then some one who is fond of disputation, or one who may even take the higher ground—love of truth, demurs both to the manner in which the experiment has been performed, and to the deductions from it; and he repeats it in his way, and thus another poor unconscious brute is made to writhe under the surgeon's knife. Here, again, we quote from our cotemporary:—"We do not think that it is necessary to illustrate physiological truths by vivisections whenever physiology is taught. When once a physiological truth has been firmly established by the united testimony of physiological experimentalists and writers, their testimony is, in our opinion, quite sufficient for ordinary pupils." We are quite contented to accept this position.

We might further object to the kind of animals experimented on, believing that from this errors often arise, since where similarity of structure is not, there cannot be similarity of function. Again, there is a peculiar susceptibility in some animals to be acted upon very different to that possessed by others.

It is true—

"If man's convenience, health,
Or safety interfere, his rights and claims
Are paramount, and must extinguish theirs."

Yet we have still to learn that corresponding benefits have resulted from the many and repeated experiments made on the lower animals, whose consciousness of kindness intended, even when operations are being performed on them, is exemplified in the following instances, as well as many others that are recorded among 'anecdotes of animals.'

"A scientific friend once mentioned to the writer a very fine instance of self-command, and of generous confidence in the real tenderness of the hand that was inflicting pain. The informant, an inspector of army hospitals, was with a branch of our forces in India at the time referred to. There was a magnificent elephant, of the largest size, attached to the artillery corps. The noble creature was suffering from an enormous tumour, which had formed at the back of the neck. All curative means had failed, and it was decided that a very formidable operation must be performed. There was great danger connected with the attempt, on account of the vast irresponsible strength of the elephant. Our friend determined that his own hand should be the one to test the creature's power of endurance, though the peril to himself was of course imminent. At the appointed hour, the elephant was led out. His attendant stood in front of him, and gave him the word of command to kneel down. Down lumbered the huge mass of unimpaired strength. Not a rope, not a chain, or bond of any kind was cast about him. Our friend approached, and made a fearfully deep incision. The elephant heaved one great sob from the depths of his panting chest, and recognising in a moment the meaning of that sudden agony, he quietly *leaned over* towards the operator, in order that he might have better command over his work. With the exception of this single movement, he never stirred or gave sign during the whole course of the operation. Surely there is moral grandeur in this scene, and it is a relief to one's feelings to know that the courage of the skilful operator and of the noble sufferer were repaid by complete recovery.

A fine black retriever dog, of our acquaintance, once met with a painful accident. He immediately betook himself to that one of his two mistresses in whose surgical skill he seemed to place the most confidence, and she bravely removed the damaged and useless claw. Ever after this, if he had the slightest ache or pain, he used to betake himself to her as to a general practitioner of ascertained ability.

It is almost inconceivable that any one should be found, who can wilfully ill-use any of God's creatures, when they prove themselves to be capable of such a fine appreciation of moral motive."

Since writing the above, the following has appeared in the daily papers:—

"A numerous meeting of the Paris Society for the Protection of Animals was held on Monday, at the Salle des Arts et Metiers, at which a deputation from the London Society was invited to attend. The deputation consisted of Sir John Scott Lillie, Professor Spooner, the Rev. Mr. Jackson, and Mr. Adam Smith. Various interesting speeches were delivered in favour of humanity, Christianity, and civilisation all over the globe—objects which both Societies had in view. Sir J. S. Lillie, on being called upon, drew their attention from the lower to the upper class of animals, by reminding his hearers that, as the proposed object of both

Societies was the protection of both classes of animals, they should be advocates of peace, otherwise they would be deviating from the principles they professed, as by the doctrines of the Christian religion the horrors of war were denounced as the greatest of calamities. That the two most enlightened nations on the face of the earth, consequently, should support these doctrines. That if wars were, in certain cases, considered necessary evils, as the forerunners of permanent peace, they should be submitted to—as, for instance, that in which both their nations were then co-operating for the introduction of humanity and civilization, and commercial relations with the Chinese, or the recent wars of their Emperor for relieving the Italians from the oppressions and cruelties to which they had been so long subjected. A permanent peace was, therefore, what the Emperor evidently had in view, when he declared the Empire to be the emblem of peace. As the majority of that meeting was composed of the fair sex, he had no doubt they would concur in this view of the case, as, although not exposed to such immediate dangers in the field, their sufferings were of a more protracted nature. When a man's life ended, his sufferings here ended also, whereas those of mothers, wives, and daughters only then commenced. The influence of that sex should, therefore, be constantly exercised in favour of that permanent peace by which the tranquillity and prosperity of all enlightened nations would be best consulted.

"The applause which accompanied these sentiments drew tears from several of the ladies present, who had evidently experienced in the late wars the losses adverted to. 'God save the Queen' was then played by a military band in attendance, and the meeting shortly afterwards broke up. We may add that the feeling of the meeting, which was crowded to suffocation, was decidedly in favour of peace."

We hope to be able soon to report the favourable results arising from this interview between the two Societies.

THE ELECTION OF J. WILKINSON, ESQ., PRINCIPAL VETERINARY SURGEON TO THE ARMY, AS PRESIDENT OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

"Honour to whom honour is due," is the injunction. The unanimous election of Mr. Wilkinson, principal veterinary surgeon to the army, to the office of president, by the Council of the Royal College of Veterinary Surgeons at their last meeting, is an act which is alike honorable to both parties.

Very lately, Mr. Wilkinson has given proof of his desire to promote the interests of the profession by the earnestness with which he laboured to advance the position of the veterinary surgeon holding a commission in her Majesty's service, and to augment his pay; and happily success has crowned his efforts.

Few know the difficulties attendant on effecting changes connected with government arrangements. Not only have long usages to be contended against, but it is imperative that the "needs be" should be shown, and the corresponding advantages pointed out, before any disturbance of them is allowed to take place. The routine of official authority can be departed from only when necessity compels. Many objections are raised, and numerous obstacles, real or imaginary, have to be grappled with. 'Tis like a ponderous machine which has got into deep ruts; it requires long and steadily continued traction to move it out. It, too, generally, is a work of time, and he is fortunate who lives to see the accomplishment of his wishes.

There yet, however, remains more to be done; and we shall be disappointed if the year of office of one we have so long known in the profession, and esteemed, closes without his taking not only some steps towards the attainment of it, but making a great advance in it. We are not unacquainted with his interests and his influence; but we also know that he is a cautious man. He acts warily; being conscious that much circumspection is necessary, and that by one false move made at the beginning, the game is often lost; or if a wrong inclination be given at the onset, the goal is not reached. Rarely does he express an opinion before he feels almost confident that his hopes will be realised. We have sometimes thought that he occasionally carries this to an extreme; but we have no right to judge any man, since all of us have our peculiarities, many of which we are unconscious of. Yet surely this cautious mode of procedure, this desire clearly to foresee the result, is to be preferred to that impetuous action which often defeats its intended purpose, or the sanguinely indulging in anticipations which often prove "a delusion and a snare;" for by them the expectation becomes raised so high, that should a failure or delay occur,—and sometimes this will be the case despite all the care manifested,—the disappointment is rendered greater, and loud and deep are the denunciations.

We are therefore contented to leave the matter in his hands. He will know to what we more especially allude: *verb. sap. sat.* We are nevertheless most anxious that those privileges should be early secured by which we feel assured the profession must in the end be advantaged. We add no more, remembering the motto—

"Amicitia semper prodest."

OPIUM.

Opium, says M. Trousseau, is one of the most sovereign remedies of the materia medica; and it is, perhaps, the pharmaceutical substance which may do the most injury; it is used every day and it is strangely abused. A physician, *homme d'esprit* as well as a *savant*, Dr. Pidoux, has called opium the "knout of the therapeutist." It is, in fact, the frustigation inflicted on all patients that suffer and complain. To administer opiates too readily is the work of the impatient and ignorant physician. It is a handy therapeutic, which all minds can make use of—is that of . . . brutally imposing silence on a painful symptom.

Extracts from British and Foreign Journals.

ON THE GENERATION OF POISONS IN THE ORGANISM PRODUCTIVE OF DISEASE.

A SERIES of interesting lectures, by M. Claude Bernard, is being published in the *Medical Times and Gazette*, "On Experimental Pathology and Operative Physiology."

From a recent one we extract the following observations, as appertaining to our domain of science.

It appears from experiments instituted by Claude Bernard that animals debilitated by want of proper nourishment submit less readily to the agency of *certain* poisons than others in a vigorous state of health. But while this is the case, arising from the rapidly increasing debility of the nervous system, they, on the other hand, become obnoxious to the action of morbid influences of a totally different character. He says it has been found that similar affections always have a strong tendency to arise in animals in a low state of health. Thus the itch (mange) a disease which frequently prevails among horses and sheep, is scarcely ever found to attack animals in good condition; as in man, the lower classes are known to be a prey to vermin, especially in childhood and old age.

The decrease of nervous power equally constitutes a predisposition to putrid, contagious and virulent affections; a fact well known to veterinary surgeons. That the chemical composition of the blood should incessantly be modified, is one of the essential conditions of life; repairing, as it does, the daily losses of the economy, and renewing the elements of all the tissues which enter into the system; and the stronger are the animal's vital powers, the more rapid are the successive changes of the blood. The uninterrupted continuance of the circulation is, therefore, in such animals of greater importance than in many others, since it cannot stagnate without promptly acquiring septic properties. As the nervous system presides over all the phenomena of life in which motion is concerned, as soon therefore as the nerves are impaired, circulation languishes, and the chemical composition of the blood becomes thereby liable to important changes. If, therefore, it be our purpose to preserve an animal from the action of woorara, or similar poisons, we must lower its forces; but if, on the contrary, we wish to guard it from contagious diseases, we must increase them by all possible means.

These septic bodies, or specific poisons, are almost invariably organic substances, and are produced within the organism. It would appear that in several cases the noxious substance prevails throughout the economy; in other cases we only discover it in certain fluids. The virus which produces hydrophobia belongs to this class; it resides exclusively in the animal's saliva. We are not yet aware whether any one of the salivary glands is its peculiar seat, or whether it is indifferently secreted by all of them. No experiments have been tried on this point; but it has been experimentally proved that the venomous principle does not exist in the blood, since transfusion does not convey the disease from a mad dog to a healthy one.

M. Claude Bernard goes on to observe, "it is a singular fact, and one which pre-eminently deserves our attention, that in so general a disease, the virus, which is alone capable of transmitting the affection, should be exclusively localised within one single apparatus, without existing in the blood at large. Yet, if we reflect upon the question, we discover, in the physiological state, a great many similar dispositions; the principles which concur in a vast number of physiological functions; pepsine, ptyaline, and the active principle of the pancreatic juice, are they not created by special glands? and is not the venom of serpents, which does not exist within the blood, produced by a special apparatus? Viewed in this light a mad dog resembles a viper or a rattlesnake.

But, on the other hand, there exist several virulent diseases, in which the blood really appears to contain the morbid principle. This is the case with the glanders; and it is a well-known fact that healthy animals may be infected with the blood of a diseased horse, as well as with the slimy matter that escapes from the nose and mouth.

But another particular, which will, perhaps, excite astonishment, is that the normal secretions, bile, saliva, gastric juice, and so forth, do not appear to contain the slightest vestige of this poison; while, on the other hand, the pathological fluids appear to be impregnated with it, and possess the property of transmitting the disease to sound animals—a fact experimentally proved with regard to pus, the fluid contained in a hydrocele, and various other morbid secretions. For this reason alone are the autopsies performed on animals that die of the glanders attended with so much danger; the virus pervades the whole system, and the slightest wound is sufficient to inoculate the complaint.

We need not, however, be astonished at this singular property; for why should not certain morbid principles be in this manner rejected from all the secretions in which the normal conditions remain unimpaired? The same thing appears to take place with respect to the contagious pneumonia of horned cattle. We are aware that volatile emanations transmit the morbid principle; but experiments have been tried (in Belgium) for the purpose of inoculating it directly to animals, as a preservative against the disease. Something similar to the process of inoculation in the smallpox was expected to result from this; it was then discovered that neither the animal's blood, nor any of the fluids of the economy, was endowed with the property of propagating the complaint. It appears to have chosen the lung for its exclusive seat; and the liquids therein contained, pus, lymph, etc., are alone endowed with the property of transmitting the complaint. The intense local inflammation which follows the operation sufficiently testifies to the noxious properties of this virus; and when, in order not to spoil the animal's flesh, the tail is selected as the point where inoculation is to be performed, the subsequent inflammation frequently causes it to mortify.

Here, then, we have another virus which exclusively resides in the tissue of the lungs, and is not found in the blood at large; but even in the normal state a great many substances are found in various tissues, which do not exist in this fluid. Thus, muscular flesh contains a large amount of salts of potash, while scarcely any trace of them is found in the blood; in a word, the various bodies found in different parts of the economy are not invariably represented in the torrent of the circulation.

The history of specific diseases offers, therefore, nothing which cannot rationally be explained; it now remains for us to discover the physiological process by which a virus may be originated. Nothing is easier than to produce putrid affections in sound animals. Thus, when transfusion is performed under the ordinary conditions—when the blood is conveyed directly from one animal into the veins of another—no accidents whatever are produced; but if the blood is allowed to remain for a short space of time in contact with the atmosphere, and if the serum is then injected into the vessels, all the symptoms of putrid resorption are observed, and the animals die after exhibiting all the characteristic symptoms of putrid infection.

The blood is therefore capable of acquiring toxic properties without the intervention of any foreign principle, merely through the modifications which take place in its composition when life is extinct. The same results may be attained to without even drawing blood from the veins. If the blood of a fasting animal is directly injected into the veins of a healthy one, the latter is poisoned exactly in the same manner as before; and yet the blood, in this case, has not undergone any previous decomposition.

The introduction of foreign principles, of course, acts upon the blood with still more intensity; nearly all the substances known under the name of *ferments,* are endowed with the property of communicating a deleterious influence to this fluid. When yeast is introduced into an animal's veins, passive hæmorrhage, and other adynamic symptoms, are immediately produced, and death takes place within a few days. Now, if the animal's blood is transfused into another's veins, all the phenomena previously described take place in rapid succession, exactly as if yeast, and not blood, had been directly poured into the vessels.

It seems likely that in this case a series of decompositions take place within the blood, which give rise to other *ferments.*

We, therefore, perceive that all this series of phenomena holds intimate connection with that mysterious chemical process known under the name of *catalysis.* The theory of fermentation is at present so imperfectly known—and organic chemistry has in this respect made, as yet, so little progress—that it would hardly be fair to reproach Medicine with its deficiencies on this point. There exists a whole series of diseases which evidently result from the chemical actions which take place within the body. It is, therefore, chemistry alone, which, in its future progress, can teach us the physiological laws which embrace this particular branch of Medicine.

SHEEP AND WOOL.

Extracts from a lecture by Dr. Lankester, delivered at the South Kensington Museum, and published in "The Chemical News."

Wool is nothing more than a modification of hair, and we call it wool because it has a tendency to curl; we also find that the growth of this wool is attended with certain alterations, by which it becomes useful for certain purposes for which we cannot use hair. We cannot weave human hair. We cannot felt human hair. We cannot make the warm garments with hair that we can with wool. If you put a piece of human hair under the microscope, you see that the exterior is composed of scales which overlap each other so as to present an imbricated appearance. Now if you put wool under the microscope you will see that the exterior presents a serrated appearance, which is much more developed in some wools than in others. It is only after long boiling and treatment with sulphuric acid that you can get human hair to look in the same way with the scales all spread. Now it is dependent upon these woolly hairs possessing looser scales that they are of use in the arts. That the use of wool depends upon those imbrications is seen in the kinds of wool more extensively employed in the manufacture of cloth. There are several calculations of these serratures. Mr. Goss finds that the finest Saxony wool contains 2720 in a single inch. Now that Saxony wool is used for making superfine cloth, and it is a kind of wool that we never get from English sheep. Some merino wool presented to Mr. Goss showed 2400 serrations to the inch. Now we come to our own Southdown fleeces, which are known by manufacturers to be inferior to the Saxony wool, and Mr. Goss found in Southdown wool 2080 serrations to the inch. Next we come to our Leicester wool, which is still less valuable, and in this we find only 1850 of these serrations. Now that calculation has but recently been made, but it proves that those serrations have some relation to their use in the manufactures; and now that that is made out the manufacturer will know how to detect the quality of the wool by the use of the microscope. It is all very well for men to say "we can use our hands and our eyes as we have done from the time of Adam, and we do not want any of your new-fangled instruments;" but that is like a man rejecting the use of one of his eyes because his grandfather had only one eye. By the use of the microscope we can detect qualities in the wool hitherto unknown even to the practical man. These serratures then are of great importance in the history, and indeed in the manufacture of wool, and it would appear that that process which is called felting, depends entirely on those little serratures becoming entangled one in another, and thus a piece of cloth is made without weaving. You cannot too early know the distinction between the uses of the different kinds of wool. One kind is converted into what we call cloth by the felting process, and another is converted into what we call worsted, or stuff, or stockings. These are made from the hair which does not felt well, and we find that it is just in proportion to the number of these serratures that the cloth will felt well.

The longer the wool the less the number of these serratures in the inch, and the shorter the wool the greater the number. All the short wools are preferred for the cloth manufacture, and all the long wools for the worsted manufacture. We have instances of the use of wool for felting, which show that the process of felting has been known almost from time immemorial. As to other hairs, those of the stoat, the mouse, the sable, the rabbit, the dog, the cat, and the hare, almost all felt as well as the hairs or wool of others of the *rodentia*. I have sometimes suspected that this property of felting is not solely due to these serrations, these imbrications so clearly developed in the wool of some animals, for I have remarked that in all the cases of the best felting hairs you always see a kind of hole or cavity in the interior, which allows the hair to yield to pressure upon a part, and thus the hair becomes reduced to a third or half of its bulk by the process of felting. I throw this out as a hint to those interested in the process.

Now I wish to speak of the sources of wool. Everybody knows we take it from a sheep. What is a sheep? Can anybody tell me the difference between a sheep and a goat? Yes, you say. Then if you can tell me in a very few words you will confer a benefit on the naturalist. You find that the wild sheep run into the wild goats. The llama, the vicugna, the guanoco, the camel, and the dromedary are so closely allied that we are puzzled to know where camel begins and where alpaca ends. So it is with the sheep—there are wild sheep. There are the *argali*, which live in certain portions of Asia, distinguishable from our sheep; and there is also the *argali* of America, the sheep which is called *ovis montani*. Then there is a sheep which inhabits the Islands of Greece. It is very certain that the old sheep which we read of in the Bible was not a descendant of that American sheep in any way. Then the question is whether it descended from the *argali* of Asia, or the *musimon* of Crete or of Greece. There is considerable difficulty in getting at those lines of distinction, and we speak then of our sheep as an independent species. Now the great and individual features of our sheep have been maintained through a long period of time. The sheep we have at the present time seem to be identical with the sheep of old. The sheep of Judea seem not to have differed from the sheep of the present day, and when we read in the Bible of the tending of sheep and their management, we feel that the sheep of that day were like the sheep of the present day, that their habits were the same, their domestication was the same, and their uses were the same for we find the man of that time eating the mutton, and using the skins for clothing until he learned to weave the wool, and then he made cloth garments. Now we have what are called breeds of sheep, and those breeds of sheep are somewhat difficult for persons not acquainted with agriculture to determine. We may divide them into the old mountain sheep, the early inhabitants of our island, and those more recently introduced, which are sheep of the plains. You all know the little Welsh sheep having a leg not weighing more than two or three pounds, hardly enough for a strong man's dinner. They have so small a crop of wool that it is hardly worth while shearing them, therefore they are going out of fashion. There are people from Wales who like Welsh sheep as the Scotch like Scotch sheep, and thus the kind is kept up. But there would have been no Leeds and no Bradford if there had been none other than Welsh sheep. Little sheep generally bear small fleeces. The Welsh and Irish generally yield no more than two pounds and the Leicester as much as eight pounds, and in America we have recently been informed they have a fleece of eighteen pounds. The tendency in this country in the breed has been to get a large amount of wool, but at the same time you ought to know that in this country we do not produce the finest kind of wool. The long wool sheep yield a valuable produce, but it is the short wool sheep which produces the most valuable. That, however, fails to equal the short wool sheep of Germany, of America, and more especially of Australia, and all these are surpassed by the Spanish sheep. The merino sheep, originally reared in Spain, produces the finest quality of wool for the manufacturer. This wool is short, and covered with a sticky secretion, and we can easily see in this wool that it makes the finest quality of cloth that is worn. Hence it was that, many years ago, the attempt was made to introduce the breeds of merino into England. They succeeded to a certain extent, but our climate was too damp and not sufficiently warm to develop their produce, and I believe there is not now a single merino sheep in this country, although thousands of pounds have been spent in the attempt to breed them. Our manufacturers obtain their merino wool from Spain, but at one time the law forbade the importation and exportation of wool, and we were then confined to the produce of our own soil. It was at that time that the sheep were introduced from Spain. Spain has lost much of her prestige and much of her industry, and when one hears of the climate of Spain and the vast resources of that country, one grieves to think it is doing so little among the nations of Europe. But what has not been done by Spaniards has been done by Englishmen. A few of these merino sheep found their way to Botany Bay; they were carried there and afterwards neglected, but in spite of that they flourished and increased; and from that small beginning has arisen an enormous trade; and now our largest supply of best wools is from our colonies in Australia. We get other kinds of wool from Saxony, and Saxony wool is perhaps the best spinning wool known in the world. All German wool, however, is not so good, but we get from Germany large quantities of the finest kind for cloth. At the present time we are deriving a considerable quantity of fine wool from America, and America is carrying on its woollen manufacture from the production of its own sheep. Many parts of North America produce very fine wool. It would seem almost hopeless for the English farmer while he produces very fine mutton to compete with America, Germany, and Australia in the production of the best wool; but at the same time the mixture of breeds has presented us with very fine wool, and the day may come when we shall produce the best mutton for our tables and also produce the best wool. I have not time to speak of Chinese and Indian wool and the wool of other portions of the world. We obtain it from almost every part, but none is more remarkable than those which I have mentioned.

I will now refer to other animals which yield us wool as well as sheep. The camel yields a wool which is occasionally woven by the women of the country into a kind of coarse garment. The other creatures which come in competition with the sheep are the goat, the llama, the alpaca, the vicugna, and the guanaco. The goat itself is difficult to distinguish from the sheep, but the common goat does not produce anything like the quantity of wool that the sheep does. But in certain parts of the world the goat produces very fine wool which has been manufactured into the finest garments. It yields a fleece of from one and a half to four pounds of fine fleecy long hair. In 1848 it was first brought into the markets of Europe. I will just remark in passing that what we call velveteens and plushes are mixtures of cotton and wool. Silk and wool are also mixed, and these hairs of the Angora goat are particularly well adapted for this mixture. There is a goat in Cashmere which yields an exceedingly fine wool, which is employed in the manufacture of those beautiful Cashmere shawls which are such objects of desire to those who wish to appear in the most beautiful forms of dress. This goat yields a fleece of which about thirty ounces are sufficient to manufacture a shawl a yard and a half square, and the worth of thirty ounces is eight or nine shillings. Then why do these shawls cost 600*l.* and sometimes 700*l.*? In answer to that question I will read a passage from the catalogue of this museum. "Thirty ounces, valued at eight or nine shillings, are all that is required in the manufacture of a shawl a yard and a half square. The immense cost of these shawls in the European market is therefore a subject of much wonder to those unacquainted with the history of their manufacture and transportation. A heavy duty is first paid upon the wool, then a further tax upon the yarn when it reaches the bazaar, and the manufactured shawl when taken to the custom house is further taxed according to the direction or caprice of the collector. If intended for the European market the shawls have yet to pass through the ordeal of still heavier exactions. They must be borne from Cashmere across the Indus to Peshawur on the frontier of Affghanistan, a journey of twenty days, upon the back of a man, the road being often impassable for camels or mules, deep precipices being crossed by suspension bridges of rope, and perpendicular rocks climbed by means of wooden ladders. At various stages of this journey taxes are exacted amounting to thirty-six shillings or forty-two shillings in the aggregate. From Peshawur to near the confines of Europe tribute is paid at many custom houses, and the forbearance of the marauders of Affghanistan and Persia and of the Turkomanic hordes must also be purchased at a high price. The precious burden is thus conveyed to Europe over the Caucasus and through Russia, or, as is now frequent, through the Turkish provinces to Constantinople." You see our friends in Cashmere are not aware of how fully we have discussed the question of free trade, and determined that it is best for the extension of trade. You need not wonder then that those beautiful shawls manufactured from the hair of the Cashmere goat should sometimes reach a price of 600*l.* or 700*l.* before it passes the rocky portals of the valley of Cashmere.

But I now pass to a kind of animal that has only recently yielded produce for our backs, but which is likely to increase the quantity of our cloth. I allude to the alpaca, which is allied to the camel and dromedary. When Cortes conquered Mexico, and Pizarro Peru, they found the llama employed as a beast of burden. The Mexican and Peruvian government have placed an embargo upon the exportation of these creatures, so that we have only now and then seen them as curiosities in the collections of our zoological gardens. But in 1846 it appears some of the wool was carried to Bradford. I recollect a gentleman of the name of Dennison coming to the meeting of the Association for the Advancement of Science, who endeavoured to convince the association of the importance of the wool. Upon one occasion he brought six of the animals to the association, but notwithstanding all that was done the alpaca wool was neglected, and much of it was lying and spoiling in a cellar, until an enterprising gentleman, named Titus Salt, bought the whole, and succeeded in laying the foundation of one of the largest enterprises in this country, and thus conferred a blessing upon his own country as well as the countries from which the animal can be obtained. The length of this hair renders it of considerable importance for mixing with the mohair and goat's wool. I would mention that there are four of these animals very distinct in form, as may be seen in the llama, the alpaca, the vicugna, and the guanaco. The vicugna yields very fine hair, which is not very much valued, but the alpaca yields a kind which is highly prized. I have mentioned the advantage of acclimatising other animals. There is no difficulty apparently in Australia, though where they have attempted here rot has seized them, because of the tenderness of the feet. A few months ago several alpacas were secured, somehow or another, and sent over to Australia; whether they have arrived there and are flourishing, I know not, but that is an experiment which ought to be encouraged, for we know not how much it may extend our manufactures.

ARSENIC IN THE SOIL AND PLANTS.

At the last evening meeting of the Royal Dublin Society, held on the 25th of May, *Dr. E. W. Davy* communicated the results of some further experiments he had instituted on the subject of the absorption of arsenic by plants, both when that substance was directly applied to their roots by watering the soil with a solution of arsenious acid, as well as when different artificial manures containing that substance (as they frequently do) were used in the ordinary manner as fertilising agents.

Dr. Davy first referred to the numerous attacks which had been made on his former experiments on this subject, which appeared in the 'Pharmaceutical Journal,' Gardener's Chronicle,' and other scientific periodicals. Thus, one gentleman, *Mr. E. S. Kensington*, of Dartmouth (see 'Pharmaceutical Journal, for November, 1859), states, from his experiments, that he doubts that plants are capable of absorbing arsenic at all; whereas Dr. Davy not only detected the presence of that substance in plants which had been watered with a solution of arsenious acid, but in several instances determined the amount which had been taken up or absorbed. Again, Mr. Ogston, of London, in the *Pharmaceutical Journal* for March, 1860, states that in plants which he had similarly treated, he found arsenic only in the portion of the stem close to the roots, but that in no case could he discover it in the leaves or in the stem at more than five inches from the ground.

Dr. Davy, on the other hand, detected it in the leaves, and in every portion which he examined of the different plants which had been watered with a solution of arsenious acid; and he accounted for Mr. Ogston's failing to detect it in the leaves, where probably it existed in a smaller quantity, by his using Marsh's method, which as Professor Odling has recently shown, is not applicable for the detection of minute quantities of arsenic where much organic matter is present.

Again, Mr. Sibson, of the Royal Agricultural College, Cirencester, asserts in the *Gardener's Chronicle* for September, 1859, that the occurrence of arsenic in super-phosphates is rare, and its quantity when present is generally exceedingly small; and he gives the results of some experiments which would appear to indicate the same.

Dr. Davy's experience, however, is diametrically opposed to the results of Mr. Sibson, for he found arsenic in almost every sample of superphosphate which he examined, as well as in different other artificial manures, in the preparation of which sulphuric acid had been employed; and, as this acid, which is used in large quantities, frequently contains, he finds, several pounds weight of arsenic in the ton of acid, the amount of that substance in superphosphate and other artificial manures, cannot be so very inconsiderable as Mr. Sibson would have us believe. Dr. Davy also noticed some interesting experiments which Mr. Horsley, of Cheltenham, had made and communicated to him, on the same subject of the absorption of arsenic by vegetables, which confirmed, in the most satisfactory manner, his former statements, and showed that plants, under different circumstances, were capable of taking up that substance; from which he (Mr. Horsley) has come to the conclusion that arsenic applied to the roots of plants, under any form, is taken up by them, some, perhaps, absorbing it more readily than others. Finally, Dr. Davy stated that he had succeeded in detecting the presence of arsenic in different crops, as for example, in turnips, mangold wurzel, &c., which had been grown with superphosphate in the ordinary way, and though the amount present was very minute, and as this manure was usually applied, it could only be very small, yet circumstances might occur in which, from unequal distribution of the manure, and from other causes, plants might be placed within reach of a greater quantity of arsenicated manure, and, under these circumstances, imbibe such a quantity of arsenic as might render those vegetables unwholesome and unfit for food. He, therefore, maintained, what he had before asserted, that a substance containing such a quantity of arsenic as pyritic sulphuric acid usually does, should not be used in the preparation of artificial manures which are intended to be applied as fertilising agents to our plants which are grown for food.

ON THE CHEMICAL REACTIONS OF STRYCHNIA.

By H. Letheby, M.B., &c.

The medico-legal chemistry of strychnia has been very fully investigated during the last few years, and Dr. Wormley's paper on the chemical reactions of the alkaloid is a valuable *resumé* of the subject.* It will be noticed, however, that his results are always obtained by adding the tests to a known quantity of the *pure* alkaloid, a condition which is not at once secured in toxicological research. Experience, therefore, has shown that some of the tests must be applied with certain precautions, or the results will be very unsatisfactory. Those who are conversant with the practice of the matter will not agree with Dr. Wormley that the colour test, for example, is to be employed in the way described by him. "We have succeeded best," he says, "by placing the strychnia, or a drop of the solution evaporated to dryness, in a watch-glass, and by its side a drop of sulphuric acid into which a fragment of bichromate of potash was introduced, and stirred until it imparted a yellow colour, then by inclining the watch-glass the coloured sulphuric acid was allowed to flow over the strychnia."† This mode of experimenting is dangerous in every way, for, in the first place, if the bichromate is in excess, and the quantity of strychnia small, the colour is so evanescent as to be uncer-

* 'Chemical News,' pp. 218 and 242.
† Ibid., p. 243.

tain, and, secondly, if organic matter be present, the colour will be masked; and, thirdly, if a nitrate or chloride is with the strychnia, the colour is not produced at all; and, fourthly, if strychnia be entirely absent, but sugar and bile, or piperine, or any of those substances be present which give a purple or red reaction with sulphuric acid, a fallacious result will be obtained; and lastly, if the result fails, the whole of the strychnia is lost, and the inquiry brought to an unsatisfactory conclusion.

So strongly have I felt these difficulties, that in my paper on the *Medico-legal Chemistry of Strychnia*, published in the *Lancet* of June and July, 1856,* I have endeavoured to guard the operator against them by describing a process which generally ensures success. It is as follows:—" First, place the strychnia, or the suspected matter, on a clean white plate; then touch it with a small drop of concentrated sulphuric acid (the acid should be free from nitric acid); stir it about with a glass rod, so as to mix the strychnia very perfectly with the acid; allow it to remain in this state for a few minutes, and if the strychnia be pure there will be no discoloration.† Then cautiously add the reagent, namely, peroxide of lead, bichromate of potash, or peroxide of manganese, taking care not to add too much of it; in fact, it is best done by dropping the powder into the oil of vitriol and strychnia from the point of a penknife. Lastly, either incline the plate so that the acid may gently flow over the the powder, or else with great caution stir the powder about with the point of a glass rod. In this way the colour is always sure to be brought out, and, as far as I know, it is not to be confounded with the reaction of other substances. Indeed, the only thing which approaches it in appearance is the dirty violet colour which is occasioned by morphia and its salts when they are treated in the same way. As to the so-called fallacies to the test, namely, salicine, bile, sugar, pyroxanthine, piperine, resinous matters, and many other things, it must be manifest that they are not fallacies when the test is properly performed, for all these compounds acquire their colour directly the sulphuric acid is added to them, and *before* the other reagent is applied.

" Of all the substances which have been proposed for thus

* See 'Lancet,' June 28, 1856, and July 12, 1856.

† The process to be followed for rendering the strychnia pure is detailed at page 37 of the 'Lancet' for July 12, 1856; it consists in treating the impure strychnia with concentrated sulphuric acid until all the impurities are destroyed and then extracting with chloroform or ether.

developing the tints with strychnia, bichromate of potash is assuredly the worst, for—

"1st. It is itself coloured by the acid, and may thus complicate the result.

"2d. It will not act when organic matter is present, as for example, the vegetable acids,—citric and tartaric, cream of tartar, tartar-emetic, potassio-tartrate of soda, the residue of an effervescing draught, sugar, gum, and even a little morphia.

"3d. It will not act when nitre, nitric acid, or common salt are present with the strychnia.

"4th. It is of all the tests the least delicate: for while the peroxide of manganese, or the peroxide of lead, will discover the presence of the $\frac{1}{20000}$th of a grain of strychnia, the bichromate will not act well with less than the $\frac{1}{2000}$th of a grain.

"It is true that by means of the process which I shall hereafter detail for extracting the alkaloid, none of those impurities will be present; yet, in making a comparison of the respective values of the several tests, it is right to know that the bichromate of potash reaction is the least satisfactory."*

The true cause of its want of delicacy is the rapidity with which it oxidizes the alkaloid; and therefore the peroxides of manganese and lead, because of their evolving oxygen slowly, are more delicate and suitable to the purpose, for their reactions take time to develop and the colour is far more enduring. Finding that the *modus operandi* of the test was the action of nascent oxygen upon the strychnia, it occurred to me that the galvanic current might be used instead of the oxygen compound.

"The mode of applying the galvanic test is as follows:—Place a drop of a solution of strychnia (say of one part of the alkaloid in 10,000, or even 20,000, of water) in a cup-shaped depression made in a piece of platinum foil. Allow the fluid to evaporate, and, when dry, moisten the spot with a drop of concentrated sulphuric acid. Connect the foil with the positive pole of a single cell of Grove's or Smee's battery, and then touch the acid with a platinum terminal of the negative pole. In an instant the violet colour will flash out, and, on removing the pole from the acid, the tint will remain."†

By this mode of proceeding the colour is perfectly under control, and the test is free from every known source of fal-

* 'Lancet,' June 28, 1856, p. 708. † Ibid.

lacy. I have lately applied it in the recognition of strychnia in the urine of a girl poisoned at Peterborough, and the results were very satisfactory. They were confirmed by the physiological action of the poison, obtained from the urine, on frogs.

Lastly, I would remark that the carbazotic acid, and iodine tests, which Dr. Wormley says he has not seen described, are fully discussed in my paper, and drawings of the crystalline precipitates are given.*—*The Chemical News.*

CHEMISTRY IN ITS APPLICATION TO AGRICULTURE AND PHYSIOLOGY.

By A. S. Copeman, V.S., Utica, N.Y.

(*Continued from page* 341.)

The chemical analysis of these three substances has led to the wonderful discovery that they contain the same elements united in the same proportion by weight, and what is still more remarkable, that they are identical in composition with the chief constituents of the blood, animal albumen, and fibrine.

The horse or ox may be kept in good health on the dried stalks and meal of maize with water; the principal nutritious matters in this simple diet are albumen and starch.

Liebig gives the following table of principles met with in the food, and their uses:

Plastic Elements of Nutrition.	*Elements of Respiration.*
Vegetable gluten	Starch
,, albumen	Sugar
,, caseine.	Fat.

Analyses show that 100 pounds of wheat contain 55 pounds of starch and 15 pounds of albumen; milk contains much fatty matter, *butter*. Both substances, you observe, contain a a large quantity of the elements of respiration.

At every moment of his life, man is taking into his lungs oxygen, which is absorbed by the blood and conveyed to every tissue in the body in its passage through the minute vessels; thus the oxygen is brought into direct contact with cells containing the compounds of fat or albumen, which it

* Ibid., p. 707, and July 12, p. 37.

decomposes, liberating the carbon as carbonic acid, and the hydrogen as water.

Fat contains 80 per cent. of carbon. Sugar, starch, and fat, are composed of carbon, hydrogen, and oxygen. The most decisive experiments and observations have proved, that whenever oxygen unites with carbon to form carbonic acid, or with hydrogen to form water, the act of combination cannot take place without the disengagement of a definite amount of *heat*.

If we suppose the carbon of the food to be converted into carbonic acid within the body, it must give out exactly as much heat as if it had been burnt in the air or in oxygen. This is the source of *animal heat*. (Liebig.)

The whole history of hybernating animals, and the well-established fact of the periodical accumulation in various animals of fat, which at other periods entirely disappears, prove that the oxygen in the respiratory process consumes all those substances which are capable of entering into combination with it. Besides carbon, and a small portion of sulphur, the animal body contains, as a combustible element, with which oxygen can combine only hydrogen.

A fat man or a dormouse will live longer without a renewal of food than a lean one of either species. In cold weather animals require the largest proportion of carbonaceous food to act as fuel to keep them warm. Our bodies may be likened to little steam-engines, or a "blacksmith's" fire, our lungs operating as a pair of bellows, our mouth as a chimney, and our food as the coal; our bellows are always going, or we soon die: if we do not eat, what would be the consequence, would the bellows cease work? No, they would go on working till every particle of animal matter, fuel, fat, &c., was consumed. This shows that if we take no food to supply the waste of the body, we must, like the fire, go out; on the other hand, if the blacksmith overloads his fire, and does not blow his bellows enough, his flame goes out, and we, if we are always eating, and never blowing our bellows enough, we are also liable to go out. The life of all animals, as we said before, depends on the action of oxygen and the supply of food. The constant tendency of this action of oxygen upon the animal system is to destroy it, and unless the vital *force* is supported by food, it soon destroys the body. The supply of food forms an antagonistic force, which is able to resist oxygen as long as the supply is kept up, but oxygen never ceases in its pursuit of its victim till it has ultimately consumed it.

It is agreed among physiologists that the *tissues* are formed only from the transformation of some compound of *albumen*, and that the other matters on which an animal feeds are for the purposes of respiration.

The process of nutrition is seen in its simplest forms in the carnivora. This class of animals lives on the blood and flesh of the graminivora, but this blood and flesh is in all its properties identical with their own. Neither chemical nor physiological differences can be discovered. Hence, in a chemical point of view, it may be said, that a carnivorous animal, in supporting the vital processes, consumes itself.

Let us give our attention for a few minutes to particular kinds of diet. First, animal food. Of whichever class this is, whether beef, mutton, pork, poultry, or fish, we know that it consists chiefly of muscle, and that for ordinary use any one of these may be received as an equivalent nearly for the other, varying only with the proportion of solid matter and water in each. Next, of vegetable food. The multitudinous articles in use of this kind differ far more from each other in composition, as may be seen in the following table:

Proximate analysis of food.

	Albumen.	*Starch.*	*Husk.*	*Water.*
Wheat	15	57	15	13
Corn	14	65	7	14
Oats	15	40	33	12
Buckwheat	6	64	14	16
Barley	14	44	28	14
Potatoes	2	18	5	75
Turnips	2	8	5	85
Dry Cornstalks	9	40	30	21

A word respecting the temperature of the body and the consumption of food.

If the knowledge that modern science affords in regard to these was properly diffused, how great would be the advantage to agriculturists. We witness every day in *winter* striking examples of the want of such knowledge, in the instances of farmers turning cattle from an atmosphere 60 degrees above to one 10 to 15 below zero. The animal's body is a heated mass, which bears the same relation to surrounding objects as any other heated mass. In the animal body the food is the fuel; the body is a furnace or stove. A stove, we all know, will not give out heat without fuel, neither can the body of an animal generate heat without consuming food; hence the farmer, by exposing his cattle to a "cold north wind," not only wastes the produce of his farm, but also injures the health of his stock; "want of warmth is equivalent to a waste of food." The capacity of the chest in an animal is a constant quantity, but the quantity of oxygen inspired is affected by the temperature of the atmosphere; air is expanded by heat, and contracted by cold, and therefore, equal volumes of hot and cold air contain unequal weights of oxygen: hence, the instant we leave a warm room for the cold open air, an infinite wisdom has so arranged, that the amount of oxygen in the atmosphere is always exactly that required to support the body at its natural temperature.

The rapidity with which the structures of the body are reproduced, will depend on the amount of exertion to which they are subjected, and the quality of matter with which they are supplied. Place an animal in a position where the least possible amount of motion is given, and supply him liberally with food, the process of nutrition is then carried on with extreme rapidity, and a call is made upon the various excreting organs to remove this large amount of matter from the system.

From inordinate exertion, these become deranged and unable to perform their office; the animal organism has then another source by which to relieve itself; namely, by depositing large quantities of those matters which in the normal condition of the animal would be appropriated to the building up of his tissues, in various parts of his body, in the form of fat.

This action, when once set up, has a tendency to progress with great rapidity, and in proportion as this increases, the other tissues, muscle, &c., decrease. The muscles waste, and an animal in this condition (fat, although he may appear to be in the highest possible state of health), is in reality in a state of extreme debility.

Remove an animal from this position, and subject him to exertion, gradually increasing it, as you find it can be borne, and what do you observe? This fat is rapidly removed, and excreted from the system by the process of respiration. By keeping him in this position, nicely apportioning the quantity of food to the amount and severity of the exertion he undergoes, we may bring him into a state of the highest physical power.

(*To be continued.*)

Translations and Reviews of Continental Veterinary Journals.

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

Annales de Médecine Vétérinaire, February, 1860.

COMPLETE OBLIQUE FRACTURE OF THE LEFT METACARPAL BONE IN A HORSE.—CURED.

By M. Stevenaert, M.V.

The subject of this case was a four-years'-old gelding. The fracture extended from the middle of the diaphysis of the bone to the superior extremity, and extended into the articulation of the knee. Notwithstanding the difficulties and danger of the case, which were pointed out to the proprietor, he would not sacrifice the animal, but insisted on a trial being made to effect a cure.

A treviss was constructed, in which the animal was suspended. Under the broken limb an excavation was made, which was partially filled with sand. The affected leg was bandaged, and a cold lotion continuously employed until the next day, when the immoveable pitch bandage of Professor Delwart was applied. At the end of four weeks the swelling and irritation, caused by the suspension, were so intense that it was necessary to remove the animal, who, on being taken out of the treviss used his leg tolerably well, which induced the bystanders to consider that a callus had formed, but the opinion of M. Stevenaert was that this was principally to be attributed to the bandage. Fifteen days later the bandage had become slightly loose, it was therefore taken off and a fresh one applied. The parts were much swollen, painful and hot. A slight mobility was perceptible at the middle of the fracture; but little weight was thrown on the leg, and that was taken on the outer quarter of the hoof. Violent inflammation now set in, to the parts cataplasms were therefore applied, which were continued for five days, after which another bandage was put on, not, however, made of pitch and resin, as none could be had on the spot, but of plaster of Paris, this being at hand.

This time the articulation of the knee was left free, so that the animal was able to lie down and get up with ease. In a fortnight after the patient could throw the whole weight on the affected leg when he moved the corresponding limb. The second bandage was taken off four weeks after it was put on. The bone was now found to be solidly set, and all that remained was slight lameness with some swelling of the parts.

Journal des Vétérinaires du Midi Pathologie et Thérapeutique, March, 1860.

ON FALSE PRESENTATIONS.

By M. Giles, V.S.

Every practitioner has observed the unnatural position of the fœtus when the head is either turned to the right or to the left; but no one, that the author is aware of, has pointed out the complication caused by the decubitus of the mother on the same side as that to which the head of the fœtus is turned, which renders parturition impossible.

In all the cases on which these observations are based there was always a chest presentation, the head being turned to the right, the mother lying on the left side. It is then impossible to bring back the head to its natural position, from the head and neck being pressed between the body and the ground; but by changing the position of the mother to the other side, there is little difficulty in bringing the head into its natural position.

Another cause of diastocia is the narrowness of the vulva. This is the case only in the young cow with her first calf. The vulva being too small to admit of the passage of the head of the calf, the mother makes useless efforts to expel it by violent contractions of the uterus; and, becoming exhausted by these, life is endangered. To remedy this the author makes two incisions in the mucous membrane, one on the right and the other on the left side, and parturition is soon effected. These incisions give but little trouble afterwards, and sometimes heal by the first intention.

Giornale di Medicina Veterinaria, Torino.

TWO CASES OF NOCTURNAL BLINDNESS (HEMERALOPIA) IN THE HORSE.

By Roberto Bassi.

The author, on observing this alteration in the vision of the horse, made a careful research to ascertain whether it had been mentioned by any veterinary authors, but he found only a short account of it in 'Falke's Handbuch aller Inneren und Einsseren Krankheiten,' &c., p. 514, and this seems only to have been done to complete his nomenclature of the diseases in the domestic animals. Even Mons. Leblanc has not alluded to it in his work on the diseases of the eye, from which the author concludes that it is of very rare occurrence.

The first case that fell under his notice was at the end of the year 1857; a farmer's horse, about eight years old, which was reported to be affected with some disease of the eyes, as at night it seemed not to walk so straight and steady as usual, and when taken out of harness, he could not find his way to the stable without being led. This had existed about ten days. On examining the eyes nothing could be seen, either in their conformation or transparency of the humours, and the usual experiments were also tried to ascertain the mobility of the iris, and it was found that they were affected by the different degrees of light thrown upon them, which proved the integrity of the optic nerves. The actions of the horse were free and without hesitation. On examining the horse after sunset, it was with difficulty that he could be brought out of the stable; he held his head up, extended his neck, and lifted his legs in an extraordinary manner. He could not be made to walk fast; kept moving his ears backwards and forwards; if left to himself in the yard he would stand still; if made to move he would run against any object in his way; but after a time he would find his way back to the stable with more or less difficulty according to the position in which he had been left.

The iris was now observed to contract very little by holding a lighted candle before the eyes, which were fixed and prominent, the cornea also seemed less transparent. The appetite was good, and the horse presented no sign of disease existing. He had been employed for about a fortnight, in the heat of the day, in a court surrounded by a whitewashed wall which strongly reflected the sun. After having taken all things into consideration, the author came to the conclusion that there was no organic lesion in the eyes of which this *hemeralopia* was the symptom, and that the cause could be no other than a diminished sensibility of the retina, which, according to his opinion, consisted in a sort of venous hyperæmia of the delicate network surrounding the nerves, produced by the intense light which was thrown on it during the time the horse was employed in the sun.

The treatment first consisted in giving perfect rest in a place moderately lighted, placing on low diet, bleeding from the jugular vein, &c. That not having produced any amendment, setons and blisters were applied to the neck and undersides of the jaw. These were continued for a fortnight, when the horse was again examined in the dark, and a decided amelioration was perceived to have taken place. When he was left at liberty there was less hesitation in his movements, and when a lighted candle was held to the eyes the pupils contracted considerably, while the eyes were freer in their movements.

The setons were now withdrawn, and the horse was moderately worked, and in about a month after the vision was again perfect.

Case 2.—Signor Minoglio related to the author his having bought a horse of a merchant of Turin, which had apparently beautiful eyes, and which showed not the least defect in vision during the day, but after dark he exhibited every symptom of a blind horse: he lifted up his legs high in the walk, extended his neck, allowed himself to be almost dragged along by the halter, could not find the stable door if left to himself, and when a light was held near to the eyes it made no impression on them. The horse having been returned to the vendor on account of this it was afterwards lost sight of.

The author draws the following conclusions:—1st. That the horse is subject to this alteration in the visual organs which, in the human being, has been denominated Hemeralopia, or nocturnal blindness. 2d. That it is not of frequent occurrence, or it may not be noticed or pass into amaurosis. 3d. That those horses ought to be included in the law as unsound, and subject to be returned.

ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING OF THE COUNCIL, HELD MAY 16, 1860.

PRESENT: Professor Simonds; Messrs. Barrow, Burley, Gabriel, Jex, Lawson, Legrew, Pritchard, Silvester, Wilkinson, and Withers.

W. BURLEY, Esq., in the Chair.

The minutes of the preceding meeting were read and signed. The election of a president for the ensuing year was then proceeded with. It was moved by *Professor Simonds,* and seconded by *Mr. Pritchard,* "That the Principal Veterinary Surgeon to the Army, J. Wilkinson, Esq., be elected President for the ensuing year;" and on the ballot being taken, that gentleman was declared unanimously elected.

The President having taken the chair, and returned thanks for the honour of his election, it was moved by *Mr. Silvester,* and seconded by *Mr. Legrew,* "That the cordial thanks of the Council be given to W. Burley, Esq., the ex-president, for his unremitting and valuable services whilst in office."—Carried by acclamation.

The election of six vice-presidents was then proceeded with, and the following nominations were made:—C. Secker, of Knaresborough, by Mr. Wilkinson; M. Harpley, of the Royal Horse Guards, by Mr. Legrew; W. Helmore, of Stratford, by Mr. Withers; J. Broderick, of London, by Professor Simonds; T. Greaves, of Manchester, by Mr. Lawson; W. Mavor, of London, by Professor Simonds; W. Wallis, of Halstead, by Professor Simonds; E. Stanley, of Birmingham, by Mr. Silvester; J. Ellis, of Liverpool, by Mr. Lawson; J. Anderson, of Glasgow, by Mr. Withers; W. Wallace, of Wolverhampton, by Mr. Pritchard.

The result of the ballot was for J. Ellis, 9; E. Stanley, 8; C. Secker, 7; J. Broderick, 7; W. Wallace, 6; M. Harpley, 6; J. Anderson, 4; J. Broderick, 4; W. Mavor, 4; W. Helmore, 3; W. Wallis. 3; T. Greaves, 2. Messrs. Ellis, Stanley, Secker, Broderick, Wallace, and Harpley, were thereupon declared duly elected.

The election of the Secretary being the last business, it was proposed by *Professor Simonds,* and seconded by *Mr. Silvester,* "That Mr. Gabriel be elected to that office;" and on the ballot being taken, he was declared unanimously elected.

Mr. Pritchard gave the following notice of motion:—"That the present investment of the funds of the College be taken into consideration, in accordance with the wishes of the Treasurer"

E. N. GABRIEL, *Secretary.*

Veterinary Jurisprudence.

FRENCH COURT.—BITE OF A DOG.

A CURIOUS case was heard a short time since, before the civil tribunal of Tours. A retired surgeon-major of the Imperial Guard, and formerly professor of anatomy in the medical school of Tours, lived on the banks of the Loire, and continued to practise, but only for the love of his profession. On the 9th of August last, he took a walk on the hill of St. Cyr, when he was bitten on the thigh by a shepherd's dog; at first he thought nothing of the wound, but a moment afterwards he thought that the animal might be mad, and he hastened to the town to consult some of his professional brethren upon the subject. They advised cauterization, and also sea-bathing. M. B— went home, took a red-hot iron, cauterized the wound, and next day departed for the sea, at Saint Nazaire. But fearing he should be attacked by hydrophobia on his way, he took a stout keeper with him, whom he furnished with a straight waistcoat. Between two journeys to St. Nazaire, he visited Paris, to consult M. Velpeau, whom he called his old pupil. The account of his tribulations was given in the pleadings in his own words:

"I continued," said he "my route to Maison Blanche, where I had business; there, without pain, I lost my consciousness for some minutes. At Tours I consulted two able men. On returning home my cook said to me, 'M. Soudié has been to see you, and will call again, and says it was his dog that bit you.' Presently this gentleman entered, accompanied by the rural guard. The object of the visit was to express the sorrow of M. Soudié, and to settle the matter amicably. I had not yet experienced any inconvenience from the bite, and said—'My pantaloons are worth 14 francs, my paletôt 50 francs. Let M. Soudié add 150 to these sums, and I will not lodge any complaint.' Soudié objected to this arrangement and the interview terminated."

Then commenced the recital of M. B—'s sufferings: "When alone I heated a gauffering iron, and cauterized the bite to the depth of an inch in all directions. I was in a fearful state of mind at the prospect of dying, in good health, at the age of seventy-five, by the bite of a mad dog. Oh, it was horrible! I was ready to blow my brains out to prevent hydrophobia. At last I became a little more calm, and set out for the sea-side. On my return I pursued the mercurial treatment for twenty-five days. I continued to take sea-baths every third day until the 13th September. M. Soudie is one of the richest men in St. Cyr, and one of the most miserly, and his vagabond dog is still at large because he will not go to the expense of a chain or collar. Soudié said his animal was not mad—that he had bitten himself and others, and no harm had come of it. I replied that a person could, perhaps, not have two kinds of madness at the same time, and that he had the money madness. 'If you are sure your dog is not so,' I added, 'make him bite you before me, and I will give you a thousand francs, and renounce any claim upon you.' He shook his head; and I added, 'My skin is worth as much as yours, I think;' to which he replied, 'That is possible, but I have more crowns than you have.' Soudié brought the certificates of three veterinary surgeons that the dog was not affected with hydrophobia. 'So much the better,' said I."

The bitten doctor, however, came before the court, and claimed damages on the ground stated by himself. "I don't fear hydrophobia any longer, although I feel vague pains; I have lost my appetite, and my habits of body are disarranged." He claimed payment of 2,989f., which sum included 40f. for refreshments at railway stations. "My demand," he said, "is not excessive. I claim justice. I await the decision of the tribunal with calmness and respect." His counsel made some remarks, but the only effect upon the audience was to create roars of laughter.

The court, in the end, condemned M. Soudié to pay 500f. damages, and ordered the costs to be shared equally between them.

OBITUARY.

In our number for May we announced the unexpected death of W. Stockley, Esq., M.R.C.V.S., and expressed a hope that we should be able to place on record some particulars of one who had been so long connected with the profession, and whose life was full of stirring incidents; nor have we been disappointed, Mr. J. Stockley, V.S., Royal Artillery, having kindly placed in our hands documents referring to the professional life of his father for this purpose, for which we are obliged to him.

It could not have been, that one who had attained so great an age, and once held so prominent a position, should have passed away from among us thus briefly noticed, and his memory have been unhonoured by us.

The late Mr. Stockley, born in 1776, was among the earliest pupils of the Royal Veterinary College, being one of the six students at the foundation of that institution. He was therefore contemporary with Mr. Bracy Clark, Mr. John Field, Mr. Richard Lawrence, and others, whose diplomas bear the same date—one only, Mr. E. Bond, having passed a few months before them. These have gone down to "the peaceful grave that hushes all," with the exception of the first-named, who is now, of course, the oldest member of the profession.

The mind is thus carried back to the very beginning of the recognition of veterinary medicine as a science in this country. Has its progress been what its originators anticipated? is a question that will be differently answered. It seems a long time to look back upon, and many have been the changes that have taken place since then;

> "Yet the present will be soon as surely gone,
> As that far past we almost think a dream."

Mr. Stockley was admitted "a resident pupil in the Veterinary College," on the recommendation of Lord Rivers, in January, 1792. Mr. St. Bel was then professor, and delivered his lectures at the temporary school, near St. Pancras Church. After his death, Professor Coleman was appointed in February, 1794; and as Mr. Stockley's diploma bears the date 5th July, 1794, according to the register, he must have been a student under both professors. From April, 1794, to September, 1795, he acted at the College as assistant to Professor Coleman, who also, at a subsequent period, in the year 1800, "offered to recommend him as one of the professors to a Veterinary College proposed to be established in Ireland" by the Royal Dublin Society.

In 1795, at the suggestion of Lord Heathfield, he was sent to a regiment of cavalry, especially and experimentally to prove the utility of introducing veterinary surgeons into the army generally, and to justify the granting of public money in aid of the funds of the Veterinary Institution; the result of which was, that veterinary surgeons were subsequently appointed to the army.

The First Fencible Cavalry, to which he belonged, was disbanded in 1800, when he received from Colonel Villiers a high testimony to his ability and diligence, and the very great advantage the service had derived from his having been appointed.

From this time, until 1804, he was unemployed, when he was appointed to the Ordnance in Ireland, in which he served until 1822, when he went on half-pay. He entered the regiment again in 1838, and went to Canada, from whence he returned in 1844, and served in Ireland and in England until 1858, when he again retired on half-pay. He was President of the Royal College of Veterinary Surgeons for the year 1856, and for several years was an active member of the Council of that body.

Mr. Stockley re-organized the Veterinary Museum at Woolwich, and also gave veterinary lectures there in 1856 and 57. Of an earnest and warm temperament, he spoke as he felt, and was ever zealous for the advancement of the profession, and jealous of its rights. The bold expression of his feelings, it may be, at times, carried him away, for his physical energies were seemingly as great as in the days of his youth, the adventures of which he would recount with much animation. At the close of these remarks, we must be permitted to relate an incident which we consider redounds greatly to his credit, while it shows the spirit by which he was actuated. At the breaking out of the Crimean War, when several veterinary surgeons were required for the Royal Artillery—of which he was the senior V.S.—on their applying to him for his recommendation to the service, he would first ask them if they were members of the Royal College of Veterinary Surgeons, and if their reply was in the negative, his answer was, "Until you become one, I cannot entertain your application;" and we believe he did not. Surely here was a step taken in the right direction, and one which, being followed up, would in the end have led to only duly qualified members being appointed in the army ever afterwards; "a consummation devoutly to be wished," and one which we hope to see ere long determined on by the authorities.

"Requiescat in pace."

ERRATA IN NO. 391.

The name of Mr. William Burt, of Brighton, was accidentally omitted in the list, published in our last number, of those who obtained their diplomas from the London School.

For George Beilly, *read* Charles G. H. Reilly, York.

THE

VETERINARIAN.

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Communications and Cases.

POISONING BY COLCHICUM, THE RANUNCULACEÆ, &c.

By W. Litt, M.R.C.V.S., Shrewsbury.

A somewhat remarkable instance of the accidental poisoning of cattle by the plant known commonly as the meadow saffron has recently fallen under my observation, and I am induced to believe a brief narrative of the facts may not be without interest to the readers of the *Veterinarian*. Such cases, although by no means uncommon in some districts, are seldom brought before the profession through the medium of the press, and there are doubtless many practitioners in England to whom they may be not less interesting than novel. Besides, the subject is one which opens a wide field for elucidation and discussion, and may probably awake the slumbering energies of some of the many able correspondents of the *Veterinarian*, for I fear we are but imperfectly acquainted as a body with the peculiar phenomena of these inadvertent vegetable poisonings.

The facts of the cases alluded to are simply these. I was requested late on the evening of Friday, the 15th June, to see several cattle at The Isle, near this town, said to be suffering from severe diarrhœa, supposed to be produced partly by eating too eagerly of the luxuriant grass of the meadow, and partly by the peculiarly cold and wet weather to which we have been so long subjected. They were in all ten two-year-old bullocks, which had been purchased by Mr. Sandford, a few days previously, from the neighbourhood of the Lyth Hill, a totally different kind of pasture. They were all more or less affected, and five of them presented symptoms of so serious a character, that I suspected at once we had a far more formidable enemy to combat with than could be produced by any quantity of ordinary herbage, however cold, wet, or rank, it might happen to be. These symptoms were a quick and irritable pulse, profuse cold perspiration, painful breathing, a low, melancholy kind of moan or grunt, general appearance of great distress about the countenance, all the ordinary manifestations of abdominal pain, and in most of the cases, at first, violent purgation. There could be little doubt that the animals had partaken of some acrid poison, and previous observations of the effects of the *Colchicum autumnale* on cattle, led me at once to inquire if such a plant was to be met with in the pastures at the Isle. The information I received, though not quite satisfactory, seemed to point to such a conclusion; but it was now quite dark, and having left for each of the poor animals an opiate draught, to be given in some warm gruel, I was satisfied to leave the further investigation of the subject until the following morning.

In the course of the night one of those most seriously affected died. Opiate and mucilaginous drinks were administered to the survivors, and other remedial measures were had recourse to, but without success. Four more died in the course of the day, thus making five deaths in less than twenty-four hours from the time I first saw them. An examination of the meadow in which they had been pasturing proved, as I had suspected, that the meadow saffron grew there in great abundance. What is more, large quantities of the plant had been pulled up a few days previously, and lay in heaps in several parts of the field, half withered. Of these the cattle appeared to have partaken rather freely, and thus the fearful virulence of the symptoms, and the rapid fatality of the attack—both of which were without a parallel in my experience of such cases—seemed readily accounted for. A *post-mortem* examination, however, made the matter still more clear. The rumen contained large quantities both of the leaves and seeds of the colchicum, and these could also be traced through the other divisions of the great digestive apparatus. The amount of disease satisfactorily explained the rapidity of the dissolution. The lining membranes of these organs—the rumen, the reticulum, the manipulus, and the abomasum—were inflamed through their entire course, the rumen perhaps most of all; and when the extent of this surface is considered, a space, if it could be fairly extended, of several square yards, the terrible character of the malady will be readily understood. These membranes might be said to be perfectly scarlet with the inflammation, which extended also to the muscular coat of the organs, but did not at any part seem to involve the peritoneum. A similar appearance, though in a somewhat less degree, was also presented at different parts of the intestinal tube; but the other organs of the abdomen, even including the kidneys—at which, perhaps, the human pathologist will feel some surprise—appeared perfectly healthy. The heart, however, and especially the pericardium, were considerably inflamed.

Of the five surviving animals, only one now manifested any very alarming symptoms. This, the largest and best, by the way, of the lot, had seemed amongst the least affected when taken up on the previous evening, and had even ate a little hay in the night. It is worthy of remark, that it was not until some sixteen hours after he had been removed from all access to the poison that this animal was observed to become seriously affected. One only difference was observable between the symptoms in his case and those in the others; there was no purgation, but, on the other hand, excessive diuresis. There is no necessity to enter upon any details of the treatment resorted to; suffice it to say, that, although the utmost care and attention were given to him, he continued to sink, and died on the following Wednesday. In the mean time, the more slight manifestations of disease in the four remaining animals have gradually subsided, and I believe they are now quite well.

Having thus hastily glanced at the particulars of these cases, it may not be without profit to all of us to inquire how occurrences of so serious a nature are most likely to be avoided where poisonous vegetables exist in large quantities, and it is next to impossible to root them out. For the most part, such poisons as grow wild in fields are pretty well known to all, the principal ones which interest us, besides the colchicum, being the common yew, the foxglove, the hemlocks, henbane, and the deadly nightshade. But of these I have been surprised to find that the one more particularly in question is least generally known, and, therefore, I may perhaps be excused a short description of it. The *Colchicum autumnale*, or meadow saffron, as it is more commonly called, is a plant with a solid, bulb-like rootstock, about the size of a walnut, somewhat deeply fixed in the ground. Its beautiful purple, crocus-like flowers spring up in the autumn without leaves, forcing themselves readily through the soil, and expanding just their orifice, together with the anthers and stigmas, above the surface of the ground, while the tubular part, with the ovary and filaments, remain enveloped in membranous sheathing spathes below the soil. Each stock produces six or eight of these flowers, and they form, in the fall of the year, a beautiful carpet in those meadows where they flourish in great abundance. In the spring the seed-vessel makes its appearance in the midst of a tuft of broad, oblong, shining leaves, and consists of three follicles adhering to one another, and each containing a quantity of opaque, fawn-coloured, globose seeds, about the size of radish-seeds. It is in these seeds that the active medicinal principle of the plant is contained in the greatest intensity, although it exists also both in the flowers and the root. This plant is common in many parts of Great Britain, and is particularly abundant in the meadows bordering on the Severn, in this county. Properly administered, in human surgery at least, it is a most valuable medicine; in poisonous doses I have already described its terrible effects.

It is certainly a fact that, for the most part, herbivorous animals of all kinds are prevented by a kind of instinct from eating to any serious extent these poisonous vegetables *in a growing state*. But it is equally certain that this protective instinct altogether fails them *when such plants are cut off*, or *plucked up and half withered*. Shakespeare, it will be remembered, has not forgotten to notice "the grateful odour of the new-mown hay," and we are most of us familiar with the peculiar sweetness that seems to be produced by the rapid drying up of the juices of green vegetables. This odour, or taste, or both, as the case may be, seems altogether to disarm the natural discrimination of the grass-eater. The landscape-gardener knows well how difficult it is to protect the withering leaves of a newly-planted shrub, whilst its more verdant fellows are allowed to go untouched; and numerous examples of a like nature might be adduced. The least acrid ranunculaceæ, as instanced in the common buttercup, are carefully avoided when growing, even on the barest pastures, but taken readily enough in the hay; and I have observed that even the rank and disagreeable hemlocks will also be eaten when withered. In the great majority of cases of vegetable poisoning that have fallen under my observation, I have found that such poisons had been taken in this half-dried condition. With this great fact before us, the inference how such accidents are to be avoided is too clear to need further remark.

But the subject is not quite so easily disposed of. These remarks only apply, it will be seen, to a *great majority* of cases; they will not hold good in all. There are frequent instances—and some such have certainly fallen under my own observation—where the poison has been eaten, even when in a growing state. Young animals, for instance, on being first turned out, have occasionally been known to poison themselves thus, and cattle that have been brought from distant and different kinds of pasture to lands where such plants were abundant, have not unfrequently been found to fall victims to the change. In winter more especially, the green yew will sometimes be consumed eagerly, and the consequences are often fatal. There is something strange and mysterious about this occasional failure of the brute instinct which I confess I cannot attempt to explain. I can only remark that some experience and observation have enabled me to bear strong testimony to the fact.

I have been led thus much at length into the subject of vegetable poisoning by the feeling that it is one which has never yet received sufficient consideration, either at the hands of the veterinary surgeon or the agriculturist. Our friend, Professor Morton, for example, whose "Veterinary Toxicological Chart' is the only work which the profession possesses on the subject, does not even mention the poison whose fearful effect I have just narrated. Nor is this want of special knowledge to be wondered at when we consider the low amount of intelligence generally brought to bear on the diseases of cattle. Science is only an accumulation of facts properly reasoned upon, and requires, therefore, the opportunities of observation for its full development. Even human surgery made but little progress during the centuries when its practice was almost exclusively confined to the barber; and until the agriculturist has learned to distrust altogether the illiterate farrier and cowleech, he must not hope to reap the advantages which veterinary science may some day be able to afford him. I am satisfied that large numbers of animals fall victims to inadvertent poisoning every year, where the real cause is never even suspected. Could a computation be made of the value of all the animals thus annually sacrificed, its amount would perhaps seem somewhat startling. He is a very lucky man who has followed the pursuit of farming many years without some such losses. I have been endeavouring to make a rough calculation of the value of stock of different kinds that have died from poisoning by the yew alone, *within my own observation and experience*, and I find it considerably exceeds a thousand pounds. This fact is of itself sufficient to show the importance of these matters, and to prove, if any proof were needed, how necessary it is that a greater amount of consideration than has yet been given to it is due to a subject involving, even in a pecuniary point of view, so much of interest to the science whose prosperity is so intimately woven with that of our own profession.

Curious enough, shortly after the foregoing remarks had been written, a case occurred in my practice illustrating very strikingly some of the points in question. My patient was the property of a gentleman in Shrewsbury, and was a small pony, of the Welsh mountain breed, four years old, a great favorite and a great pet. His symptoms were those of acute tympanitis, an unusual complaint for such an animal; and I was led, therefore, to inquire somewhat closely into the probable cause. I found that, for the most part, the pony was kept up in the stable; but on the previous evening he had been turned out for an hour or two into a little patch of land near the house. The pasture was described to me as exceedingly bare of grass, but quite *yellow with buttercups*, and to my great surprise, an examination showed that he had eaten very freely of these, for there were very few remaining. On the morning following he was discovered to be suffering severely, and the appearance of his stable seemed to indicate that he had been in violent pain during a great part of the night. The symptoms did not much differ from those of ordinary enteritis, excepting that the belly was more than usually tympanitic, and I perceived that *his mouth and throat were much inflamed and tender* when I came to give him his medicine. For the first twenty-four hours it seemed doubtful whether or not he would die; for notwithstanding that the most active treatment was had recourse to—bleeding, and counter-irritation to the belly, opiates, aperients, and frequent enemas—he obtained very little relief. After a time, however, the more serious symptoms began to abate, the bowels were freely acted upon, and the pony rapidly recovered, although for several days he appeared to have some difficulty in swallowing. He is now quite well.

If we admit this to have been a case of poisoning with what I have already spoken of as one of the least acrid of the ranunculaceæ—and I have not the slightest doubt on the matter—it illustrates with some clearness many of those exceptional circumstances under which the protective instinct of animals is often found to fail them. The pony in question was young, unaccustomed to be turned out, led a peculiarly artificial life, and was greatly petted and fed much from the hand—circumstances which tended, all of them, more or less, to vitiate his tastes and destroy his natural instincts. This is the only clearly proven instance of the baneful effects of the buttercup that I remember to have met with, and hence I have thought it advisable, whilst on the subject of vegetable poisoning, to place it on record.

But how often does the country practitioner meet with cases, undoubtedly of poisoning, where the agent and the symptoms are alike mysterious! Many such do I recollect, and one which, for two or three reasons, it may not be without interest to relate in this place. A farmer residing some five or six miles from this town, in the summer of 1854, made a claim on one of the fire insurance companies here for the value of several yearling cattle, said to have been lost *from the effects of lightning*. The circumstances under which the claim was made not seeming quite satisfactory to the directors of the company, I was requested by these gentlemen to visit the farm in question, and investigate and report on the matter; and perhaps the facts of the case will best appear in the exact words of the report I then made, of which the following is a correct copy. It bears date June 12th, 1854.

"REPORT.

"In compliance with the request of the Secretary to the Shropshire and North Wales Insurance Company, I went over to Wheatley on the evening of Friday, the 9th inst., for the purpose of inspecting some cattle said to have been affected by lightning. One of these cattle—a two-year-old heifer—I found lying dead beneath a tree, in a field near the house; and another—a yearling bullock—was lying stretched at length under a hedge in the same field, evidently in a dying state; a third was grazing near, and seemed playful and lively enough when moved, though with something of the general appearance of an animal recovering from a recent ailment.

"I was informed that the heifer had died on the day previous, and I proceeded at once to an examination of her. There were no marks of external violence of any kind, the skin being in every part quite perfect, nor was there the slightest lesion of the muscles, or other appearance about any of the external tissues that was not perfectly natural. On laying open the cavity of the abdomen some marks of inflammation of the peritoneal membrane, more especially of that portion of it which lines the regions of the loins and the abdominal muscles, were apparent. The appearance of the first, second, and third divisions of the stomach was quite healthy; but the fourth division of the stomach—the abomasum—which is the true digestive stomach of the ruminant, was quite empty of food, as were also the whole of the remaining intestines, large and small. The inner lining membrane of this organ was also inflamed in patches, and this appearance extended itself further to the duodenum, and, indeed, throughout a considerable portion of the small intestines. Some of the contents of the chest exhibited likewise traces of disease. Streaks of inflammation were visible both on the pleura and pericardium, and there was also some appearance of congestion of the lungs.

"On the morning following, having been informed of the death of the bullock of which I have already spoken, I again went over to Wheatley, for the purpose of making a post-mortem examination on the fresh subject, as Mr. Merry, the owner of the animals, seemed to think that some of the appearances observed in the heifer were not so much the result of disease as of putrefaction. But the morbid appearances here were as nearly as possible the same in character, though not, perhaps, in extent. There were the same peritoneal discolourations, and the same patches of inflammation on the stomach and intestines; but the viscera of the chest had in this case a more healthy appearance, as there were no marks of pleural disease, and but very slight congestion of the lungs.

"Such were the appearances after death: of the symptoms whilst living I could gain no minute information. The animals, six in number, five of which are now dead, are said to have been first observed on the evening of Sunday, the 28th ult., at the same time, standing apart from their fellows, and looking dejected. They were put into a pasture by themselves, and with the exception of one, which still survives, were never observed to graze or ruminate afterwards. I found, on inquiry, that their evacuations had been, for the most part, natural, and that they had never exhibited any deficiency of muscular energy. They were attended on the following day by a cow-leech, who drenched them once with some purgative, which is said to have operated very well; but nothing more was done, and one died three or four days afterwards, the others having dropped off at intervals since. They were left out of doors night and day, being thus exposed to every change of atmospheric temperature, and having only the cold ground to rest on, although the fact of their continually crouching under trees and hedges, and creeping into the warmest nooks they could find to die, ought to have dictated a wiser and more humane course.

"With these few facts before us, we have now to inquire into the causes of the death of these cattle. The morbid appearances which I have described—though by no means insignificant—seem scarcely sufficient to explain the result. The only symptoms described are dejection and loss of appetite, and as these are common to nearly every serious disease, they afford us no light here. It appears there had been several thunderstorms in the neighbourhood on the 27th and 28th ult., and this circumstance seems to have given rise to the suggestion that these cattle had been struck by the lightning. But there is nothing in the facts to support this hypothesis, even for a moment.

"The fact that the animals were first observed standing together, and on the evening of the storm, proves nothing; and the circumstance of five or six out of a flock of cattle falling amiss at the same time, is too common an occurrence to need peculiar consideration, and as readily explained by many other suppositions as by that of lightning. Lightning, it must be borne in mind, destroys life by a sudden shock to the brain and nervous system; and if death is not almost immediate in cases of animals struck by lightning, they generally—I think I may say nearly always—recover. When the shock has not been sufficiently severe to destroy life, its effects are like those of severe nervous disorders,—*prostration*, *insensibility*, *paralysis*, for a time.

"But no such symptoms were found in the cases in question. The animals were discovered standing up, they appear to have been all along sufficiently sensible to ordinary impressions, and they continued to move about with perfect ease and freedom. There was no external mark of violence to indicate the passage of the electric fluid—in a word there is not one peculiar feature in the whole case, as far as experience or science has taught us, in the least degree consistent with this conjecture. To suppose, then, that the malady under which these animals suffered was in any respect the effect of lightning, is to assign to this agent another and a more subtle power than any which has hitherto been noticed in science. The supposition is too absurd to be entertained, even for a moment, by any one acquainted with the principles of pathology.

"But whilst it is thus perfectly clear that the death of these animals was in no way connected with the effects of lightning, I confess that the real cause of the evil remains somewhat obscure. Had I been called in earlier, this obscurity might possibly have been less. The cases were never seen by a qualified veterinary surgeon until I saw them on the day on which the last one died, and no treatment, with the exception of a single dose of opening medicine, was ever adopted. Even the ordinary precautions to a sick animal of a shelter and a little dry straw were not afforded them. The appearances of the stomach and intestines seem to indicate that something noxious had been taken with the food, and indeed the most reasonable supposition appears to be that they had eaten of some of the many poisonous herbs with which the hedgerows abound at this season of the year, and no means having been adopted to counteract this, and no proper care or treatment resorted to, they continued to sink, and died at length from sheer exhaustion of nervous energy. It is precisely in this way that many of the vegetable poisons produce death, and the post-mortem appearances in these cases are quite consistent with this supposition. Let it be understood, however, that I have given this as a conjecture, and no more."

That these were cases of poisoning by some narcotic vegetable I have not the slightest doubt; for, of course, the farrier's theory of lightning is too ridiculous to be spoken of seriously in this place, although, as will be seen, I was under the necessity of treating it with some gravity in my report to the Directors. The whole case is an excellent illustration of what I have already called "the low amount of intelligence generally brought to bear on the diseases of cattle." Looking at the length of time which some of the animals survived the first serious symptoms, it is more than probable that with anything like proper treatment their lives might have been saved; but the fact was that, after the lightning theory had been so happily conceived, the poor animals were abandoned to their fate, and the consequence was hardly to be wondered at. What might have been the particular agent of the mischief I cannot presume to say. Perhaps I ought to have searched the meadows, with a view to this discovery, but it must be borne in mind that I was more likely to be misled than properly informed in my investigations, for my inquiries were looked upon with great jealousy by the parties interested, as being hostile to their claim for compensation, and I had some difficulty in obtaining the slightest information of a nature to be relied on. Nor did I feel myself called upon to go further in the matter. I was satisfied at the time that they were simply cases of inadvertent vegetable poisoning, and a more enlarged experience has only tended to confirm that impression. They are curious, at all events, for the extravagance of the assumption by which ignorance sought to explain them, and I have given this publicity to their reminiscence, because they seem to illustrate several of the observations which I made in the early part of this article.

ON PARTURITION.

By W. Cox, Sen., M.R.C.V.S., Ashbourne.

As veterinary obstetrics have of late occupied your pages, the following illustrative cases may not be deemed out of place.

Case 1.—On the 16th of May, 1859, I was requested to attend a mare that could not foal. She was the property of Mr. Mellor, Hope-dale, near Alstonefield, seven miles from this place. On my arrival, I found that the two fore legs of the fœtus were presented up to the knees, and that the head was turned back. Several *noted* persons had been endeavouring to bring the foal away, but they could not; not one of them being able to reach any further than the foal's ears. I pushed the fœtus back as far as I was able to do, and then I could only touch its eyes. Consequently, I at once proceeded to perform embryotomy, which was done in the following manner—I generally use a curved, sharp-pointed bistoury, made for the purpose, but on this occasion I employed an embryotomy thimble, which I purchased of Mr. Arnold, of West Smithfield, London, and which answers very well—The fœtus was first pushed back, and the limb to be operated upon was next drawn forward a little. I then passed the instrument as far as half-way up the scapula, where I commenced my incision in the front, carrying it onwards to the point of the shoulder, down the course of the humerus, and over the elbow-joint, along the arm, over the knee-joint, and down to the inner side of the fetlock. I then, with the scalpel, skinned the limb to a little above the knee-joint, which was pulled out for the purpose, leaving it attached at the fetlock; the remainder was separated with the hand over the whole of the limb. A cord, having a running noose, was next fixed above the elbow, and another above the knee-joint; the skin at the fetlock was then divided, and a cord attached to it. This being done, three men easily pulled off the fore extremity. The other limb was operated upon in the same way, by my then pupil, Mr. J. Coe, M.R.C.V.S. *We had taken the precaution to fasten a cord to the skin of each extremity.* Mr. Coe then pushed back the fœtus by pressing against its sternum, and by putting my arm alongside his I was enabled to lay hold of its jaw, and bring forward the head, which I found was a crooked, or malformed one, but delivery was now soon effected.

The operation occupied forty minutes, but the mare went on very well afterwards.

This made the twenty-third case in which I had performed embryotomy on foals and calves during the winter and spring of 1859, besides great numbers that I extracted during that period without resorting to this operation.

Case 2.—Mr. Chadfield, of Prodsley Wood, had a mare that could not foal, from the same cause as the above, and I operated in the same manner, only I brought the head of the fœtus forward, when the fore extremities were removed by fixing a hook in one of the orbits. With the assistance of my son this foal was extracted in thirty-four minutes.

Case 3.—A mare belonging to Mr. John Haywood, of Ashbourne Green, was unable to parturiate, from the head of the fœtus being turned back. I found the fore legs protruding as far as the knees, as in the other cases, and I operated in the same way as before described. I was nearly an hour in extracting the foal in this instance, arising from the extreme violence and throes of the mare; nevertheless, this animal likewise did well.

I seldom find much difficulty in extracting foals or calves in presentations of this kind, unless there is some malformation either in the parent or offspring.

Case 4.—My last case of this kind shall be an unsuccessful one. It occurred in my practice, eight years since, and it brought on an eruptive disease in my arms, called by some writers *ecthyma simplex*, which has troubled me very much, more or less, every year since, during the parturition season.

CASE OF SUSPECTED POISONING.

By E. O. Harrison, M.R.C.V.S., & V.S. Royal Artillery.

The subject from which the morbid specimens sent were taken, was a small, thorough-bred, gray horse, my own property, four years old. He had been ridden as a hack by me for about twelve months, eleven of which he enjoyed, to all appearance, good health. He was vigorous in his movements and pleasing to the eye.

About the commencement of the last month there were evident appearances of the animal losing condition. His coat began to stare, the appetite was irregular, a cough was present, the bowels were frequently relaxed, the visible membranes injected, and, at times, a good deal of fever with a general failure of physical strength was manifested. Aperient and febrifuge medicines were administered, but they afforded very little, if any, relief. As the winter was approaching, I determined on placing the animal in a cool box. This seemed only to aggravate the aforesaid symptoms. Now, however, there was evidence of the liver being deranged, by the mingling of bile with the blood. I therefore gave small doses of calomel and opium, with some appearance of benefit. This, however, continued only for a short time, as the animal was soon again in the same state. General and great emaciation was present, associated with extreme debility and an irregular state of the bowels. There was also a most anxious expression of the countenance, and a frequent looking round at the sides, accompanied with heavy sighs; he likewise frequently lay down, although not for any lengthened time. Such medicinal agents were given at different periods, as the symptoms indicated, but without any good resulting. As time passed on every symptom became worse, until February the 14th, when, the animal having become a living skeleton merely, death closed the scene.

The very unsatisfactory and inexplicable symptoms and appearances in this case, in conjunction with some other facts, led me to suppose that there was something seriously wrong in the treatment of my horses; and, a searching and strict inquiry being instituted by me, and from subsequent collateral circumstances, I ascertained that the man in charge of them had been in the habit of administering some drug or drugs, for the purpose of producing a shining coat—in other words, to make the horses look well. Of course a denial of this was given when I asked what was the agent he had used. Circumstantial evidence, however, was too strong to be thwarted, and as far as my investigation went, I was led to believe that sulphuric acid at one time, and arsenious acid the other, were the agents that destroyed my horse.

Chemically reasoning, you may perhaps be able to account for the state of the liver from the effects of one or both of these drugs. You will perceive the organ is studded with granular matter. The illness first commenced the latter end of September, although a month previous to that I had observed a variable appearance in the horse, he being at times off his feed for a short time.

Examination of the Parts, by Assistant-Professor Varnell.

The œsophagus was inflamed throughout, the vessels of the attached surface of the mucous membrane being engorged with blood. The villous portion of the mucous membrane of the stonach was inflamed, in some parts intensely so; giving the surface a peculiar patchy appearance. The lining membrane of the trachea and larynx was unusually red. The heart was soft and flabby, and a few petechial spots studded its inner surface. The kidney was unusually dark in colour, from congestion of its vessels, and on making a section of it, its surfaces were found to be studded—the cortical portion more especially—with very dark spots, indicating that the Malpighian tufts were highly congested.

In forming an opinion as to the cause of the death of the animal, we cannot but think that the lesions above described were produced by some mineral poison or poisons.

[The earthy matters being dissolved out of the liver by means of dilute acid, no effervescence took place. To the solution, oxalate of ammonia being added, a cloudy precipitate was thrown down, showing the existence of lime. Another portion being neutralized with carbonate of soda, on the addition of nitrate of silver to it a yellow deposit took place, arising from the presence of phosphoric acid. Thus the deposition consisted of bone-earth.]

ON VETERINARY OBSTETRICS.

By C. Hunting, M.R.C.V.S., South Hetton.

Since I forwarded my paper on "Veterinary Obstetrics," for your March number, the discussion of that important subject has been more fully entered into at the meeting of the *West of Scotland Veterinary Association*, and also by other correspondents in your pages, which proves very clearly to me that the doctrine attempted to be laid down by Messrs. Aitken, Balfour, and Calley, is not true, and that they wrote their papers, not so much for the purpose of laying their opinions and experience before your *professional readers*, as to delude the ignorant, by attempting to prove that no special danger accompanies difficult parturition in the *mare*.

But as the subject is not only interesting, but very important, and is worth more consideration than it has as yet received, I trust to see many of the older members of our profession come forward and give us the results of their long experience in such cases.

Although my paper was written partly to defend a professional brother from what I considered a most unwarrantable attack—as Mr. Calley's paper in your November number certainly appears to me to be—I am glad to bear my testimony to the statement in your leader on "Veterinary Obstetrics," viz., "that there are many who are experts in the treatment of such cases, and whose knowledge is founded on the *scientific* and *practical* information they obtained during their pupilage." I know of no subject more fully explained, or more forcibly expressed, during my attendance at College than that of "parturition," by Professor Simonds. On reference to my note-book, now before me—and which I have frequently referred to before with advantage—I see I have not less than six folio pages of notes taken down from those very valuable lectures, as well as a rough sketch of several very useful instruments recommended by the professor; as also Skillet's work on 'Parturition,' which contains many plain but valuable practical suggestions in these cases. It was principally in consequence of these lectures which compelled me to state that I could not subscribe to the statement of your "Bolton Correspondent," that, as a profession, we are "worst up" on obstetric surgery.

I believe the three reasons given by Mr. Lawson are the principal causes why we fail to give relief as often as we otherwise should do.

There is, however, to my mind, one other cause, even more important than any he has advanced, as affecting our *equine* patients, and one over which we have little or no control, viz., the violence of the throes and the great excitability of most mares in difficult parturition.

Another consideration of importance to the surgeon in his prognosis of the case is the fact, that the most excitable temperaments are nearly always the most violent, and their expulsion pains the most difficult to overcome. The chances of success in difficult cases of parturition in the mare, as compared with similar cases, as seen in our docile patient "Crummie," is as twenty to one in favour of the cow. We most of us like to record our successful cases, but these, from the fact that we have had no *extraordinary difficulties* to overcome, are often far less instructive than our unsuccessful ones. I am led to make these observations from the manner in which your correspondents, Messrs. Aitkin and Balfour, have stated their cases in your February number. Our object in professional writing ought to be, either to promulgate facts, or to solicit the opinions of the "profession" on obscure points of practice. After carefully reading over their remarks, I can arrive at only one conclusion, viz., that these gentlemen lay it down as a *rule,* that there is no particular difficulty or danger attending protracted cases of parturition in the *mare;* in fact, that you "may *always* reasonably reckon on saving your patients." My experience is the reverse of this, and I would ask the profession is this their experience? I had always believed that it was a well-known fact that at least 60 per cent. of *long-protracted* cases of difficult parturition in the *mare* proved fatal to the parent; not so frequently from non-delivery as from exhaustion produced by violent exertion and loss of blood during the period of labour.

I quite agree with Mr. Lawson in his statement that the removal of the legs at the *knee-joints* is worse than useless, and for the reasons stated by him. If the legs are removed, they must be removed entire, if you would gain any advantage by the operation. The object in removing the legs is to give room for adjusting the head, and without you gain the space occupied by the shoulders, your operation is useless. I have met with cases where, after finding the head, securing the lower jaw with a rope, and using hooks in the orbits as well, it was impossible to bring the head and neck straight, owing either to the size of the fœtus or the enormous contraction of the uterus, or both. Under such circumstances you must remove the shoulders, however difficult the task may be; failing to accomplish this you cannot deliver your patient, and in some cases it is quite impossible to effect it.

Mr. Aitken tells us, at page 142—"The mare was very restless, *unmanageable, kicking fearfully* when approached;" and yet we are told in the next page that the animal kept her legs during the *whole time* that he amputated both fore extremities. Truly Mr. A. was a most fortunate man to have met with such a sudden transmogrification of temperament in an animal upon which he had to perform a very tedious operation.

Mr. Aitken also says, at page 143, that he always amputates at the knee. I have found it far better to amputate at the fetlock-joints, leaving the feet attached to the skin, and fixing a rope thereto. After skinning the leg in the usual way, as high up as the elbow-joint, I double the metacarpal bone upon the radius, bringing either side of the noose over both bones, and then pass the free ends of the rope through the noose. The more the ends are pulled the tighter will the noose grip the metacarpal upon the radius. I then proceed to skin as much of the shoulder as I can. The assistant pulling at one or both cords upon the foot and knee greatly facilitates this operation, as also that of cutting asunder the muscles within your reach, which attach the fore extremity to the trunk. Having accomplished this we frequently require the united efforts of three or four men to pull away the scapula from its attachments which cannot be severed with the knife. If you amputate at the knee, and can only divide a few of the muscles which attach the extremity to the trunk, where can you get a fixed point to resist the strength of three or four men, and which is frequently required to pull away the shoulder *after* you have cut all that you can reach?

Mr. Aitken also states that one fore leg was *tied up*. A far safer, and therefore better plan is that recommended by Professor Simonds in his very able lectures on the subject, viz., to fix a rope on *each* of the hind pasterns, making the free end fast to *one* of the fore legs, by which means your patient can lie down or get up at will, and yet is effectually prevented from doing any injury to herself or the operator.

So far as the subject has been discussed by impartial writers it has fully borne out my statement, that at least 60 per cent. are fatal cases in mares. It appears to me to be extremely unfair in a professional man to publish a single case—even when the presentation is the same in both instances—to prove that a brother practitioner must have erred in judgment because the one case happened to be successful, and the other unsuccessful. Although the presentation may be the same in both cases, there may be so many unfavorable circumstances to contend with in the one, which are not seen in the other, that the man who treats the fatal case may deserve credit for his skill; whilst the other, though he gets all the praise, may deserve none. To prove this very clearly, I shall briefly state two cases which occurred in my own practice.

CASE 1.—May 20th, 1854, I was called to see a four-years' old cart-mare, the property of W. Taylor, Esq., Heseldon Hall, nearly eleven miles from my house. The messenger stated that the mare was foaling; but they could not find the head, although the legs were in the passage. On my way I expressed an opinion to the hind that the mare would be lost, fully expecting that all the farmers within three miles would have tried "their experience." Mr. Taylor, however, was a sensible and humane man, and when they could not find the head, he refused to allow any one to interfere with the fœtus until he saw whether I could attend.

On my arrival—not less than three hours after they had explored the uterus—I found the mare lying at full length, apparently suffering but little, with the fore feet of the foal protruding out of the vagina as far as the fetlock-joints. The throes were not at all violent, and the vulva not much swollen. On examination I found the head lying on the side of the fœtus, but could only reach as far as the orbit, although the uterine contraction was unusually slight, and the parts not much swollen, nor yet very dry, and the mare lying comparatively quiet. I had some sacks filled with straw, her hind parts raised—as I have frequently done with the cow—and the sacks placed under them. I then proceeded to insert a common hook, to which was attached a strong cord, into the orbit, and whilst assistants pulled at the cord, which brought the head a little nearer the pelvis, I succeeded in getting a slip-noose over the lower jaw. An assistant was then ordered to push as much as possible against the protruding extremities, whilst others were pulling at the cords fast to the jaw, and the hook in the orbit. In less than half an hour from the commencement the head was brought into the pelvic cavity; ropes were then fixed on the fetlocks, and delivery effected in a very short time. Before I left the hall, the mare was up, and had eaten a little mash, and in a few days was perfectly well.

Case 2.—This was a mare about ten years old, the property of Mr. Wm. Hutchinson, of "Old Shotten," and which had had several foals before. This case occurred the following week to the other one, and was in the first instance attended by a neighbouring practitioner, a member of our profession, and a very good one too. The presentation was precisely the same, but the circumstances attending it the very opposite of what I met with in almost every particular. The mare was very violent, and the expulsive throes rapid and excessively strong, almost from the commencement of labour. The vagina was very much swollen, and the uterus and fœtus very dry. The gentleman who attended the case from the first—that is, after some half dozen farmers had tried their "experience" and failed—did all that science and art could suggest. He had amputated one fore extremity, but failed to remove the other, and therefore recommended the mare to be destroyed, but a relation of Mr. Hutchinson having seen Mr. Taylor's case, advised my being sent for. On my arrival I found the case as I have stated above; the parts were so dry, and so great was the contraction of the uterus, that I found it impossible to ascertain the correct position of the head. It required immense force to pass the arm at all, and so tight did the uterus grip, that in a few minutes my arm was rendered useless. From the swollen state of the parts, the violence of the throes, and the excited state of the animal, I concluded that it was a hopeless case, and therefore recommended the poor animal to be put out of her sufferings at once; only, however, a few hours sooner than she would have died, had I been brutal enough to cut away piecemeal the fœtus, and to see her sink either during the operation, or a few hours after it, to gain a little popularity from the incompetent judges who were present, at the expense of an honorable and upright member of our profession.

Here are two cases, to the uninformed alike, where one practitioner gains a great deal of praise, but deserves none. Any other member of the profession could and would have delivered Mr. Taylor's mare as easily as myself, it was an exceptional case—I was never so fortunate as to meet with one like it, either before or since—but I do not believe it was possible for any man to have saved the life of the mare in the second case, unless he had been present before, or at the time the membranes became ruptured; yet the practitioner was condemned as a bungler, because he could not accomplish an impossible task.

In conclusion, I wish to offer a few remarks on the communications in your November and June numbers, signed by "Andrew Calley." I think no member of the profession can read these letters without arriving at the conclusion that they are the production of a partisan, written for the express purpose of damaging the professional reputation of a member of the corporate body, and as such will be condemned by ninety-nine out of every hundred in the profession south of the Tweed. Had the discussion of the case been confined to your pages, we could have understood the matter better, and would have been charitable enough to have supposed the presumed author to be animated with a desire to obtain information from the profession—of which he is not a member—to guide him in future cases of a similar kind: but what is the fact? This Burntisland blacksmith publishes a pamphlet on the case, and sends it by post: to whom? One would naturally suppose to the members of the Veterinary Profession—the only competent judges of the case in question; but no, this knight of the anvil, Vulcan-like, knows better where to strike to injure his opponent, than upon men who would analyse his blows, and scorn his chaff, which contains no wheat. But to the point: to whom does Andrew Calley send these books on cases of difficult parturition? Why, to farmers, to gentlemen, to members of the Highland Agricultural Society; these are the men he treats to his books, for what purpose I shall leave your readers to judge for themselves. Were it only Andrew Calley writing and publishing such matters, and in such an unprecedented manner, one might be content to let it pass without a remark, but one must be a novice, indeed, to suppose that a village blacksmith could afford to print pamphlets, and send them out by post to different parts of the kingdom at his own expense, merely to elicit information as to the best way to treat a similar case of difficult parturition. The fable of the mountain in labour and bringing forth a mouse, is very applicable in this case, and the following extract from a letter published in the *North British Agriculturist* for May 9th, 1860, by W. Sadler, Esq., a gentleman of high standing in the district where the case occurred, to whom it appears one of these pamphlets was sent, fully proves that even this small mouse has been caught in a trap of its own making, and condemned in language so appropriate, that to smooth it down would be unjust to the author. The letter is headed, "Malice among Veterinarians," the first clause of which is as follows:—"In last week's paper I noticed a long and disparaging article against Professor Gamgee, purporting to come from a person called Andrew Calley. *The name* is *the same* which was appended to a printed pamphlet, dated Burntisland, which I, along with others in our district, received through the post some months ago, and which appeared to me at the time such a piece of *dirty and malicious work* that I immediately pitched it into the grate." The letter goes on to state that from inquiries subsequently made, he has reason to believe that Calley did not pen the productions to which his name is attached.

In Mr. Calley's last communication he puts a great number of questions, some to the profession, others to Mr. Gamgee; some he answers himself, and some statements are made therein which very clearly prove that the man who wrote them does not in the least understand the subject upon which he is writing. It is clear that the writer supposes that what is right and practicable to do in one case, is equally so in another, whereas it may, and *often is*, purely impossible, although the presentation may be the same in both cases. And when a man talks about legal actions for damages, because a professional man *advises* a hopeless case to be destroyed, and tells us that a mare which had been in labour *about twelve hours*, during the last six of which she had been constantly subject to explorations of the uterus and endeavours to extract the fœtus, had a *regular pulse* and manifested *no* symptoms of exhaustion, he must suppose that the members of the Veterinary Profession are more gullible than the farmers and gentlemen to whom he sent his pamphlet.

I purpose in my next paper to revert to the subject, and endeavour to answer at length the questions put by Mr. Calley in your June number.

EXTENSIVE INJURY TO THE HEAD OF A HORSE. TRACHEOTOMY SUCCESSFULLY PERFORMED.

By W. A. Cox, Jun., M.R.C.V.S., Ashbourne.

On 24th May last I was requested to attend a horse belonging to Mr. Gould, of Hawkslow, near this town. The symptoms present, as described by the messenger, were, considerable swelling of the head, it being three times as large as it ought to be, difficulty in breathing, and profuse perspiration. The man said the horse had either been halter cast, or he had got his hind leg fast in the halter, and thus bruised his head, which happened on the 22d.

On visiting the animal I found him to be in the state already described: the nasal openings were nearly closed by the swelling, the head was pendulous and resting on the ground, he reeled in his gait, and the power of deglutition was gone. As it seemed more than probable the animal would die from suffocation, if not at once relieved, I persuaded the owner to have tracheotomy performed. An incision having been made in the skin, I cut through the trachea in the form of a star, and introduced the common tracheotomy tube. The relief afforded was immediately apparent. The animal could now move without staggering, and the respiration became much lessened in frequency. To maintain the head in its proper position we constructed a sling, formed of bags suspended from the ceiling; blankets were then placed around the head, and a continuous stream of hot water poured on to them. This treatment was continued until my next visit, on the 25th, when I found the swelling was a little reduced, and the animal evinced a desire to eat, but could not. As, however, he could swallow fluids, liquid nourishment was given him, and a little fever medicine, the fomentations being continued.

May 26th.—A marked improvement had taken place; the head is much reduced in size, and not so pendulous. He can now masticate a little, and drinks freely. Still continue the fomentation, and repeat the fever medicine.

Being engaged on the 27th in another direction I did not visit my patient, but received a message from the owner stating that the horse's head was nearly reduced to its natural size, and asking if he should discontinue the fomentations, which I sent word to do.

May 28th.—This morning I thought I might venture to remove the tube; but on placing my hand over the orifice the animal evinced uneasiness and difficulty in breathing, I therefore considered it advisable to let it remain in a little longer. After this I did not see the horse for some days, and the owner, thinking it necessary, as the horse seemed to be recovered, removed the tube himself. I saw the animal soon after, and the wound was almost healed. The horse has done well since, and now goes regularly to work.

A LUSUS NATURÆ.

By W. Maw, M.R.C.V.S., Thornton, Yorkshire.

On the 30th May I was requested to attend a cow, the property of Messrs. Wade and Son, Ebbertson, which could not calve; but, not being at home, my brother attended her, and found her labouring violently. She had been in this state for six hours. They had at first called in a shepherd, who found that the fœtus presented its fore legs, the head being turned back. After some time he got it into its proper position; but with all the force they used they were not able to remove it, consequently they determined to call in a professional man, more especially as it was the cow's first calf.

After my brother's successful manipulation he found it to be a very curiously formed calf.

It had a protuberance on its head, about the size of a child's head, with hair on it, and the tongue protruded from the mouth like a man's hand, with the thumb and four fingers.

On all the four feet were four digits, and the hind quarters and tail were like those of a dog; the legs were about six inches long, and there was no roof to the mouth; thus leaving the mouth and nostrils opening into each other.

The cow was much exhausted after her delivery of this monstrosity, but with proper management she has recovered.

CASE OF ACUTE DIARRHŒA ARISING FROM IMPROPER FOOD.

By A. H. Santy, M.R.C.V.S., York.

On April 1st I was requested to go into the country, about four miles distant from this, to see a two-years old colt, which the man said was suffering from diarrhœa. The animal appeared to be well the night before, was playing and seemed very lively. He had been running in a fold-yard; his food having been oat-straw, with oats, barley, and a little wheat, mixed together; but last night he ate some mangel-wurzel refuse, which had been thrown out from the cow-house.

When I saw him, at 9 a.m., I could detect no pulsation at the submaxillary artery, the breathing was quick and laboured, the mucous membranes were injected, the extremities cold, the alvine evacuations profuse, running down his legs like water, and very fœtid. I gave him the following draught—

℞ Pip. Cayenne, ʒj;
Cerevisiæ, Oss;
Oleum Lini, Oj;
Ether. Sulph., f℥j. Misce.

With a view to rouse the circulation, and as he exhibited pain by shifting about, I ordered his abdomen to be well fomented with hot water, and then left him for two hours. When I returned I found he was dying. I poured boiling water over his belly, but no effect was produced by it, and he died at 2 p.m.

Post-mortem examination.—All the viscera were healthy, except the intestines, which were slightly inflamed, and in a pouch of the colon a large quantity of sand existed. The bowels contained much fluid ingesta.

CASE OF RUPTURED STOMACH OF A HORSE.

By M. Hack, M.R.C.V.S., Leicester.

The subject of this communication was an active bay cart-horse, seven years old, belonging to a farmer of this town. He had been in regular work, without showing any symptom of disease, until Wednesday, May the 3d, between eleven and twelve o'clock a.m., when a messenger was sent to me, requesting my immediate attendance on a horse having colic, accompanied with violent pain. The animal had been at work since seven o'clock in the morning, drawing a cart.

On my first seeing him, which was about one p.m., not being at home when the messenger arrived, I found my patient lying down and rolling over, having an anxious countenance, the perspiration rolling off in drops, the mouth hot and dry, the Schneiderian membrane also dry, but not changed in colour, and the pulse 46 in the minute. I immediately administered an antispasmodic draught, having taken one with me, and then proceeded to put a few questions to the waggoner as to how he had been feeding his horses, &c. He informed me that the horse in question had eaten that morning the same quantity as usual, and of the same kind of food as given him for the last two or three weeks, which consisted of cut oat-straw, three quarterns of split beans, and one pound of linseed cake per day for each horse, the cake being mixed with water, and the cut meat also made moist when given to the horses.

I may here add, that at six o'clock, the same morning, I was called in to attend a cart-mare in the same stable, labouring under an attack of spasm, which quickly recovered after giving her a draught, and she went to a little light work the same day.

3 p.m.—My patient is still in pain, the pulse has risen to 52 beats in the minute, easily compressible, the breathing is accelerated, and he has not passed any fæces. I was, how-

ever, informed by the man in attendance that he had done so in the morning, and when at work he tried to urinate, but failed. I immediately back-raked him, and explored the bladder, which viscus I found empty. Gave Aloës Barbadoes, ℥vj; Opium et Hydrarg. Chlorid., aa, ℈ij in ball, repeated the antispasmodic draught, and stimulated the abdomen with compound liniment of ammonia. He refuses to drink any water.

5 p.m.—Animal still in great pain; draught repeated.

7 p.m.—Returning, I found my patient still in great pain, and was informed that he had been so ever since I left, not the slightest relief being given by the antispasmodic draughts; the pulse was now 66 in the minute. I gave sulphuric ether, f℥j; tincture of opium, f℥j; spirit of nitric ether, f℥j, and threw up an enema of soap and warm water, which quickly returned, slightly discoloured; I also applied ℔iss of mustard, in the form of poultice, to the abdomen.

10 p.m.—The breathing has become quicker, and the pulse 84 in the minute. He is still in pain; at times he is drowsy, but only for a few seconds, and the visible mucous membranes are injected. I did not perceive him to be more easy in any particular position; he stood but little. I gave another enema, and resolved to sit up all night with my patient.

12 o'clock.—Pulse 90, and weak; animal still in great pain. Repeated the calomel and opium in ball, and also the enema.

2 a.m.—Upon my entering the box, I found my patient down; he rose partially upon his fore legs, gave an occasional look back at his flanks, and, by frequent curling of the tail, indicated internal pain. I could not perceive any swelling or irritation from the mustard. From this time he rose upon his legs, never after to lie down until he dropped and died. There were, before this took place, spasmodic twitchings of the muscles of the neck, breast, and flanks, with an occasional effort made to vomit, resulting in the escape of a little watery fluid from the nostrils; the pulse was hard and wiry, very difficult to count, it being intermittent; the eyes were bright; the surface of the body cool.

My prognosis was, of course, unfavorable, and I diagnosed the case to be one of rupture of some portion of the abdominal viscera, or the existence of some mechanical obstruction. But as life still remained, struggling against death, and it being our duty to do everything for the relief of an animal's sufferings when submitted to our care, I gave a dose of castor oil, repeated the enema, hand-rubbed the ears, bandaged the legs, clothed the body, and then left him for a short time, without, however, any hope of recovery.

4 a.m.—The pulse is more feeble; the ears and extremities are cold. Remove the mustard plaister, which has acted slightly.

8 a.m.—The animal continues to stand with his head in one corner of the box; a gurgling sound is heard in the trachea, probably from some of the vomited matter having found its way down that tube. Repeat the enema, but give no more medicines.

12 o'clock.—He has been quiet since I left him, but now begins to be more restless. He walks round his box occasionally, the pulse is imperceptible at the submaxillary artery, the breathing is quicker, the spasmodic twitchings of the muscles of the face have increased, and the eyes are amaurotic. In this state he continued until between one and two p.m., when death put an end to his sufferings.

Autopsy.—The trachea contained a quantity of semifluid matter, consisting of the medicines, mixed with the food; congestion of the lining membrane of the lungs, heart, &c., existed. Upon laying open the cavity of the abdomen, a quantity of ingesta was seen floating among the intestines; the peritoneum was reddened in places; the large intestines, with the exception of the rectum, were full; the stomach was nearly empty, having a rupture in its peritoneal and muscular coats, to the extent of fourteen inches, along its greater curvature; the rent in the mucous membrane was sufficient to admit of one's fist; the walls of the stomach were very weak, and a large quantity of bots were found adhering to the lining membrane, which was inflamed; the liver, kidneys, and spleen were healthy; the latter organ was small.

I do not forward this case with an idea of there being anything uncommon, either in the symptoms or in the post-mortem appearances, being fully aware that there are plenty of cases of this kind on record. At the same time, having had an opportunity which seldom or ever offers itself to a private practitioner of closely watching the progress of a case from its commencement to its termination, I have thought it might not be without some value.

In conclusion, I would state that there was not any tympanitis present. At what period did the rupture take place? I am of opinion that the external and middle coats gave way at the commencement of the spasms, if not when at work. Is vomition in the horse a sure sign of rupture? So far as my experience has gone, it is not, for I have known a horse to vomit a large quantity of food and recover; and I remember a case of enteritis, accompanied with obstinate constipation of the bowels, in which the horse vomited, and died without any rupture existing.

CASE OF RUPTURED HEART OF A HORSE.

By D. E. James, M.R.C.V.S., Haverfordwest.

Dear Sir,—I have forwarded you the kidneys, spleen, and heart of a horse; the last-named organ having a rupture in the muscular structure of the right ventricle. The history of the case I will append.

I am, dear sir,

Your obedient servant.

Assistant-Professor Varnell.

April 2d, 1860, 9 a.m.—I was hastily summoned to see a bay carriage-horse, five years old, the property of I. R. Powell, Esq., of this town, which was said to be suffering from inflammation. On my arrival I found my patient manifesting great uneasiness by pawing, looking back at his flanks, and making attempts to roll. Pulse 38, and weak; visible mucous membranes natural; mouth moist and cool; respiration normal; extremities warm; the bowels constipated.

On inquiring into the history of the case, I was told that he had not eaten his food that morning, nor the day before, as usual, and that the hay was very coarse and of very inferior quality; and further, that he had had but very little exercise. Hearing this, I expressed my opinion to the owner, who was standing by at the time, that it was a case of spasmodic colic, arising from indigestion, caused by the coarse food and want of exercise. I prescribed the following—

℞ Sp. Ammon. co.,
Sp. Æther. Nit.,
Tinct. Opii, āā ℥j;
Ol. Lini, ℥xvj. M. ft. haustus.

This gave immediate relief. I ordered clysters to be thrown up every hour; all the hay to be removed from him; a little mash to be offered, and requested the man to call me if the animal should be in pain before I could see him again.

12 o'clock.—My patient has been free from pain, has uri-

nated freely twice, and is very anxious to have something to eat; indeed, he is apparently quite well again. Directed a little mash to be given him, and the clysters to be repeated occasionally.

2 p.m.—The groom has come to say that the horse is in pain again. I returned with him, but found that the pain had left my patient before our arrival. The pulse, visible mucous membranes, &c., are the same as in the morning—

℞ Hyd. Chlorid., ʒj;
Oleum Lini, ℥xj;
Sp. Ammon. co., ℥j. M. ft. haustus.

Ordered the clysters to be continued, and requested the man carefully to watch the animal.

8 p.m.—My patient is much the same as when I saw him last, except that the pulse is a little weaker. He has urinated freely again, but has not passed any fæces. Ordered the clysters to be continued, and requested the owner to have him watched during the night.

April 3d, 8 a.m.—My patient has lain down, and appeared to be very easy nearly all night. The bowels have not responded to the medicine, but he has passed some very hard fæces once, which were covered with a little mucus. He has urinated freely three times. The pulse is about 38, very weak and intermittent; the visible mucous membranes are slightly injected; the mouth hot and clammy; the respiration natural, extremities warm I ordered a little walking exercise in hand, the clysters to be continued until the bowels should begin to respond, and a little mash and gruel to be offered him during the day. I expressed an opinion to the owner this morning that I feared there was something wrong with the heart. I then left my patient for the day, as I had to go a long journey.

8 p.m.—The medicine has operated well, and the animal has urinated freely several times. He has not, however, partaken of anything during the day. The pulse is imperceptible at the jaw, except one beat about every quarter of a minute; the visible mucous membranes are rather more injected; the mouth hot and dry; extremities warm; respiration natural. When lying down he manifested a little spasmodic pain occasionally, by whisking his tail and stretching his head out on the ground.

℞ Pulv. Opii, ʒss;
Sp. Ammon. co., ℥j;
Liq. Ammon. Acet., ℥vj. M. ft. haust.

By this he was relieved for about two hours, when he showed a little uneasiness again. I repeated the draught, which had as good an effect as the first.

April 4, 8 a.m.—My patient is decidedly much worse. He has not partaken of anything during the night, except a little gruel, and with this he was drenched. The pulse is imperceptible at the jaw, and even at the heart, except by auscultation, when I could only hear a very weak movement of the heart. The visible mucous membranes are more injected, the mouth hot and very dry, the respiration laborious, the extremities warm.

I told the owner's father-in-law, Dr. Dumain, who was present, that I was somewhat at a loss to account for the very great amount of fever, pain, and laborious breathing, with such a very weak, low, and intermittent pulse as the animal had from the beginning, and expressed my opinion that there was inflammation going on in the stomach and large intestines, and that there must be some affection of the heart which deceived us in the pulse. I also suggested to the doctor that I thought the best treatment we could adopt would be to bleed the animal, to see if we could get a pulse, as we could not dare to give any stimulants with so much fever present. The doctor being of the same opinion, the horse was bled to the amount of about six quarts, when we obtained a pulse. I then applied a mustard cataplasm to the loins and abdomen, ordered—

℞ Pulv. Opii, ℈j;
Hyd. Chlorid., ʒj;
Pulv. Lini, c. Syrupus, q. s. M. ft. bolus,

and gave liq. ammon. acet. ℥vj. in gruel; directed clysters to be thrown up occasionally, and a little mash and gruel to be offered him.

2 p.m.—My patient is about the same as when I saw him last, except that the pulse is again imperceptible, and the mouth not quite so hot and dry. Bloodletting was again ventured upon to the amount of about two quarts, when the pulse became again perceptible at the jaw. Repeat the medicines as before ordered, apply hot rugs to the abdomen, and continue the clysters.

1 a.m.—The pulse is perceptible, but very weak and quick; the visible mucous membranes are about the same; the respiration not so laborious; and the extremities are warm. He has been free from pain since the rugs were applied, and has partaken of a little mash with sliced carrots in it, and a

good bit of steamed hay. Some fæces have been passed, which were in a natural state, and he has twice urinated freely. Ordered the rugs to be discontinued, and the abdomen to be rubbed dry, and a mustard cataplasm to be applied to the loins and abdomen. He was then moved to his own stall, where he very soon laid down, and remained apparently very easy, for about two hours, when he got up, and laid down directly on the other side. He seemed now to be quite free from pain. After he had been down about an hour, I left, hoping to see him better on my next visit, and requested the man to call me if he should get worse.

6 a.m.—The man has called to say that the horse has become much worse very suddenly. On my arrival, I found him in great pain, pawing, looking back at his flanks, rolling, and not quiet for a minute; the pulse imperceptible at the jaw, but not at the heart; the visible mucous membranes still more injected; the respiration quick and laborious; the extremities and surface of the body bedewed with cold perspiration. Prognosis unfavorable. Discontinued all treatment. The animal continued to be in great pain until the evening, when he died.

Post-mortem appearances.—The stomach had an extensive patch of inflammation around the small curvature, which had involved all its coats. The cæcum and colon were exceedingly inflamed throughout their whole extent. The whole of the other viscera (with the exception of the heart, kidneys, and spleen, which I have sent you) were quite healthy.

[We regret to say that the morbid parts arrived in such a state of decomposition that it was impossible satisfactorily to examine them; which being communicated to Mr. James, the following letter was received from him.]

HAVERFORDWEST; *May* 3, 1860.

DEAR SIR,—I am sorry I could not see Mr. Powell's groom so as to obtain the history of the horse previous to his illness, or I should have replied to your very kind letter ere this. Mr. Powell bought the horse about six months ago of a gentleman in this county, who bred him. He was rather low in condition then; but since he had improved very much, fed well, and performed his work to his owner's perfect satisfaction up to the day before he was taken ill, when he was observed by the groom not to eat his corn as usual.

The changes that had taken place in the parts I sent you were as follows: The cortical portion of the right kidney was highly inflamed, and so flabby that I could not cut it with a scalpel; but the medullary portion was not much altered. The left kidney had only a small patch about the size of a five-shilling piece of its cortical portion inflamed.

The heart.—The right auricle much thinner in its walls and larger than natural; highly inflamed and quite black in colour. The inflammation continued down to the internal lining membrane of the right ventricle. There was also a rupture in the muscular structure of the right ventricle, which was about an inch in length, and extended down to the internal lining membrane, but not through it. The membrane investing the heart had given way about a quarter of an inch around the rupture. I suppose the rupture was the result of softening from inflammation of the muscular texture of the heart.

Spleen.—The whole surface was covered with lumps, each about the size of a walnut, which contained what I thought to be highly congested venous blood.

To Assistant-Professor VARNELL.

ON VETERINARY OBSTETRICS.

By G. ARMATAGE, V.S., Bicester.

GENTLEMEN,—I am pleased to find that considerable space has been devoted in the *Veterinarian* to the important subject of "Veterinary Obstetrics."

Having frequently experienced the difficulties attendant upon that character of presentation, viz., with the head turned backwards, both in cows and mares, in cases successful and unsuccessful, I am not a little interested in the perusal of the various statements.

The remarks commencing the letter of my esteemed friend and fellow-student, Mr. W. Robertson, of Kelso, to Mr. Gamgee, relative to the disadvantages under which we mostly labour at the outset, apply well in my case, as I generally find the animal has been BRUTALLY handled, and often tampered with for some hours, before I am summoned, by persons of very doubtful judgment and discretion in such matters.

One case I well remember;—a valuable black cart-mare manifested the usual symptoms of parturition about nine a.m., upon which two strong fellows, under the superintendence of a cow-leech, began the attack and laboured ineffectually until noon, when a messenger was dispatched for me, and the mare allowed a respite.

Not being at home, the attack was renewed, and continued until my arrival at HALF-PAST SIX, P.M.

I pronounced the case a hopeless one, as the mare was fast sinking, and all uterine contractions had ceased. She was scarcely able to rise, and the men by their united efforts had dragged the poor brute along the ground into the yard. On examination, the head was turned backwards, both fore feet protruding had been pulled at and amputated at the knees. I at once divided the integuments from the shoulder downwards; when each limb was brought away with the scapulæ. The head was brought up by a long hook, and held until a second was inserted within the nose. After removing the first hook, the nose was held and directed within the passage, during which time a stout fellow steadily pulled at the hook, when all came away tolerably easy, occupying about twenty-five minutes. The mare died the next day.

In a cow of the Welch breed, I found a rupture of the womb, after several hours of similar usage. The calf of course was amongst the intestines. She was slaughtered.

In February last, a mare was seen to be labouring under symptoms of protracted parturition. I was sent for before she was interfered with, and found the head turned backwards over the left side of the thorax, both legs also back, and the shoulders firmly pressed by the violent throes of the animal across the pelvis.

The foal was dead. By pushing it back I was enabled to get up the legs singly, and, as before, I divided the integuments from the shoulder, &c. The whole operation did not occupy more than half an hour, consequently the animal did not suffer much, and by subsequent attention she was restored, and able to work in about a fortnight.

In a short-horn cow, which had gone beyond her time three weeks, without showing symptoms of parturition, or any diminution of her great size, and which, from being off her food, dull, and hide-bound, presented rather a miserable appearance, I found the pelvis, which relaxes so greatly during parturition, to be as firmly fixed as at ordinary times; the vulva and vagina were also as small as in a maiden heifer, which rendered the examination a difficult one, and a fetid discharge issued from the womb. The calf was placed in the position already alluded to, but, for the want of room proper for its extraction, I was compelled to abandon the operation, and to rely upon other means to support the animal until decomposition of the fœtus would allow of its coming away piecemeal. She died the next day, although she had not suffered by treatment, nor exhibited any symptoms of pain. After finding the fœtus, which was not in the least decomposed, nothing further was done, as I was not able to excise so far as the shoulder. The state of the pulse did not betoken such a formidable state of things. I was disappointed in not being able to see the case after death, as the carcase was dispatched to the neighbouring kennels before I arrived.

Excepting a case of twin calves (breech presentation), ALL my cases of obstetric practice in this locality have been confined to shoulder presentations with the head backwards, and not unfrequently one or both legs also; and from the maltreatment, or the causes connected with premature labour, or both combined, the fœtus I have always found dead. But, had not such been the case, the manner in which they were found, together with the violent contractions, left little chance, in my opinion, of extracting them alive. I have also in all, except the two cases detailed, succeeded in effecting delivery, and in the majority of cases the animals have done well.

The instruments I use are few and extremely simple. A hooked knife, with a hoop for the middle finger, with which the integuments are more easily divided than by the scalpel, and with greater safety to the operator's fingers. I wind around its blade, to the extent of three fourths its length, some stout string, commencing at the heel, and when properly adjusted it proves a very useful instrument. Two cords of a quarter of an inch diameter, gradually thickening to five eighths or three quarters, and in length about eight feet, prove useful agents in traction, on being attached to the fetlock or knee-joints.

Two hooks, two feet six inches long, having crutch or T handles, and divisible for portability into three parts, having male and female screws, the whole being formed of half-inch round iron, and five eighths at the joints, form powerful instruments. With one the neck or jaws may be seized, brought up, and retained, until a second is attached. When the hook, or last portion is replaced by a straight and longer piece of iron, I have a good instrument for pushing back the fœtus altogether. Another piece, having a joint three inches from the end, to which a second part is riveted, and capable of being moved at right angles when adjusted, serves well for turning or for breech presentations.

I have not detailed so minutely as might have been done the particulars in form, &c., connected with my instruments for the above line of practice, supposing them to possess no particular novelty beyond their comparatively slight cost, and their being easily procured at the nearest forge; together with (in my opinion) their decided advantage over hooks attached to cords; for, from the slipping of one, on a certain occasion, I had a narrow escape from serious injury.

COMMUNICATION FROM T. STRANGEWAYS, V.S.

EDINBURGH; *July* 11, 1860.

GENTLEMEN,—In the abstract of the proceedings of the Council of the Royal College of Veterinary Surgeons, reported in page 359 of your number for June last, it is stated that "fifty-two members have been admitted during the past year, forty-three from the Royal Veterinary College of London, and nine from the New Veterinary College, Edinburgh." Now, if you refer to page 368 of the same number of your journal, you will find that, instead of nine, there were eleven gentlemen who obtained their diplomas in Edinburgh, and of these eleven only two were students of the New Veterinary College; the remaining nine (the first in the list) having studied at the Veterinary College, Clyde Street, under Professor Dick; the students of which school, as you are aware, have a perfect right to present themselves for examination for the diploma of the Royal College of Veterinary Surgeons.

Besides, of the two from the new school, one studied only one year there, and the other year in Clyde Street.

Hoping you will correct the mistake in the next number of your journal,

I remain, yours respectfully,
THOMAS STRANGEWAYS,
Lecturer on Anatomy,
Veterinary College, Clyde Street.

To the Editors of the 'Veterinarian.'

COMMUNICATION FROM A. J. MURRAY,
Student at the New Veterinary College, Edinburgh.

York Place, Edinburgh; *July* 18, 1860.

Gentlemen,—A letter having appeared in the last number of your journal from Mr. C. Moir, of Glasgow, in which some observations are made on a report of the proceedings of the West of Scotland Veterinary Medical Association, which appeared in the *Veterinarian* for June, I hope you will allow me to offer a few words in explanation of the matter. The evening before Professor Gamgee left for Glasgow, he told me, in common with other students, that he would read a paper on "Veterinary Obstetrics" the next day, before the West of Scotland Veterinary Medical Association; and several of us resolved on going with him; but some were prevented by other duties, and I attended alone, being introduced by Professor Gamgee to Mr. Moir and other gentlemen connected with the society.

I was much interested in the debate, and took copious notes, from which, without any interference on the part of any one, much less Mr. Gamgee, I drew up the report which appeared in the *North British Agriculturist*, and subsequently in the Veterinary journals.

Mr. Moir, in his letter says, that "Mr. Gamgee does not hesitate to cook a report, if it is to make himself appear clever in the eyes of the Profession;" by which I presume he means that the report does not contain a fair account of the proceedings of the meeting; but I certainly do not think that Mr. Moir has succeeded in showing that this is the case. Mr. Moir points out an inaccuracy in the report, where it is stated that Mr. Anderson and Mr. Cockburn recommended a mare to be destroyed, while the fact was, that it was destroyed by the late Mr. M'Robie. This mistake was quite unintentional, and I certainly cannot see how so trifling an error can be brought forward as evidence that the report was written to make Mr. Gamgee appear clever in the eyes of the Profession.

With regard to the statement that "he makes it appear as if Mr. Aitken had said he always amputated at the knees," I have only to say that as it appears it is perfectly correct, as Mr. Aitken said so in answer to Professor Gamgee's question.

With regard to the quotation from Professor Gamgee's observations, "Mr. Anderson's remarks about the teaching of obstetrics in our schools being deficient," &c.; these words were, of course, used by Professor Gamgee in reference to Mr. Anderson's statement, that he had lost a mare in which the uterus was twisted, not having been taught this at the College. Mr. Anderson, on hearing Professor Gamgee's remarks as to the teaching of obstetrics being deficient, did not rise up to say that he (Mr. Anderson) had not meant what he said, though Mr. Moir seems now to take that duty upon himself.

In conclusion, I have only to say that the report is a fair and honest account of the proceedings of the society on the occasion referred to, and that in writing it I neither attempted to make any person "appear clever," nor did I put into any person's mouth words which he did not utter.

I am, Gentlemen,

Yours respectfully.

To the Editors of the 'Veterinarian.'

TUMOUR IN THE SHEATH OF A POINTER DOG.

By J. Read, Clitheroe.

On the 12th of last month, I was requested to examine a valuable pointer dog, the property of R. Dewhurst, Esq., J.P., of this town, having a tumour within its sheath, which greatly interfered with the powers of locomotion.

All that I could learn of the previous history of the case was, that the tumour had been gradually increasing in size for four or five weeks, and that the animal was losing condition every day; in fact, that he was becoming totally useless.

Before performing the operation (for its removal was imperative), I administered chloroform, but the dog being of an irritable disposition, it had only a partial effect.

Upon the extraction of the tumour, there escaped about a half pint of sabulous matter, which had become lodged in the sheath. The weight of the tumour was about a pound, and when examined I found its centre perfectly ossified.

A few sutures were passed through the edges of the wound, which was subsequently treated in the ordinary manner.

The second day after the operation, the sheath and surrounding parts were very much swollen, and the dog appeared to be in a highly dangerous state. I administered an aperient and applied warm fomentations, which soon gave great relief.

Suppuration commenced on the third day, and the wound was dressed every day with a compound of turpentine until he was discharged, on the 30th of the same month.

Facts and Observations.

NEW CURE FOR TETANUS.

In a severe case of tetanus, with opisthotonos, M. Pescheux injected subcutaneously into the neck, at the median line, a solution of sulphate of atrophine. The poisonous qualities of the agent were well marked, but with their disappearance also disappeared the tetanic symptoms.

POISONING OF PIGS WITH HELLEBORE.

Mr. Barker, a farmer at Habton, in Yorkshire, has lost several pigs from this agent. It appears that some powdered hellebore, used for killing lice on stock, had been found by one of the servants, and, although labelled, was supposed to be "colouring," and was mixed with the milk. The mixture proving a failure, it was thoughtlessly thrown into the pig-tub, and the consequence was the poisoning of nearly a dozen pigs.

GUN COTTON AS A FILTER FOR STRONG ACIDS.

Böttger recommends chemists to use gun cotton as a filter for concentrated acids and liquids decomposable by organic matters. The author employs it with the greatest advantage for filtering concentrated nitric acid, fuming sulphuric acid, chromic acid, permanganate of potash, and even concentrated solutions of potash and aqua regia. He says that, properly prepared, gun cotton is only attacked at the ordinary temperature by acetic ether.

INDIGO TEST FOR GLUCOSE.

Glucose and grape sugar transform blue indigo into white in the presence of alkalies. Mulder on this reaction founds a process for the detection of small quantities of these sugars. He adds to the liquid to be tested sulphate of indigo, to which an excess of carbonate of potash or soda has previously been added. The addition of the alkaline salt scarcely affects the blue colour of the indigo solution even after boiling, and the presence of the alkali is necessary for the reduction of the indigo to take place. If the liquid contains glucose or grape sugar, the blue colour disappears at the ordinary temperature, and more quickly if it be heated. Cane sugar boiled with the blue liquor produces no change.

THE VETERINARIAN, AUGUST 1, 1860.

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

THE MEETING OF THE ROYAL AGRICULTURAL SOCIETY.

THE annual meeting of the Royal Agricultural Society, which has just been brought to a close in the far-famed county of Kent, has in some respects proved less successful than many that have gone before it. Several circumstances combined to produce such a result, the chief perhaps being the situation of the place—Canterbury—in which the meeting was held. A writer in one of our periodicals has described it as "a land's-end place, like the Irishman's home, a long way from everywhere." True it is that the greater part of the exhibitors of stock incurred no little risk, and were put to much additional trouble, in having their animals conveyed through London to the south of the Thames, for want of a connecting line of railway; and that others abstained from exhibiting, rather than encounter the difficulty. The same cause operated also in diminishing the number of visitors from distant parts, so that the pecuniary returns fell far below any of late years; nor can it be said that the Kentish people took that lively interest in the meeting which had been justly anticipated.

There were also other elements of non-success, and among them must be named the much to be regretted difference which had arisen between the Council of the Society and several of the principal manufacturers of implements, which led them to withhold the sending of the productions of their skill and industry to the meeting. To those who have the best interests of agriculture and its sister sciences at heart, it was painful to witness this estrangement, and to miss the presence of familiar friends. We have good hope, however, that this difference is in a fair way of being adjusted, and that long ere next year's meeting takes place, we shall have the assurance that they will again occupy their wonted places, to the advantage both of the Society and themselves.

The show of animals upon the whole was good, but scarcely equal in a few of the classes to former years. This applies more particularly to the horses, some of which were too inferior to be sent for competition to even the most humble local show. There were, however, many good animals in the different classes, fully meriting the distinction which was put upon them by the judges. Compared with previous years, there were fewer cases of hereditary disease among the horses; but still so many existed, as to induce the stewards to announce that, "several good-looking animals in this division were rejected for unsoundness."

The short-horns were universally admitted to be very superior, and perhaps were never equalled on any previous occasion. Without particularizing any of the animals, which is contrary to our established custom, we cannot refrain from saying that *Royal Butterfly* even surpassed in many respects his far-famed brother, *Master Butterfly*, who, it will be remembered, was purchased for Australia at the price of 1200 guineas. Col. Towneley is said to have refused the sum of 2000 guineas for *Royal Butterfly* and two heifers.

The Hereford class was not numerous, but contained several superior animals. It included eleven bulls, ten yearlings, and five bull calves; one cow, to which was awarded the *first prize;* six heifers, five yearlings, and six heifer calves.

The Devons exceeded the Herefords in number, and were upon the whole a very good class. Among the "other established breeds" came the Sussex and the Suffolk, with the Alderneys and *petites* Bretonnes, celebrated it is said for their milking properties; but certainly not, in the specimens exhibited, for the excellency of their conformation.

Of the sheep we may remark that the Southdowns came out with great strength. In the awards Jonas Webb may be said to be "first, and the rest nowhere." He took not only *the three prizes* for shearling rams and for the old rams, but likewise all the "high commendations," and all but one of the "commendations."

The Leicesters were not so well represented as we have seen, but the Cotswold and Shropshire sheep were remarkably good.

The Hampshire and Oxford-downs also maintained their well-deserved reputation.

The Kent sheep, like the "turn-wrist plough," spoke rather of things as they were than as they should be.

The pigs, considering the *new* classification, did not number so strong as was anticipated. We believe, however, that by next year this step of the Society will be found to produce the best results, as more time will have been given for its practical operation. Although not numerous, the pigs were a very excellent class.

We append the names of the judges and their awards.

STOCK JUDGES.

SHORT HORNS.
Charles Barnett, J. Parkinson, G. Atkinson.

HEREFORD.
E. L. Franklin, G. W. Baker, — Higgins.

DEVONS.
J. Anstey, Thos. Potter.

OTHER BREEDS AND SUSSEX.
Wm. Ladds, A. Denman, B. Swaffield.

HORSES.
Jno. Atkinson, W. Bartholomew, E. Greene.

RIDING HORSES AND PONIES.
The Honourable Colonel Cotton, J. Earle Welby, H. Thurnall.

LEICESTERS.
R. Hewitt, T. Harris, R. B. Aylmer.

LONG WOOLS, KENTISH, AND LOCAL PRIZES.
Thos. Brown, J. Abbot, H. Beevor.

SOUTH DOWNS.
Henry Lugar, J. G. Homer, P. Purves.

SHORT WOOLS.
J. Rawlence, G. Brown, H. Beauford.

SHROPSHIRE DOWNS.
C. Randall, W. Kempe Bourne, E. Trumper.

PIGS.
Rev. E. Elmshirst, J. Unthank, W. Cattle.

LIST OF PRIZES.

SHORTHORNED CATTLE.

CLASS I.—*To the owner of the best Bull, calved on or before the 1st of July, 1858, and not exceeding six years old.*

First prize of £30 to No. 15, Lieutenant-Colonel Towneley, of Towneley, Burnley, Lancaster.

Second prize of £15 to No. 10, James Dickinson, of Balcony Farmhouse, Upholland, Wigan, Lancaster.

Third prize of £5 to No. 2, Lord Feversham, of Duncombe Park, Helmsley, Yorkshire.

Highly Commended.—No. 6, John Hanbury Bradburne, of Pipe-place, Lichfield, Staffordshire. No. 12, Henry Ambler, of Watkinson Hall, Halifax, Yorkshire.

Commended.—No. 5, the Hon. Colonel Pennant, M.P., of Penrhyn Castle, Bangor, Carnarvon. No. 7, John Lynn, of Church Farm, Stroxton, Grantham, Lincoln. No. 8, John Tompsett Noakes, of Brockley House, Lewisham, Kent.

CLASS II.—*To the owner of the best Bull, calved since the* 1*st of July*, 1858, *and more than one year old.*

First prize of £25 to No. 27, Jonathan Peel, of Knowlmere Manor, Clitheroe, Yorkshire.

Second prize of £15 to No. 21, Francis Hawksworth Fawkes, of Farnley Hall, Otley, Yorkshire.

Third prize of £5 to No. 40, Sir Charles Tempest, Bart., of Broughton Hall, Skipton, Yorkshire.

Highly Commended.—No. 19, Henry Ambler, of Watkinson Hall, Halifax, Yorkshire. No. 23, Francis Hawksworth Fawkes, of Farnley Hall, Otley, Yorkshire.

Commended.—No. 22, Francis Hawksworth Fawkes, of Farnley Hall, Otley, Yorkshire. No. 34, James Dickinson, of Balcony Farmhouse, Upholland, Wigan, Lancashire. No. 41, Lieutenant-Colonel Towneley, of Towneley, Burnley, Lancaster.

CLASS III.—*To the owner of the best Bull-calf, above six and under twelve months old.*

First prize of £10 to No. 59, Stewart Marjoribanks, of Bushey Grove, Watford, Herts.

Second prize of £5 to No. 64, Lieutenant-Colonel Towneley, of Towneley, Burnley, Lancaster.

Highly Commended.—No. 61, Jonas Webb, of Babraham, Cambridge. No. 68, Lieutenant-Colonel Towneley, of Towneley, Burnley, Lancaster.

Commended.—No. 58, Joseph Robinson, of Clifton Pastures, Newport Pagnell, Buckinghamshire.

CLASS IV.—*To the owner of the best Cow, in milk or in calf, above three years old.*

First prize of £20 to No. 84, Richard Eastwood, of Swinshawe House, Burnley, Lancashire.

Second prize of £10 to No. 75, Richard Booth, of Warlaby, Northallerton, Yorkshire.

Third prize of £5 to No. 85, Lady Pigot, of Branches Park, Newmarket, Suffolk.

Highly Commended.—No. 74, William Wells, of Redleaf, Penshurst, Kent. No. 81, Stewart Marjoribanks, of Bushey Grove, Watford, Herts. No. 82, Francis Fowler, of Henlow, Biggleswade, Beds. No. 87, Joshua Price, of Featherstone, Wolverhampton.

Commended.—No. 77, Edward Bowly, of Siddington House, Cirencester, Gloucestershire. No. 83, Henry Ambler, of Watkinson Hall, Halifax, Yorkshire.

CLASS V.—*To the owner of the best Heifer, in milk or in calf, not exceeding three years old.*

First prize of £15 to No. 90, Henry Ambler, of Watkinson Hall, Halifax, Yorkshire.

Second prize of £10 to No. 89, Captain Gunter, of The Grange, Wetherby, Yorkshire.

Third prize of £5 to No. 97, Lady Pigot, of Branches Park, Newmarket, Suffolk.

Highly Commended.—No. 91, John Grundy. No. 94, Hon. and Rev. Thomas Henry Noel Hill. No. 96, Lady Pigot. No. 100, Duke of Montrose. No. 104, Joshua Price.

Commended.—No. 92, Richard Booth. No. 93, Richard Booth. No. 95, The Hon. Col. Pennant. No. 98, Edward Bowly. No. 101, Duke of Montrose. No. 103, Joshua Price.

Class VI.—*To the owner of the best Yearling Heifer.*

First prize of £15 to No. 105, Captain Gunter, of The Grange, Wetherby, Yorkshire.

Second prize of £10 to No. 106, Captain Gunter, of The Grange, Wetherby, Yorkshire.

Third prize of £5 to No. 121, Joseph Robinson, of Clifton Pastures, Newport Pagnell, Buckingham.

Highly Commended.—No. 112, The Hon. and Rev. T. H. Noel Hill. No. 123, Stewart Marjoribanks. No. 127, Jonas Webb.

Commended.—No. 114, Richard Booth. No. 129, Jonas Webb. No. 135, Richard Stratton.

Class VII.—*To the owner of the best Heifer Calf, above six and under twelve months old.*

The prize of £10 to No. 143, the Hon. Col. Pennant, M.P., of Penrhyn Castle, Bangor, Carnarvon.

Highly Commended.—No. 148, Stewart Marjoribanks. No. 152, Lieut.-Col. Towneley. No. 153, Lieut.-Col. Towneley.

Commended.—No. 139, Joseph Pain. No. 142, The Hon. Col. Pennant, M.P. No. 149, Edward Ladd Betts.

HEREFORD CATTLE.

Class I.—*To the owner of the best Bull, calved on or before the 1st of July, 1858, and not exceeding six years old.*

First prize of £30 to No. 160, Thomas Edwards, of Wintercott, Leominster, Hereford.

Second prize of £15 to No. 161, John Williams, of St. Mary's, Kingsland, Leominster, Hereford.

Third prize of £5 to No. 164, Thomas Rea, of Westonbury, Pembridge, Hereford.

Highly Commended.—No. 165, Lord Berwick.

The Class generally Highly Commended.

Class II.—*To the owner of the best Bull, calved since the 1st of July, 1858, and more than one year old.*

First prize of £25 to No. 166, William Perry, of Cholstrey, Leominster, Hereford.

Second prize of £15 to No. 167, Thomas Rea, of Westonbury, Pembridge, Hereford.

Third prize of £5 to No. 172, Lord Berwick, of Cronkhill, Shrewsbury.

Highly Commended.—No. 168, Lord Bateman.

Commended.—No. 173, William Taylor. 174, William Taylor.

Class III.—*To the owner of the best Bull-calf, above six and under twelve months old.*

First prize of £10 to No. 180, John Monkhouse, of The Stowe, Hereford.

Second prize of £5 to No. 177, Thomas Edwards, of Wintercott, Leominster, Hereford.

Class IV.—*To the owner of the best Cow, in milk or in calf, above three years old.*

First prize of £20 to No. 181, James Taylor, of Stretford Court, Leominster.

Second prize of £10, no competition.

Third prize of £5, no competition.

Class V.—*To the owner of the best Heifer, in milk or in calf, not exceeding three years old.*

First prize of £15 to No. 184, James Rea, of Monaughty, Knighton, Radnor.

Second prize of £10 to No. 186, John Williams, of St. Mary's, Kingsland, Leominster, Hereford.

Third prize of £5 to No. 187, Lord Berwick, of Cronkhill, near Shrewsbury.

Highly Commended.—No. 185, John Williams.

The Class generally Highly Commended.

Class VI.—*To the owner of the best Yearling Heifer.*

First prize of £15 to No. 189, Lord Bateman, of Shobdon Court, Shobdon, Hereford.

Second prize of £10 to No. 193, Edmond Wright, of Halston Hall, Oswestry, Shropshire.

Third prize of £5 to No. 192, Philip Turner, of Leen, Pembridge, Hereford.

Class VII.—*To the owner of the best Heifer Calf, above six and under twelve months old.*

The prize of £10 to No. 196, John Williams, of St. Mary's, Kingsland, Hereford.

The Class generally Commended.

DEVON CATTLE.

Class I.—*To the owner of the best Bull, calved on or before the* 1*st of July,* 1858, *and not exceeding six years old.*

First prize of £30 to No. 203, Thomas and John Palmer, of Norton Stoke Climsland, Callington, Cornwall.

Second prize of £15 to No. 205, George Turner, of Barton, near Exeter.

Third prize of £5 to No. 202, John Bodley, of Stockley Pomeroy, Crediton, Devon.

Class II.—*To the owner of the best Bull calved since the* 1*st of July,* 1858, *and more than one year old.*

First prize of £25 to No. 210, James Quartly, of Molland House, South Molton, Devon.

Second prize of £15 to No. 211, James Quartly, of Molland House, South Molton, Devon.

Third prize of £5 to No. 213, George Turner, of Barton, near Exeter.

Commended.—No. 206, William Hole, of Hannaford, Barnstaple, Devon.

Class III.—*To the owner of the best Bull-calf, above six and under twelve months old.*

First prize of £10 to No. 218, George Turner, of Barton, near Exeter.

Second prize of £5 to No. 214, William Hole, of Hannaford, Barnstaple, Devon.

Class IV.—*To the owner of the best Cow, in milk or in calf, above three years old.*

First prize of £20 to No. 223, James Quartly, of Molland House, South Molton, Devon.
Second prize of £10 to No. 226, George Turner, of Barton, near Exeter.
Third prize of £5 to No. 225, George Turner, of Barton, near Exeter.
Commended.—No. 220, Walter Farthing, of Stowey Court, Bridgwater, Somerset. No. 224, John Quartly, of Champson Molland, South Molton, Devon.

Class V.—*To the owner of the best Heifer, in milk or in calf, not exceeding three years old.*

First prize of £15 to No. 230, George Turner, of Barton, near Exeter.
Second prize of £10 to No. 227, John Mildon, of Woodington Farm, Witheridge, Devon.
Third prize of £5 to No. 229, John Quartly, of Champson Molland.

Class VI.—*To the owner of the best Yearling Heifer.*

First prize of £15 to No. 232, Philip Halse, of Molland, South Molton, Devon.
Second prize of £10 to No. 231, Philip Halse, of Molland, South Molton, Devon.
Third prize of £5 to No. 236, Edward Pope, of Great Toller, Maiden Newton, Dorset.

Class VII.—*To the owner of the best Heifer Calf, above six and under twelve months old.*

The prize of £10 to No. 239, George Turner, of Barton, near Exeter.

OTHER ESTABLISHED BREEDS.

Not including the Short-Horn, Hereford, or Devon breed.

Class I.—*To the owner of the best Bull, calved on or before the 1st of July,* 1858, *and not exceeding six years old.*

The prize of £10 to No. 245, Edward Cane, of Berwick Court, Berwick, Lewes, Sussex.

Class II.—*To the owner of the best Bull calved since the 1st of July,* 1858, *and more than one year old.*

The prize of £10 to No. 246, Lord Sondes, of Elmham Hall, Thetford, Norfolk.

Class III.—*To the owner of the best Cow in milk or in calf, above three years old.*

The prize of £10 to No. 256, Edward Cane, of Berwick Court, Berwick, Lewes.

Class IV.—*To the owner of the best Heifer in milk or in calf, not exceeding three years old.*

The prize of £10 to No. 257, Lord Sondes, of Elmham Hall, Thetford, Norfolk.

Class V.—*To the owner of the best Yearling Heifer.*

The prize of £5 to No. 262, Lord Sondes, of Elmham Hall, Thetford Norfolk.

HORSES.

AGRICULTURAL HORSES GENERALLY.

Class I.—*To the owner of the best Stallion for Agricultural purposes, foaled on or before the* 1*st of January,* 1858.

First prize of £25 to No. 273, Rev. Stephen Terry, of Dummer, Basingstoke, Hants.
Second prize of £15 to No. 276, Samuel Clayden, of Little Linton, Cambridge.
Third prize of £5 to No. 275, Jonas Webb, of Babraham, Cambridge.
Highly Commended.—No. 268, William Laws.
Commended.—No. 270, Charles Frost.

Class II.—*To the owner of the best Stallion for Agricultural purposes, foaled in the year* 1858.

Errata in Catalogue.—Entry No. 307, entered by mistake of the exhibitor in this Class, should read as though transferred to Class I.
First prize of £20 to No. 311, Nathaniel George Barthropp, of Cretingham Rookery, Wickham Market, Suffolk.
Second prize of £10 to No. 292, William Wells, of Redleaf, Penshurst, Kent.
Highly Commended.—No. 295, William Sanday.
Commended.—No. 298, John Foster.

Class III.—*To the owner of the best Mare and Foal for Agricultural purposes.*

First prize of £20 to No. 315, Isaac Rist, of Tattingstone, Ipswich.
Second prize of £10 to No. 318, George Carter, of Danbury, Chelmsford, Essex.

Class IV.—*To the owner of the best two-year old Filly for Agricultural purposes.*

First prize of £15 to No. 332, Nathaniel George Barthropp, of Cretingham Rookery, Wickham Market, Suffolk.
Second prize of £10 to No. 328, John Clayden, of Littlebury, Saffron Walden, Essex.
Highly Commended.—No. 327, Charles Frost.
Commended.—No. 324, Samuel Wrinch.

Several good-looking animals in this division were rejected for unsoundness.

DRAY HORSES.

Class I.—*To the owner of the best Stallion, foaled on or before the* 1*st of January,* 1858.

First prize of £25 to No. 334, Edmund Olding, of Ratfin, Amesbury, Wilts.
Second prize of £10 to No. 340, George Brown, of Little Hinton, Shrivenham, Wilts.
Commended.—No. 343, James Shepherd, of Cock Farm, Stoginsey, Bridgwater, Somerset.

Class II.—*To the owner of the best Stallion, foaled in the year* 1858.

First prize of £15 to No. 344, William Root, of Chipping Warden, Banbury, Oxon.
Second prize of £5 to No. 347, John Brown, of Compton, Newbury, Berks.

Class III.—*To the owner of the best Mare, with a foal at her feet.*

No entry.

Class IV.—*To the owner of the best Filly, foaled in the year* 1858.

No entry.

OTHER HORSES.

Class I.—*To the owner of the best thorough-bred Stallion for getting hunters.*

First prize of £25 to No. 354, Edward Marjoribanks, of Greenlands, Henley-on-Thames, Oxford.
Second prize of £15 to No. 350, George Trumper, of Horton, Slough, Bucks.

Class II.—*To the owner of the best Brood Mare, with foal at foot, or in foal, for breeding hunters.*

First prize of £20 to No. 361, John Denchfield, of Aston Abbotts, Aylesbury, Bucks.
Second prize of £10 to No. 359, Robertson Ruse, of Jealotte Hall, Warfield, Bracknell, Berks.

Class III.—*To the owner of the best Brood Mare for breeding hackneys.*

First prize of £15 to No. 366, Walter John Burch, of Campsey Ash, Wickham Market, Suffolk.
Second prize of £5 withheld.

SHEEP.

LEICESTERS.

Class I.—*To the owner of the best Shearling Ram.*

First prize of £20 to No. 372, William Sanday, of Holme Pierrepont, Notts.
Second prize of £10 to No. 373, William Sanday, of Holme Pierrepont, Notts.
Third prize of £5 to No. 371, William Sanday, of Holme Pierrepont, Notts.
Highly Commended.—No. 367, Lieutenant-Colonel Inge, of Thorpe Constantine, Tamworth, Staffs.

Class II.—*To the owner of the best Ram of any other age.*

First prize of £20 to No. 403, William Sanday, of Holme Pierrepont, Notts.
Second prize of £10 to No. 400, William Sanday, of Holme Pierrepont, Notts.
Third prize of £5 to No. 399, William Sanday, of Holme Pierrepont, Notts.
Highly Commended.—No. 402, William Sanday, of Holme Pierrepont, Notts.
Commended.—No. 407, John Borton, of Barton House, Malton, York. No. 408, Thomas Bird, of Bilton, Rugby, Warwick.

Class III.—*To the owner of the best pen of five Shearling Ewes of the same flock.*

First prize of £20 to No. 422, William Sanday, of Holme Pierrepont, Notts.

Second prize of £10 to No. 421, Lieutenant-Colonel Inge, of Thorpe Constantine, Tamworth, Staffs.

Third prize of £5 to No. 425, George Turner, of Barton, near Exeter.

SOUTH DOWNS.

Class I.—*To the owner of the best Shearling Ram.*

First prize of £20 to No. 452, Jonas Webb, of Babraham, Cambridge.

Second prize of £10 to No. 456, Jonas Webb, of Babraham, Cambridge.

Third prize of £5 to No. 459, Jonas Webb, of Babraham, Cambridge.

Highly Commended.—No. 461, Jonas Webb, of Babraham, Cambridge.

Commended.—No. 453, Jonas Webb, of Babraham, Cambridge. No. 454, Jonas Webb, of Babraham, Cambridge. No. 460, Jonas Webb, of Babraham, Cambridge.

The class generally commended.

Class II.—*To the owner of the best Ram of any other age.*

First prize of £20 to No. 481, Jonas Webb, of Babraham, Cambridge.

Second prize of £10 to No. 484, Jonas Webb, of Babraham, Cambridge.

Third prize of £5 to No. 482, Jonas Webb, of Babraham, Cambridge.

Highly Commended.—No. 483, Jonas Webb, of Babraham, Cambridge. No. 485, Jonas Webb, of Babraham, Cambridge.

Commended.—No. 480, Lord Walsingham, of Merton Hall, Thetford, Norfolk. No. 486, Jonas Webb, of Babraham, Cambridge. No. 487, Jonas Webb, of Babraham, Cambridge.

Class III.—*To the owner of the best pen of five Shearling Ewes of the same flock.*

First prize of £20 to No. 495, John and Alfred Heasman, of Angmering, Arundel, Sussex.

Second prize of £10 to No. 499, Lord Walsingham, of Merton Hall, Thetford, Norfolk.

Third prize of £5 to No. 494, the Duke of Richmond, of Goodwood, Chichester, Sussex.

Highly Commended.—No. 493, the Duke of Richmond, of Goodwood, Chichester, Sussex.

Commended.—No. 497, William Rigden, of Hove, Brighton, Sussex. No. 498, the Earl of Radnor, of Coleshill House, Highworth, Wilts.

KENTISH OR ROMNEY MARSH BREED OF SHEEP.

Class I.—*To the owner of the best Shearling Ram.*

First prize of £15 to No. 503, Frederick Murton, of Smeeth, Ashford, Kent.

Second prize of £5 to No. 504, Frederick Murton, of Smeeth, Ashford, Kent.

Third prize of £5, added by the Local Committee, No. 505, Frederick Murton, of Smeeth, Ashford, Kent.

Class II.—*To the owner of the best Ram, of any other age.*

First prize of £15 to No. 512, Frederick Murton, of Smeeth, Ashford, Kent.

Second prize of £5 to No. 513, Frederick Murton, of Smeeth, Ashford, Kent.

Third prize of £5, added by the Local Committee, to No. 514, Frederick Murton, of Smeeth, Ashford, Kent.

Commended.—No. 517, William Gascoyne. No. 520, Thomas Blake.

CLASS III.—*To the owner of the best Pen of five Shearling Ewes, of the same flock.*

First prize of £15 to No. 525, William Gascoyne, of Bapchild, Sittingbourne, Kent.

Second prize of £5 to No. 526, Charles Neve, of Shepway Court, Maidstone, Kent.

Third prize of £5, added by the Local Committee, to No. 523, Frederick Murton, of Smeeth, Ashford, Kent.

LONG WOOLLED SHEEP.

Not qualified to compete as Leicesters, or Kentish and Romney Marsh Breeds.

CLASS I.—*To the owner of the best Shearling Ram.*

First prize of £20 to No. 560, James Walker, of Northleach, Gloucestershire.

Second prize of £10 to No. 543, Robert Garne, of Aldsworth, Northleach, Gloucestershire.

Third prize of £5 to No. 540, Robert Garne, of Aldsworth, Northleach, Gloucestershire.

Highly Commended.—No. 537, George Fletcher, of Shipton Sollars, Cheltenham, Gloucestershire. No. 555, William Lane, of Broadfield Farm, Northleach, Gloucestershire. No. 556, William Lane, of Broadfield Farm, Northleach, Gloucestershire. No. 557, William Lane, of Broadfield Farm, Northleach, Gloucestershire. No. 538, George Fletcher. No. 544, Robert Garne. No. 546, Thomas Porter. No. 552, Edward Handy.

Commended.—No. 535, John King Tombs, of Langford, Lechdale, Gloucestershire. No. 539, George Fletcher, of Shipton Sollars, Cheltenham, Gloucestershire. No. 545, Thomas Porter, of Baunton, Cirencester, Gloucestershire. No. 551, Edward Handy, of Sierford, Cheltenham, Gloucestershire. No. 554, Wm. Lane, of Broadfield Farm, Northleach, Gloucestershire. No. 558, William Lane, of Broadfield Farm, Northleach, Gloucestershire.

The Class generally Commended.

CLASS II.—*To the owner of the best Ram, of any other age.*

First prize of £20 to No. 570, Robert Garne, of Aldsworth, Northleach, Gloucestershire.

Second prize of £10 to No. 571, Robert Garne, of Aldsworth, Northleach, Gloucestershire.

Third prize of £5 to No. 569, George Fletcher, of Shipton Sollars, Cheltenham, Gloucestershire.

Highly Commended.—No. 573, Thomas Porter. No. 574, Thomas Porter. No. 580, William Lane. No. 582, William Lane.

Commended.—No. 576, Edward Handy. No. 581, William Lane.

The Class generally Commended.

Class III.—*To the owner of the best Pen of Five Shearling Ewes, of the same flock.*

First prize of £20 to No. 590, William Lane, of Broadfield Farm, Northleach, Gloucestershire.
Second prize of £10 to No. 589, William Lane, of Broadfield Farm, Northleach, Gloucestershire.
Third prize of £5 to No. 588, William Lane, of Broadfield Farm, Northleach, Gloucestershire.
Highly Commended.—No. 586, John King Tombs, of Langford, Lechdale, Gloucestershire. No. 587, John King Tombs, of Langford, Lechdale, Gloucestershire.
Commended.—No. 584, Thomas Beale Browne, of Salperton Park, Andoversford, Cheltenham, Gloucestershire. No. 585, Thomas Beale Browne, of Salperton Park, Andoversford, Cheltenham, Gloucestershire.

Shropshire Sheep.

Class I.—*To the owner of the best Shearing Ram.*

First prize of £15 to No. 594, Thomas Horton, of Harnage Grange, Shrewsbury.
Second prize of £5 to No. 614, James and Edward Crane, of Shrawardine, Shrewsbury.
Highly Commended.—No. 615, James and Edward Crane, of Shrawardine, Shrewsbury.
Commended.—No. 616, James and Edward Crane, of Shrawardine, Shrewsbury.

Class II.—*To the owner of the best Ram, of any other age.*

First prize of £15 to No. 644, Sampson Byrd, of Lees Farm, Stafford.
Second prize of £5 to No. 635, Thomas Horton, of Harnage Grange, Shrewsbury.
Highly Commended.—No. 638, Edward Holland, of Dumbleton Hall, Evesham, Worcestershire. No. 639. Charles Reynolds Keeling, of Yew Tree Farm, Penkridge, Staffordshire. No. 647, William Goodwin Preece, of Shrewsbury.
Commended.—No. 630, Henry James Sheldon, of Brailes, Shipston-on-Stour, Warwickshire. No. 636, Thomas Mansell, of Adcott Hall, Shrewsbury.

Class III.—*To the owner of the best Pen of Five Shearling Ewes, of the same flock.*

First prize of £15 to No. 655, James and Edward Crane, of Shrawardine, Shrewsbury.
Second prize of £5 to No. 654, James and Edward Crane, of Shrawardine, Shrewsbury.
Highly Commended.—No. 652, Edward Holland, of Dumbleton Hall, Evesham, Worcestershire.
Commended.—No. 650, the Earl of Dartmouth, of Patshull, Albrighton, Wolverhampton. No. 656, John Evans, of Uppington, Shrewsbury. No. 657, Henry Matthews, of Montford, Shrewsbury. No. 658, Henry Smith, of Sutton Maddock, Shiffnall, Shropshire.

Short Woolled Sheep.

Not qualified to compete as South-downs or Shropshire Sheep.

Class I.—*To the owner of the best Shearling Ram.*

First prize of £20 to No. 660, Stephen King, of Old Hayward Farm, Hungerford, Berks.

Second prize of £10 to No. 692, William Humfrey, of Oak Ash, Chaddleworth, Wantage, Berks.

Third prize of £5 to No. 693, William Humfrey, of Oak Ash, Chaddleworth, Wantage, Berks.

Highly Commended.—No. 671, Charles Howard, of Biddenham, near Bedford. No. 678, John Bryan, of Southleigh, Witney, Oxfordshire. No. 679, John Bryan, of Southleigh, Witney, Oxfordshire. No. 686, Joseph Druce, of Eynsham, Oxford. No. 690, William Humfrey, of Oak Ash, Chaddleworth, Wantage, Berks.

Commended.—No. 661, Stephen King, of Old Hayward Farm, Hungerford, Berks. No. 670, Charles Howard, of Biddenham, near Bedford.

Class II.—*To the owner of the best Ram, of any other age.*

First prize of £20 to No. 719, William Humfrey, of Oak Ash, Chaddleworth, Wantage, Berks.

Second prize of £10 to No. 790, William Humfrey, of Oak Ash, Chaddleworth, Wantage, Berks.

Third prize of £5 to No. 716, William Humfrey, of Oak Ash, Chaddleworth, Wantage, Berks.

Highly Commended.—No. 701, William F. Bennett. No. 706, John Bryan. No. 707, John Bryan. No. 715, the Duke of Marlborough. No. 718, William Humfrey.

Commended.—No. 714, the Duke of Marlborough.

Class III.—*To the owner of the best Pen of five Shearling Ewes, of the same flock.*

First prize of £20 to No. 724, William Browne Canning, of Chisledon, Swindon, Wilts.

Second prize of £10 to No. 723, Stephen King, of Old Hayward Farm, Hungerford, Berks.

Third prize of £5 to No. 726, William F. Bennett, of Chilmark, Salisbury.

Highly Commended.—No. 722, John Washbourne Brown.

PIGS.

Class I.—*To the owner of the best Boar of a large breed, of any colour.*

First prize of £10 to No. 735, John Harrison, jun., of Heaton Norris, Stockport, Lancashire.

Second prize of £5 to No. 732, John Dyson, of Adelphi Hotel, Dock Street, Leeds, Yorkshire.

Commended.—No. 731, William Bradley Wainman, of Carhead, Cross Hills, Yorkshire.

Class II.—*To the owner of the best Boar of a small white breed.*

First prize of £10 to No. 758, John Harrison, jun., of Heaton Norris, Stockport, Lancashire.

Second prize of £5 to No. 750, George Mangles, of Givendale, Ripon, Yorkshire.

Highly Commended.—No. 761, Joseph Hindson, of Barton House, Everton, Liverpool.

CLASS III.—*To the owner of the best Boar of a small black breed.*

First prize of £10 to No. 767, Thomas Crisp, of Butley Abbey, Wickham Market, Suffolk.

Second prize of £5 to No. 768, Thomas Crisp, of Butley Abbey, Wickham Market, Suffolk.

Commended.—No. 770, Thomas Crisp, of Butley Abbey, Wickham Market, Suffolk.

CLASS IV.—*To the owner of the best Boar, of a breed not eligible for the preceding classes.*

First prize of £10 to No. 783, William Bradley Wainman, of Carhead, Cross Hills, Yorkshire.

Second prize of £5 to No. 777, Henry Endeacott, of Norfolk Street, Hunslett Lane, Leeds.

Commended.—No. 775, George B. Morland, of Chilton Farm, Harwell, Berkshire.

CLASS V.—*To the owner of the best breeding Sow of a large breed, of any colour.*

First prize of £10 to No. 789, James Clayton, of Midway Farm, Poynton, near Stockport, Cheshire.

Second prize of £5 to No. 785, William Bradley Wainman, of Carhead, Cross Hills, Yorkshire.

Highly Commended.—No. 787, John King Tombs, of Landford, Lechlade, Glo'ster. No. 791, Michael Gavins, of Fox Inn, Woodhouse, Carr, near Leeds, Yorkshire.

Commended.—No. 800, William Hewer, of Sevenhampton, Highworth, Wilts.

CLASS VI.—*To the owner of the best breeding Sow, of a small white breed.*

First prize of £10 to No. 802, William Hatton, of Addingham, near Leeds,

Second prize of £5 to No. 810, Edward Ladd Betts, of Preston Hall, Maidstone, Kent.

Highly Commended.—No. 803, William Hatton, of Addingham, near Leeds.

Commended.—No. 804, George Mangles, of Givendale, Ripon, York.

CLASS VII.—*To the owner of the best breeding Sow, of a small black breed.*

First prize of £10 to No. 818, George Mumford Sexton, of Earls Hall, Cockfield, Sudbury, Suffolk.

Second prize of £5 to No. 822, Thomas Crisp, of Butley Abbey, Wickham Market, Suffolk.

Highly Commended.—No. 823, Thomas Crisp, of Butley Abbey, Wickham Market, Suffolk.

Commended.—No. 824, George Turner, of Barton, near Exeter.

CLASS VIII.—*To the owner of the best breeding Sow, of a breed not eligible for the preceding classes.*

First prize of £10 to No. 829, John Harrison, jun., of Heaton Norris, Stockport, Lancashire.

Second prize of £5 to No. 827, George Mangles, of Givendale, Ripon, York.

Commended.—No. 826, William Bradley Wainman, of Carhead, Cross Hills, Yorkshire.

Class IX.—*To the owner of the best Pen of three breeding Sow Pigs, of any colour, of the same litter, above four and under eight months old.*

First prize of £10 to No. 840, William Hewer, of Sevenhampton, Highworth, Wilts.

Second prize of £5 to No. 839, William Hewer, of Sevenhampton, Highworth, Wilts.

Commended.—No. 836, William James Sadler, of Bentham Calcutt, Cricklade, Wilts.

Class X.—*To the owner of the best Pen of three breeding Sow Pigs, of a small white breed, of the same litter, above four and under eight months old.*

First prize of £10 to No. 844, Thomas Crisp, of Butley Abbey, Wickham Market, Suffolk.

Second prize of £5 to No. 842, Samuel Wiley, of Brandsby, York.

Highly Commended.—No. 843, Samuel Wiley, of Brandsby, York.

Class XI.—*To the owner of the best Pen of three breeding Sow Pigs, of a small black breed, of the same litter, above four and under eight months old.*

First prize of £10 to No. 846, George Mumford Sexton, of Earl's Hall, Cockfield, Sudbury, Suffolk.

Second prize of £5 to No. 847, Thomas Crisp, of Butley Abbey, Wickham Market, Suffolk.

Highly Commended.—No. 845, George B. Morland, of Chilton Farm, Harwell, Berkshire.

Class XII.—*To the owner of the best Pen of three breeding Sow Pigs, of a breed not eligible for the preceding classes, of the same litter, above four and under eight months old.*

First prize of £10 to No. 849, Edward Ladd Betts, of Preston Hall, near Maidstone, Kent.

Second prize of £5 to No. 848, Edward Davies, jun., of Harrington, Shiffnal, Shropshire.

SPECIAL PRIZES.

Offered by the Canterbury Local Committee.

SUSSEX CATTLE.

Class I.—*To the owner of the best Bull, calved on or before the* 1*st of July,* 1858, *and not exceeding six years old.*

First prize of £30 to No. 851, William Botting, of Westmeston Place, Hurstperpoint, Sussex.

Second prize of £15 to No. 853, George Buss, of Boughton Aluph, Ashford, Kent.

Third prize of £6 to No. 850, Stephen Hart, of Aldington Court, Hythe, Kent.

Class II.—*To the owner of the best Bull, calved since the* 1*st of July,* 1858, *and more than one year old.*

First prize of £25 to No. 859, William Dunk, of Horton Priory, Hythe, Kent.

Second prize of £15 to No. 861, Tilden Smith, of Beckley, Staplehurst, Sussex.
Third prize of £5, no competition.

Class III.—No entry.

Class IV.—*To the owner of the best Cow, in milk or in calf, above three years old.*

First prize of £20 to No. 866, Tilden Smith, of Beckley, Staplehurst, Sussex.
Second Prize of £10 to No. 865, George Jenner, of Parsonage House, Udimore, Rye, Sussex.
Third prize of £5 to No. 864, Thomas Hayley Gregson, of Woodsden, Hawkhurst, Kent.

Class V.—*To the owner of the best Heifer, in milk or in calf, not exceeding three years old.*

First prize of £15 to No. 869, John and Alfred Heasman, of Angmering, Arundel, Sussex.
Second prize of £10 to No. 870, Thomas Hayley Gregson, of Woodsden, Hawkhurst, Kent.
Third prize of £5 to No. 871, Pennington Gorringe, of Tilton, Selmeston, Lewes, Sussex.

Class VI.—*To the owner of the best Yearling Heifer.*

First prize of £15 to No. 873, Robert Neame, of Fairbrook, Faversham, Kent.
Second prize of £10 to No. 872, John and Alfred Heasman, of Angmering, Arundel, Sussex.
Third prize of £5 to No. 874, Pennington Gorringe, of Tilton, Selmeston, Lewes, Sussex.

Class VII.—*To the owner of the best Heifer Calf above six and under twelve months.*

The prize of £10 to No. 876, Robert Neame, of Fairbrook, Faversham, Kent.

PONIES OF ANY BREED.

Class I.—*To the owner of the best Stallion Pony, not exceeding* 14 *hands high.*

First prize of £20 to No. 877, George Kersey Cooper, of Euston, Thetford, Norfolk.
Second prize withheld.

Class II.—*To the owner of the best Mare Pony, not exceeding* 14 *hands high.*

First prize of £15 to No. 879, Thomas Neve, of Benenden, Staplehurst, Kent.
Second prize of £5 to No. 880, Rev. William Helt Beevor, of Cowbridge, Glamorganshire.

SHEEP.

Kentish or Romney Marsh Sheep.

Class I.—*To the owner of the best Pen of Five two-years-old Ewes.*

First prize of £10 to No. 886, Frederick Murton, of Smeeth, Ashford, Kent.

Second prize of £5 to No. 885, Edward Kingsnorth, of Orlestone, Ham Street, Kent.

Class II.—*To the owner of the best Pen of Five three-years-old Ewes.*

First prize of £10 to No. 891, Charles Collard, of Wichambreux Court, Wingham, Kent.

Second prize of £5 to No. 889, Frederick Murton, of Smeeth, Ashford, Kent.

INTERNATIONAL STATISTICAL CONGRESS.

The fourth session of the Congress, held this year in London, was opened on Monday, July 16th, by his Royal Highness the Prince Consort, who delivered an eloquent address on the occasion, in which he pointed out the true position and value of statistical knowledge. Besides a numerous attendance of British *savans*, scientific representatives from the governments of nearly every European state were present, as also from our own distant colonies, and the United States of America. To facilitate the discussion of the several subjects to be brought before the Congress, a division into sections was made, which comprised—1st, Judicial statistics; 2d, Sanitary; 3d, Industrial, including Agricultural; 4th, Commercial; 5th, Census, with Military and Naval statistics; and 6th, Statistical Methods.

The branches most interesting to our leaders being those of agriculture and health, more especially of animals, we add a few remarks explanatory of the principal proceedings which took place relative thereto.

The first of these important matters was brought before the section (Sir Roderick Murchison, D.C.L., F.R.S., in the chair) by the reading of papers by Mr. Caird, M.P., and Mr. Donelly, Registrar-General of Ireland, when it was proposed:

"That in the case of agriculture the area of the land under each crop should be annually returned, and a return of the live stock obtained not less frequently than once in every five years, and if possible every year. The quantity of the produce should also be estimated. The means to be employed should vary according to the circumstances of each state; but especial care should be taken to avoid exciting the prejudices or apprehensions of cultivators by unnecessary inquiries."

"Mr. J. H. James moved an amendment to this proposition, which was, however, not seconded.

"A long and interesting discussion ensued, in which the following foreign and English gentlemen took part:—M. Ackersdyck; M. Adrien Naville; Dr. Hübner; Dr. Engel; Baron De Czœrnig; Dr. Hermann; the Chairman; Mr. Caird; Lord Harry Vane; Mr. Donnelly; Mr. Purdy; Mr. J. H. James; and Professor Simonds.

"The proposition was then put to the meeting, and carried unanimously."

Among the numerous details which were discussed, was the advantage of obtaining *annual* returns of all the animals purchased or reared on the farm, and separating, in the case of cattle, sheep, and pigs, the store from the fat stock; and further, that the losses which the country sustains by the inroads of disease and death among animals should be ascertained by returning these in comparison with the total number kept.

In the sanitary section (the Earl of Shaftesbury in the chair), Professor Simonds laid before the meeting the following resolution:

"That in relation to the causes affecting public health, it is exceedingly desirable that means be adopted for ascertaining the extent and fatality of epizootic and other diseases among those animals which are ordinarily used as food, and that it be recommended that this be carried into effect by the authorities appointing veterinary surgeons or other officers of a similar kind."

After a short discussion, in which the great importance of the subject was universally admitted, the section adopted the resolution, which was confirmed subsequently by the Congress in general assembly.

RETIREMENT OF MONS. YVART.

On the retirement of Mons. Yvart from the office of Inspector of the Veterinary Schools of France, Mons. Renault has been appointed in his stead, and Mons. Delafond has succeeded him as Director of the Veterinary School at Alfort.

Extracts from British and Foreign Journals.

CELLULOSE DIGESTED BY SHEEP.

The researches of several German chemists, says the *Chemical News*, have proved that the cellulose of plants is by no means so indigestible a substance as was at one time supposed, but that on the contrary it is digested in considerable quantities, by the ruminants at least, especially when a portion of the food of the animal consists of some substance rich in oil.

In order to ascertain to what extent the digestibility of cellulose may depend upon its state of aggregation, Sussdorf and A. Stœckhardt have undertaken a series of experiments, of which only a very brief abstract can be here given. From their results it is evident that even the most compact kinds of cellulose can be in great measure digested by sheep. The experiments, commenced in July 1859, were upon two wethers, respectively five and six years old. These were fed—1st, upon hay alone; 2d, upon hay and rye straw; 3d, hay and poplar wood sawdust which had been exhausted with lye; in order that the sheep should eat the sawdust, it was found necessary to add to it some rye bran and a small quantity of salt; 4th, hay and sawdust from pine-wood, mixed with bran and salt; 5th, hay, spruce sawdust, bran, and salt; 6th, hay, paper-maker's pulp from linen rags and bran; after several unsuccessful attempts to induce the sheep to partake of the pulp when mixed with dry fodder, it was at last given to them in a sort of paste or pap, prepared by mixing bran with water. The experiments were continued until November, with the exception of a short intermission, during which the animals were put to pasture, in order that they might recover from the injurious effects—probably due to the resinous matters of the spruce wood—of the fifth series of experiments.

The animals, as well as their food, drink, and excrements, were weighed every day. The amount of cellulose in the excrements was also daily determined by analysis, the composition of the food ingested having been previously ascertained.

It thus appeared that when the animals were fed—(1.) with hay (35 lbs. per week), 60 to 70 per cent. of the cellulose contained therein was digested, *i. e.* it did not appear as such in the solid excrements. In this experiment the animals gained 7½ lbs. in 18 days. (2.) With hay 14 lbs. and straw 7 lbs. (per week), 40 to 50 per cent. of the cellulose of the straw was digested, the animals having lost 2½ lbs. in 11 days. (3.) With hay 10½ lbs., poplar sawdust 5¼lbs., bran 7lbs. (per week), 45 to 50 per cent. of the cellulose of the poplar wood was digested, the animals having gained $2\frac{1}{2}$ lbs. in 13 days. (4.) With hay $10\frac{1}{2}$ lbs., pine-wood sawdust 7lbs., bran $10\frac{1}{2}$ lbs. (per week), 30 to 40 per cent. of the cellulose of the pine wood was digested, the animals having gained 10 lbs. in 24 days. (5.) With hay $9\frac{1}{3}$ lbs. paper-maker's pulp 7 lbs., bran 14 lbs. (per week), 80 per cent. of the cellulose of the paper pulp was digested, the animals having gained 7 lbs. in as many days.

These experiments are to be continued, and more particularly with a view of ascertaining whether any nourishing effect is to be attributed to the cellulose.*

Dr. Lankester, in a lecture delivered by him at the *South Kensington Museum*, speaking of cellulose, says:—"We find in plants, whether they are composed of vascular tissues or of cells, that the greater part is composed of a hard substance called cellulose, or wood when it is formed into trunks and branches of trees. Now when we deal with the vegetable kingdom in our manufactures, we deal with this cellulose. When we deal with trees and cut them into boards, or when we take these delicate fibres and convert them into pocket-handkerchiefs and things of that sort, we deal with cellulose; and when we have worn all our cotton and our linen to rags, they are collected for the purposes of the paper-maker. The whole country is at this moment convulsed to know what we are to do for rags now we are going to take the duty off paper. There is an immense quantity of this cellulose in different parts of the world, in the forests of Asia, Africa, and America, and plenty in our own wildernesses, and it is only a question as to whether a man shall wear it first upon his back, or have it manufactured into paper at once. I believe the reduction of the paper duty will give the greatest incentive to the young chemists to pursue, the subject and to make such discoveries and improvements in the art of paper-making, that the paper manufacturer will be enabled to snap his fingers at rags."

CHEMISTRY IN ITS APPLICATION TO AGRICULTURE AND PHYSIOLOGY.

By A. S. Copeman, V.S., Utica, N.Y.

(*Continued from page* 420.)

The various organs, duly performing their proper functions, are wasted and reproduced with proportionate rapidity; and we might almost observe the animal's body is being completely renewed, at certain intervals, by the new materials,

* Stœckhardt's 'Chemischer Ackersman,' 1860, No. I, p. 51.

continually received, being deposited, in place of the old ones, which then constitute matters no longer available for the purpose of nutrition. And here again we see the wonderful provisions of nature in removing such from the system when they are no longer required.

We have stated repeatedly, that the various carbonaceous matters unite with the oxygen taken in by the arterial blood, and are carried to the lungs and excreted with other portions of effete materials. From the decomposition of albumen, are taken elements to the liver to form bile, and lastly, the kidneys have for their office the removal of a large proportion of them in the form of urea, the quantities of course being dependent on the amount of waste; and here we observe a striking instance of the metamorphoses of the various tissues.

If a person undergoes much bodily exertion, the amount of urea is increased; if, on the other hand, his employment has been that in which the assistance of the mind has been most active, the preponderance of phosphates will be evident, thus proving that even a thought is sufficient to make a call upon the sources of nutrition, so as to cause a partial destruction of the brain itself. Nevertheless we do not find that the *mind* decreases in power the more it is employed; on the contrary, it becomes more powerful the more it is exercised. Difficulties, which at first sight appear insurmountable, by careful investigation are often proved to be most simple.

Thus step by step the mind proceeds, acquiring new strength and new capacity with every exertion; grasping Nature's deepest mysteries, and seeking for the laws that govern them, uncoiling their most intricate windings with indefatigable perseverance, clearing away the mass of ignorance and superstition which surrounds them, and making those facts which were hidden in depths almost unfathomable to appear clear and evident as the mid-day sun.

Thus does education change the face of Nature, rendering that a fair plantation, which without it would appear a "desert wild." Well may we say with Pope:

> "A little learning is a dangerous thing,
> Drink deep or taste not the Pierian spring;
> Its shallow draughts intoxicate the brain,
> But drinking deeply sobers us again."

Thus we have seen that the functions of *vitality* are carried on to a certain duration, and then comes the cessation of nutrition and death. The once-moving body is now a motionless mass, on which the laws of chemistry will soon exert their potent influence, converting the complicated animal organism into a number of noxious compounds, but even these by the wise provision of a bountiful Providence are rendered again available to the animal economy. It is here that we see the admirable adaptation of the vegetable world. During what has been aptly likened to the process of digestion, plants feed on those matters that are poisonous to the animal body, and give forth those constituents which are destined to play again their important part in the complicated functions of the animal machine. Thus it may be truly said, not an atom of matter is ever lost or needs forming anew ; all that exists now existed at the *creation*, and will exist till time shall be no more ; that which lives, flourishes, dies, and decays, is not lost ; the great *principle of life* only changes its form ; hence the destruction, or metamorphosis of one generation of vegetables or animals, is only the necessary requisite for the existence and support of the next.

We have taken an imperfect view only of the formation, reproduction, and decay of vegetables and animals ; we have seen the beautiful simplicity of arrangement that exists in the various stages ; and now let us conclude our observations by a retrospective glance at the life of the highest being in animated nature—MAN.

Let us view him as a helpless infant, unable to assist himself to the common necessaries of existence ; a being on whom the meanest reptile that crawls might wreck its venom with impunity ; but years roll on, one epoch after another is passed, and then bursting forth "like a giant rejoicing in his strength," appears the man ! Proudly he casts his gaze o'er creation's face. The fiercest animals that roam the desert wild tremble at his presence, and quail before him ; alike he laughs to scorn the unwieldy elephant's strength and the lordly lion's roar, and undauntingly journeys onward, secure from all except his fellow-man. The lapse of revolving seasons brings him near to his appointed " threescore years and ten," when truly a change comes o'er the spirit of his dream. Behold him now a picture of the very nothingness of human power ; his arm, that would have felled a giant, hangs powerless by his side ; his eye, that rivalled the eagle's in penetration, has lost its brilliancy ; his tottering limbs almost refuse to perform their wonted office, and even his reason fails him, till death, seeming to pity the abject condition of creation's lord, draws a veil over the scene. Thus he shuffles off this mortal coil, and his name perhaps is heard no more. Thus, too, is fulfilled the spirit of that terrible denunciation,

"Dust thou art, and unto dust thou shalt return."

(*To be continued.*)

Translations and Reviews of Continental Veterinary Journals.

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

Journal des Vétérinaires du Midi, April, 1860.

A WORD ON THE CACHEXIA, OR ROT, IN RUMINANTS.

Par M. Raynaud, Vétérinaire à Gaillac.

The author asserts that all who have written on the cachexia in ruminants are in error as to its nature. He founds his opinion on the discoveries made by the naturalists of our day, which show that the cachexia cannot be anything but a verminous affection. Is vertigo in our domesticated ruminants considered now-a-days as a morbid state of which the cœnurus in the brain is the effect? It has been clearly proved that the cœnurus is the cause, and that the gravity of the disease is always in proportion to its development. The pathologist who would consider the presence of œstri in the stomach of the horse as the effect of gastritis would be laughed at, although their presence is often attended by colic. Is the acarus in mange an effect or the cause of the disease? If the cœnurus cerebralis, the cysticercus of the cellular tissue, the œstri in the stomach, the acarus in mange, and many other parasites, by their presence in the system cause a morbid state of the animal economy, why should the flukes in the cachexia be an exception? Therefore, the hydroæmia of the French authors, the asthenia of M. Valada, ought to be considered as a morbid effect caused by the presence of the flukes in the liver, instead of, as hitherto, the cause of it; the intensity of the disease being always in direct proportion to their number.

Naturalists no longer admit of the spontaneous evolution of the entozoa, all of which come from without, and find their way into the system under certain circumstances, and pass through one or more changes.

The older naturalists discovered how the larvæ of the œstri got into the digestive tube of the horse; the modern and, above all, our contemporaries have found out how the cœnurus finds its way into the cranium of ruminants, and how several species of the tænia arrive at perfection through their migration from one kind of animal to another; and they are also in a fair way of finding out how and in what manner the fluke penetrates into the liver of ruminants.

The object of the author is to prove that the cachexia, or rot, is a verminous affection, which produces the gastric asthenia, the hydroæmia, and the anæmia of different authors.

Treatment.—This necessarily consists, firstly, in destroying the fluke; and secondly, in strengthening the system.

The medicament the author employs to effect the first of these indications is very simple, easily obtained, and cheap: it is chimney soot.

In directing the attention of the public to this remedy, he states that veterinary surgeons are aware it contains a certain amount of pyroligneous oil, which possesses undoubted anthelmintic properties. The dose is from one to three table-spoonfuls a day, given in the food.

To fortify the constitution, the seed of the *Lupinus* is advocated by him. M. Rodet says the seed of the lupin is a preservative against this malady; and M. A. Gasparin recommends bread made of half of the meal of the lupin and half ordinary meal, as a prophylactic. According to M. Raynaud, this seed is to be given as meal either raw or cooked. When raw, it has a bitter taste; if cooked, it loses this taste, but the animals do not dislike this bitter taste. It is to be used as the ordinary diet of the patients. After a few days, sheep get very fond of the plant; but it does not suit the monogastrics, particularly the pig; and although this animal has the faculty of vomiting, it nevertheless causes severe indigestion when long fed on it, which generally terminates in death. An addition of a little common salt is very advantageous to this treatment. The diet should be nutritious. From twenty to thirty days will generally suffice to effect a cure.

Etiology.—The cachexia, or rot, being according to the views of the author a verminous disease, he agrees with the opinion of the ancients, who believed that the flukes found in the liver are either taken in with the water or the provender. The author limits his investigations on this subject to two points: 1st, those circumstances which favour the entrance of the flukes into the system; 2dly, the predisposition which favours the development of these entozoa. Among the first are the pasturing in the marshy and low damp meadows, on the borders of stagnant water or even rivers; also animals being turned out when the heavy dews are on the ground at the rising of the sun, or during fogs, and those who are pastured in the forest.

Inundations in winter do not cause the disease; while those which occur in the summer are a frequent cause of it. The observation has long since been made, that the lowland meadows, and the borders of watercourses and shallow rivers are frequently infested with this disease, while the mountain ranges are exempt. Among the organic causes, the first is the constitution of the herbivorous animals, and secondly the debility caused by the scarcity of fodder, or the little nutrition contained in it.

That this disease is hereditary cannot be refuted, and therefore the author abstains from adducing the many facts in support of it.

Parliamentary Intelligence.

TUESDAY, JULY 3, 1860.

DISEASED HORSES AT ALDERSHOT.—*General Peel* asked the Secretary of State for War if it was true that glanders prevailed to a considerable extent amongst the horses in the camp at Aldershot; and, if so, if he could state what steps had been taken to prevent the spread of it.

Mr. Sidney Herbert said he had found, upon inquiry, that it was suspected that some of the horses at Aldershot had glanders, and orders had in consequence been given to separate them from the other horses. Subsequently, the matter had been inquired into by a military board, and they reported that no horses were affected with glanders, but the few that were suspected were removed, the stable was subjected to fumigation, and the roof taken off before being again used.

PLEURO-PNEUMONIA IN THE UNITED STATES.

THIS disease is spreading rapidly in the State of Massachusetts. A committee of the two houses of the Legislature, which was occupied for eight days in receiving evidence, reported, on the 7th ult., "that from the evidence before the committee, it is apparent the disease is contagious, and so insidious in its attacks, so difficult of discovery in its early stages, and so fatal in its termination, as to warrant stringent measures to arrest its progress, and to protect the great interest exposed to its ravages."

Two draft bills were also submitted at the same time, with the view of preventing the spread of the disease, along with a report of the evidence taken. Commissioners have been appointed under the acts passed to prevent the spread of the disease. That the presence of pleuro-pneumonia has caused great alarm in the States, may be gathered from the fact that, "the governor of Ohio has appointed three commissioners to visit Massachusetts and other infected districts, for the purpose of gathering the facts relating to this disease. J. H. Klippart, secretary of the Board of Agriculture; Col. S. D. Harris, editor of the *Ohio Cultivator*, and another gentleman, are the commissioners."

At a meeting held to consider the best course to adopt to prevent the spreading of the disease, burning the infected animals was suggested as the most likely means of preventing contagion.—*North British Agriculturist.*

THE AGRICULTURAL HALL COMPANY AND THE SMITHFIELD CLUB.

At the special general meeting of the Smithfield Club, held, under the presidency of Lord Walsingham, at the Freemasons' Tavern, on Tuesday, the 17th instant, a resolution confirming the adoption of the committee's reports in favour of the arrangement with the Agricultural Hall Company, and appointing certain members of the club to sign the agreement with the company, was moved by Mr. Sydney and seconded by Professor Simonds. To this resolution an amendment was moved by Sir John Shelley, and seconded by Lord Tredegar, that the whole matter should be again postponed to the general meeting to be held in December next; but, after some discussion, this amendment was lost, the votes being 9 in favour and 39 against. The original motion was then put and carried by 33 to 6—a majority in favour of the company of more than five to one.

The friends of the Smithfield Club (and their name is legion) will gladly welcome this solution of the difficult position in which the club had found themselves. That the Baker Street premises had long been inadequate to the demands of the Christmas show was but too evident; and that the offer made by the Agricultural Hall Company was both opportune and, in a commercial sense, liberal, none can dispute. The Agricultural Hall Company will, we believe, do well that which has been but imperfectly done for a long time, and, we sincerely trust, equally to their own profit and that of the club. Exhibitors both of implements and stock are largely interested in this subject, and should therefore help the company with such support as they can give. The following is a copy of the resolution alluded to above:

"That the report of the sub-committee appointed at the general meeting of December 9th, 1859, to inquire into the practicability of providing a more commodious place for holding the annual exhibition of the Smithfield Club, having been adopted at the special general meeting of the 22d of May, 1860, and the report of the legal arrangements' committee appointed on the same 22d of May to conclude the terms of an agreement with the Agricultural Hall Company having also been adopted at the special general meeting held on the 6th of June, 1860, this meeting does in the fullest manner confirm those proceedings.

"And it is further resolved, that Messrs. Milward, B. E. Bennett, William Torr, S. Druce, Owen Wallis, Thomas Twitchell, and R. C. Ransome, or any two of them, be authorised forthwith to sign the agreement, which was settled by Mr. Ade, the solicitor of the club, and Mr. Dorman, the solicitor of the Agricultural Hall Company, and approved by the legal arrangements' committee in its report to the general meeting of the 6th of June, and that a copy of the agreement be entered on the minutes."—*The Field.*

ARMY APPOINTMENTS.

War Office, Pall Mall, *July* 24, 1860.

VETERINARY MEDICAL DEPARTMENT.

John Henry Burbage, M.R.C.V.S., gent., to be Acting Veterinary-Surgeon; David Paley, gent., to be Acting Veterinary-Surgeon.

Embarked, on the 26th of July, on board the "Newcastle," for India, Veterinary-Surgeons Tatam, Baldock, Dorrofield, and Cheesman.

THE

VETERINARIAN.

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Communications and Cases.

A PECULIAR AND UNUSUAL DISEASE OF THE OSSEOUS TISSUE IN THE HORSE; RESEMBLING IN MANY OF ITS CHARACTERISTICS MOLLITIES OSSIUM, RHACHITIS, OSTEOPOROSIS, AND FATTY DEGENERATION OF BONE.

By G. Varnell, M.R.C.V.S.,
Assistant-Professor, Royal Veterinary College, London.

It may be asked if there is any advantage to be derived from recording cases of a disease the cause of which we are at a loss to ascertain, and respecting the cure of which we are equally in the dark? Were we able to say upon what the disease depended, so as to remove the cause, or by studying its pathology were thereby enabled to effect a cure, then, under such circumstances, it might be thought that benefit would be conferred upon the profession, and through it upon the public.

Now, as these observations apply *indirectly* to the cases I am about to narrate, my reply to them is as follows:—I am of opinion that all diseases of an unusual character which come under our notice, especially such as frequently terminate fatally, or assume an epizootic or enzootic form, although the causes that gave rise to them may not easily be discovered, or the means of cure at once devised, should, nevertheless, be faithfully recorded, with as much of their history as can be obtained. I do not mean that they should be simply registered in a case-book, but published in a widely-circulating journal; for were this course adopted, the details of such cases might reach the eye of those residing at remote parts of the world, and who, perhaps, were familiar with such diseases, but had not seen the necessity of publishing what they knew about them. The light, therefore, they possessed was hid, as it were, "under a bushel," and the community thus deprived of its influence.

I believe that a record of facts is highly important, not only to furnish data for the systematizing of disease, but also in many other ways is the utility of such a course beneficial, as is acknowledged by most pathologists; so that I need not occupy space in setting forth the advantages to be derived from it.

Holding these views, I have from time to time exerted my humble abilities in recording a few cases, which to me, at least, possessed some interest, and in this spirit I offer the details of the following.

On the 14th of November, 1859, I was requested by Mr. Wallin, veterinary practitioner at Theale, Berkshire, to see some horses, the property of Mr. Champion, of Calcot, near Reading, who is a large farmer and miller. Three of this gentleman's horses had died, a fourth was not expected to live many days, and two others were labouring under the same disease in a less acute form. It not being convenient for me to go there at the time I was requested, I arranged to see the horses on the 21st, on which day Mr. Wallin drove me to Mr. Champion's farm. On my arrival I was told that the horse which I was previously informed was not expected to live many days, had been dead about twenty-four hours, but that the carcase was kept for my examination. I thought it best, however, first to examine the two horses then ill, and also to obtain from Mr. Wallin and Mr. Champion as much of the history of these singular cases as possible.

Mr. Wallin commenced by stating that the disease then affecting Mr. Champion's horses had puzzled him very much. It had not yielded to any treatment he had had recourse to, but gradually increased in intensity, wearing out the vital powers, and ending in death. The symptoms he described to be somewhat as follows:—"My attention," he said, "was in most instances first directed to defective action, perhaps in one joint or limb only, which, upon examining, tenderness would be evinced with inordinate heat, and in a few days visible enlargement would be observed to exist. In the course of a week, or thereabouts, another of the limbs would become affected in the same way, when the acute symptoms of the first attacked, would, perhaps, have partially passed off. In this way all the four extremities, one after the other, eventually became similarly diseased. The appetite was generally good, and for a time the animals did not lose flesh very fast, but after awhile, from the great constitutional disturbance set up, they fell off in their appetites, and began to waste rapidly. The pulse seldom rose much above the natural standard, and the excretions appeared to be natural." He also informed me that he had made a *post-mortem examination* of each horse that had died, but only so far as the abdominal and thoracic viscera, and the large articulations of the four limbs were concerned. In the former he could not detect anything to account for the death of the animals, but in the latter he found extensive ulcerations of the articular cartilage to exist, with only a small quantity of synovia, and that of a dark colour, arising apparently from an admixture of blood. This articular disease was sufficient, in his opinion, to account for the pain observed in walking, which I fully concurred in.

This is a brief outline of what Mr. Wallin communicated to me respecting the symptoms, progress, termination, and post-mortem appearances of the cases, as they had come under his notice.

Mr. Champion gave me the following history of the horses in question. He stated that he bred all the horses that had died, or were then ill, except one, which was a brown horse, and this he had bought. They were the offspring of *different mares,* and also *different sires.* They had been fed with the same kind of food as the other horses on the farm, which had never shown any symptoms of the disease, and also in the same way; indeed he had been in the habit of feeding his horses for many years in this way, without, until the present occasion, having experienced any ill effects. Bran or pollard formed the greater part of their diet; otherwise it consisted of the ordinary produce of the farm. They all drank the same kind of water, this being that which the stock generally partook of. Mr. Champion showed me samples of the food the horses had been in the habit of eating, all of which appeared to be very good. He likewise mentioned one singular circumstance, namely, that although his young horses consisted of colts and fillies, not one of the latter had ever been affected with the disease; those that had died, and those that were then unwell, being males. He also stated another singular fact, that on his other farm, which was only a short distance from the one where this disease existed, not a single instance had occurred, although the horses were bred from the same parents and partook of the same kind of food. He further informed me that he had not the slightest reason for supposing that his men had been using drugs of any kind, as carters are very often in the habit of doing; nor could he account for the occurrence of the disease in any way whatever.

Having heard the above statement from Mr. Champion, and also that of the veterinary surgeon under whose care the animals had been placed, I proceeded to examine the two horses then labouring under the malady.

I was first shown a brown cart-horse, five years old. He was standing in the cart-horse stable with other horses; was in very fair condition, and at first sight appeared as if nothing was the matter with him; the pulse was only a little above the ordinary standard, and the excretions, as far as I could see or learn, were natural. I ordered him to be led out of the stable, when I observed that he stepped short, flexed his limbs with difficulty, and apparently with much pain, particularly the near fore and the off hind legs; the knee- and hock-joints of which were hotter than natural, slightly swollen, and tender when pressed upon. These symptoms were also present in the other two limbs, but in a much less degree of intensity. On causing the horse to be turned round, or moved in a backward direction, a decidedly rigid state of the loins was observed, and by pressing upon any part of the back considerable pain was evinced. On examining the animal's head, I was particularly struck with the enlarged and roundish appearance of the facial region. Each ramus of the lower jaw, the upper maxillary, and the nasal bones, were evidently enlarged, and pressure on them caused some amount of pain. On looking into the mouth, I observed that the mucous membrane was of a purplish tint, except at the margin of the gums, where it was of a pinkish colour, crossed here and there by bluish lines (veins). The lining membrane of the nasal passages, and the conjunctival membrane also, were paler than natural. This condition of the membranes, I was assured by Mr. Wallin, could not have been caused by any medicine that had been given.

I next examined a chestnut gelding, four years old. He was kept in a barn, in which he had been for some time, and every care seemed to have been bestowed upon him. He was in very good condition, although, I was told, not so fleshy as he had been. Like the brown horse, while in a standing position he did not appear to be suffering, but when made to walk the pain seemed to be very acute. The joints of the near fore and off hind legs were also hotter than natural, tender, and slightly swollen; and, as in the brown horse, the same tenderness and rigidity of the back were manifested when he was made to back or turn. The visible mucous membranes likewise presented the same appearance, but the peculiar enlargement of the bones did not exist. The pulse was only a little increased in number, but in both horses it became increased about 10 in the minute, if they were made to walk for a short distance.

I was informed that the chestnut horse had been ill about six months; that a short time after he was first attacked he became apparently better in health, and was castrated, from which operation he recovered in the usual time, but after awhile he relapsed into his former state of health, and had continued to get worse up to the present time. His food consisted of pollard, mangel-wurzel, and good upland hay.

I then proceeded to examine the carcase of the horse that had died the day before. Not being provided with proper instruments, and the *post-mortem* having to be made in the field, my examination was not so minute as it otherwise would have been. An accidental circumstance threw a little light upon the nature of the disease. I have before alluded to the enlarged state of the facial bones of the brown horse. This fact induced me to proceed, firstly, to examine the head of this horse. After having removed the skin from the side of the face, and dissected back the muscles and periosteum, I pressed upon the bones for the purpose of testing their density, and while so doing, a young man belonging to a dog-kennel about half a mile distant, who happened to be present, said, "I daresay you will find the bones of this horse just like those of the other horses." On asking him what he meant by that observation, he answered, using his own words, "Why they were as soft as a pear; they boiled all to pieces. They were so soft that a rib could be cut easily with a knife, or it broke like a rotten stick." I asked him if he thought any of these bones could be obtained? he replied they could, and he would select some of them if I wished. This I considered somewhat important information, and requested him to furnish me with some of them, which he did, and these I found to be in the state he had described.

With the assistance of Mr. Wallin, we now proceeded with our examination: first inspecting the abdominal and thoracic viscera, and next the articulations of the extremities. The former, with the exception of a peculiar pallidness, showed no marks of disease. The latter, however, Mr. Wallin assured me were identical in appearance with those he had previously examined. Portions of the bones entering into the joints of the extremities, and a part of those of the facial region, I brought away with me, for the purpose of further investigation, the particulars of which I shall hereafter allude to.

This horse, I was told, was first taken ill on the 21st of June, 1859. The disease gradually progressed, and the animal exhibited the same symptoms, but it was thought in a more intense degree than in any of the others. The extreme pain this horse appeared to suffer when in a standing position, and the great difficulty he had in rising when in a recumbent one, suggested to Mr. Wallin the advisability of placing him in slings, in which he appeared to be more comfortable; but it was only for a short time, as his sufferings again became so great that he had to be taken out of them. In a short time afterwards he died.

I was asked if I could suggest any treatment for the relief of the two horses then labouring under the disease? Not having the slightest idea of the cause which had given rise to the malady, and not understanding its pathology fully, I was unable to answer the question satisfactorily; nevertheless, I suggested the following, viz.: a complete change of the food, water, and also the situation of the animals. Not that I considered the locality to take any prominent share in the production of the malady, but as a curative means I thought the change might prove beneficial. I further recommended tonics, such as the salts of iron combined with the vegetable bitters, to be given daily, and as much slow walking exercise as the animals could bear. I also recommended that a stimulating embrocation should be applied to the region of the affected joints.

This plan of treatment, I was informed, was carried out for a time, but, I believe, without the slightest benefit resulting; both horses, in fact, continuing to get worse during it. Thinking that, perhaps, the kind of food the horses had been eating had had something to do in producing the disease, I advised that the bran or pollard should only be given occasionally, and that some other food should be made the basis of their support.

It may be inferred, from my giving this advice, that I thought the bran was the main agent in causing this affection. Now, although I incline to the opinion that it had something to do with it, yet I have no proof that such is the case; neither am I prepared to explain how it could have caused it.

I have before stated that the two horses, the brown and the chestnut, continued to get worse. I therefore wrote to Mr. Champion, stating that we were desirous that one of them should be sent to the College, so as to enable us to watch the progress of the disease. To this request Mr. Champion made no objection; and the brown horse was forthwith forwarded to us by rail. It was not our intention to carry out any particular mode of treatment, as from the investigation we had made of the bones of the last horse that died, and having likewise deliberately thought over the nature of the affection, we were of opinion that the disease was incurable.

This horse was admitted into the College Infirmary about the middle of December, and was kept until the 28th of the same month, when it was thought advisable to have him destroyed. I wrote to the owner, informing him of the course we were about to take, and at the same time I asked him to send the chestnut horse to the College for the same purpose. To which I received the following reply.

CALCOT, READING; 26*th December*, 1859.

DEAR SIR,—You can do just what you think expedient with the brown horse. I think there can be no doubt of the incurable nature of this strange disease, both in him and the chestnut horse, which I will send to the Great Western Railway Station at Paddington on Wednesday morning.

I trust you will be able to throw some light on the *cause* of this most unfortunate malady. The chestnut horse is now worse than when you saw him; the head has increased in size the last few weeks, and the disease has been longer developed in him, without becoming fatal, than in any of the other horses.

The two horses are not related either through their sires or dams.

I remain, dear Sir, yours truly,
W. W. CHAMPION.

G. Varnell, Esq.

The horse was accordingly sent, and both the horses were destroyed on the same day. When the brown horse first reached the College, he was freer from defective action than I expected to find him; nevertheless, the motion of his limbs was very imperfect, particularly the off hind one, and it was evident he could not progress without great pain. He manifested a desire to eat, but in consequence of the diseased state of the maxillary bones he could only take sloppy food. The symptoms rapidly increased in intensity, until the bones of his face became so much enlarged that he could scarcely move his tongue; the joints of the affected limbs also became much larger, the heat and tenderness increased, and when he laid down he could not rise again without help. The pulse, however, was but little increased, and his desire for food continued to the last.

The chestnut horse, on his arrival at Paddington station, was unable to walk from the horse-box, in which he was brought, to the van we had sent to bring him to the College. On his attempting to do so, his fore legs gave way at the elbow-joint on one side, and the shoulder-joint on the other, in consequence of the articular and capsular ligaments, and the tendons of those muscles which are attached near to these joints, becoming detached (as was found to be the case afterwards) from their bony connections, by the tearing away of portions of diseased bones. It was consequently thought desirable to have the horse destroyed on the spot, and the carcase brought to the College.

We now proceeded to make a careful examination of both carcases, the most prominent features of which I will briefly describe.

The structural changes that had taken place in the organs of both were so much alike that the description I am about to give of one will equally apply to both. The soft parts generally were paler than is natural, especially the muscles of those limbs which had been thrown out of use from the pain produced whenever any movement was attempted to be made. But in these structures I did not detect the slightest tendency to fatty degeneration. The fat generally had a mottled, watery appearance, which is very common in animals that are rapidly losing flesh, and this had been the case in a very marked degree with these, for a short time before they were destroyed.

In disarticulating the limbs from the trunk, and also the several bones of each limb one from the other, the appearance of the interior of each joint was remarkable. In most instances, although not in all, the articular cartilage was of a dark slate colour, much thinner than natural, and in many places it was entirely lost. This was especially the case around the margin of the articulations, leaving the bone at that part quite exposed. The synovial membrane was considerably thickened, especially in those parts where it is most vascular. The quantity of synovia in each joint was small, of a dark colour, and in some cases mixed with clots of blood. The character of some of the articulating surfaces, however, was quite different. In such the articular cartilage was pale-coloured, and in some places of a palish yellow tint, velvety to the feel, and evidently containing fat; thereby indicating that the cartilage cells had disappeared and fat become deposited in their place. The ends of the bones were so much softened, that by applying a slight degree of force to the capsular or articular ligaments, small portions of the bone could easily be detached. The periosteal covering of all the flat and irregular, and also some parts of the long bones, was very vascular, and could easily be stripped off. The bones, generally, were likewise so very soft that they could be cut with a knife in any direction, with the greatest ease, and if pressure were applied to the cut surfaces, or where the periosteum had been removed, blood would ooze from numerous points. In the interior of the bones, the cancelli were filled with a red gelatinous substance. The ribs, the vertebræ, and indeed all the irregular and flat bones were in the same condition. The shafts of the long bones of the extremities were not visibly increased in size; nor was the shell or compact structure much altered. The ends of these bones, however, were enlarged and soft; and on making a section through them, in their long diameter, the medullary canal, and especially the cancelli near to their extremities, had a singular although not a uniform appearance. In some of them, the whole of the interior was of a dark red colour, from congestion of the vessels and effusion of blood into the areolar interspaces. In others, one half only of the interior was in this state, the other part being filled with a peculiar fat, and consequently very pale in colour. It was at the end of the bone affected in this way that the articular cartilage was of a palish yellow colour, velvety to the feel, and also slightly greasy. Even the teeth did not escape the malady, one of their constituents being evidently affected, which was evinced by the crusta-petrosa being much thicker and more spongy than natural.

(*To be continued.*)

PLEURO-PNEUMONIA IN SHEEP.

By W. A. Cox, Sen., M.R.C.V.S., Ashbourne.

A disease of a very alarming character has devastated many of our flocks of sheep in this neighbourhood during the past spring. I first heard of it in March last.

Symptoms.—The animal at first appears dull and drooping, with hanging of the ears and a dejected countenance; soon after a discharge shows itself at the nose, of an adhesive character, and about the consistence of the white of an egg, which becomes darker in colour as the disease progresses. A painful cough is always present, with increased respiration, which in the last stage of the affection is attended with a grunt, and great distress is produced whenever the animal's sides are pressed.

They generally die from the third to the sixth day after they are first attacked.

Post-mortem appearances.—The last sheep that we opened belonged to Mr. Lowndes, Shaw's Farm, Tissington, which may be taken as a type of all the others. The abdominal viscera were healthy. The lungs were evidently the seat of the malady, and in this case it was nearly confined to the left side. The pleuræ costalis and pulmonalis were much diseased, and adhered to each other. The lung was very much enlarged, and had become consolidated, being as hard as liver, and when cut into, it had a marbled or variegated appearance, resembling the lungs of a cow which had died of pleuro-pneumonia. We have never found much serum in the chest, although the pleuræ generally were adherent, but I have heard of a few cases in which it existed.

I know some farmers who have lost a fifth part of their sheep from this disease.

I am fully satisfied in my own mind that pleuro-pneumonia among cattle is infectious, and have been ever since my paper on this subject appeared in the September number of the *Veterinarian* for 1842; since which period I have had ample opportunities of ascertaining whether or not the disease could be or ever was communicated from the cow to the sheep; but although I have seen these animals depastured together, and even kept in the same building, the latter never became infected.

Where this disease has appeared among sheep, I am not aware that cattle affected with pleuro-pneumonia have, in any one instance, been near them. Whether or not it is infectious among themselves, I am not prepared to say at present.

The recoveries after treatment were about one fourth. One farmer told me that he succeeded best with a moderate bleeding at the onset, and afterwards giving castor oil with a little brandy, so as to act upon the bowels, constipation being always present.

Tænia in lambs has also been very prevalent this year, producing diarrhœa and death. I find the remedy that I recommended in the *Veterinarian* for 1855, the most effective that can be resorted to for their eradication.

ON VETERINARY OBSTETRICS.

By J. Aked, M.R.C.V.S., Blackburn.

"Vis Unita Fortior."

Is it that many of us do not understand the above motto, which is written on all our diplomas, or is it, as I am informed, that young men, especially those considering themselves competent to lecture and write for the guidance of others, are apt to be presumptuous, and being so, often become very inconsiderate?

It is much to be regretted that such differences of opinion and ill-will should exist amongst the members of our profession; and how Mr. Gamgee reconciles the scorning of the attempt of some to raise themselves by the detraction of others, I cannot understand; since, in my opinion, he sets the members of the profession down, up to the present time, as being all perfectly ignorant but himself. I for one should like his writings much better if he would make his statements without calling others to account, and give them credit for having done the best they could under the existing circumstances. Perhaps he will hereafter find it difficult to do more. One man cannot possibly be clever at all things. The same study and training which would make one clever at writing books, might entirely unfit him for rough country practice. The weak hand and ringed finger would be of little use in some cases of veterinary obstetrics. Knowledge is said to be power; but, however wise a man may be, if he cannot take up half a hundred-weight in one hand, and quietly raise it above his head, he will be of little use in relieving unnatural presentations in the mare or cow. And this strength of hand and arm, I know from experience, can only be attained by being accustomed to much hard work.

In my opinion, protracted cases of labour in the mare or cow are not necessarily so fatal as the public are led to believe from the lectures and cases published by the different gentlemen in the *Veterinarian*. Neither does my experience in such cases prove that the chances of success are infinitesimally small.

With respect to obstetric instruments for the mare or cow, few are required, or can be used to any advantage. And in cases of unnatural presentations, with only the head turned on one side, a common scalpel, or a small knife of almost any kind, I have always found quite sufficient to do all that is required. This most practitioners generally have with them in their case of pocket instruments.

In my practice during the last sixteen years, I have had eighteen cases requiring embryotomy; eleven in the cow, and seven in the mare. Out of these fifteen recovered, and three died, one of which had been in labour twenty-four hours, and every portion of the calf that could be reached had been taken away before my arrival. I removed the remainder by the Cæsarean operation. The cow died the following day. The second was a case of abortion in the mare; she died on the fourth day from absorption of putrid matter from the uterus. The cause of death in the third was laceration of the womb. Eleven of these cases had been in labour from six to thirty-six hours before I saw them, and seven were under my care from the commencement. Four of these were monstrosities—calves with two heads, and all the organs of the thorax double. One had eight legs, and one colt had a large misshaped head with curved neck.

The last case I had to attend was on the 22d of last month; and from the effects of it I am at present suffering from slight fever, and a pustular eruption, so well described by Mr. Gamgee in the *Edinburgh Veterinary Review* for July, 1858. This is the fourth time I have been affected in this manner. Once I belive it was caused by removing a putrid placenta from a cow.

The case I am referring to was an old mare, having a hollow back, and what we in this country call a broken belly; the lower part of the abdomen being as low as the mare's hocks. This animal was observed to be in labour at four o'clock in the morning, but she might have been so during the greater part of the night. As is usual in such cases, when the party in charge of her, and the neighbours, had tried all they could unsuccessfully, I was requested to attend. This was about ten o'clock. On examination, I found it was a breech presentation. The colt was on its back in the uterus, the back part of the legs crossing the pelvic opening, and the feet opposite the spine of the mother.

After examining the mare, I was of opinion that no man living, with all the obstetric instruments that ever were invented, would be able to relieve her in a standing position. She was therefore taken from the field in which she was, and put into a large well-littered loose box, and there left to herself to lie down of her own accord; after which she was well packed up with straw, and pressure applied to the abdomen; proper ropes were then attached round the fetlocks of the foal, and with the assistance of the hand in the uterus, it was partially twisted round, and brought into a more favorable position for delivery, and before twelve o'clock it was removed piecemeal. This mare made a very speedy recovery.

It requires some little determination to attend on these cases, remuneration being out of the question; but how people, and especially professional men, can stand by, with their hands in their pockets, finding fault with others, without assisting to relieve the poor creatures, as is stated in Mr. Gamgee's lecture in the *Veterinarian* for June, is to me a mystery, and deserving of much censure.

CASE OF PERICARDITIS IN A MARE.

By F. B. Jones, M.R.C.V.S., Hereford.

I have forwarded a morbid specimen to you, thinking it of some interest. It is the heart of a cart-mare. The animal was seven years old, and belonged to Mr. Pardington, Byford, near Hereford. She was in foal, and her time expired two weeks ago. At that time the carter said her udder was much distended, and he expected her to parturiate every hour. She also seemed dull and stupid, and evinced symptoms of gripes, as he considered it, but being nothing worth noticing the attack passed off.

Since that time the animal has fallen away in condition very much, and the man made the remark, that she did better when at work than at play. She has been living well all the winter, working up to three weeks since. *This I inquired particularly respecting*, and was informed that she has never showed any symptoms of distress at a hard day's work.

Mr. Pardington saw me one day last week, when he requested me to call and see her if I was going that way, as she had gone over her time a fortnight, but seemed quite well. I saw her last Friday; she was then grazing in a field, and seemed in health, but the mucous membranes were a little yellow. I told him it would be better not to give her any medicine then, but let her have time, allow her a bran mash night and morning, and if any symptoms of parturition presented themselves, to let me know.

On Saturday night last, I was sent for, on account of the so-called symptoms of gripes again showing themselves. The owner thought that she wanted to foal, and to satisfy him I examined her, *per vaginam*, but found the os uteri quite closed. The other symptoms were—the breathing a little accelerated, constipation present, the pulse at the jaw quick and feeble, and the action of the heart seemed laboured. I applied strong mustard applications, and gave fever medicines, combined with an aperient.

On Sunday morning I found her no better, and repeated the sinapisms, but neither took any effect. I also gave her some more medicine, but perceived her to be gradually getting worse, in fact, sinking.

On Monday the unfavorable symptoms were much aggravated, and after a minute examination, and careful auscultation in the front of the chest, I was satisfied that water existed in the pericardium. Not until then could I detect it; although my opinion before this, was that the heart was diseased. I may here remark that the peculiar sound on auscultating was such as I never heard before. I could hear a *peculiar splash* when the heart moved, altogether unlike what I have heard in other cases of hydrops-pericardii. I also could distinguish, all the time of her illness, the systolic and the diastolic action of the heart, which is not easily done in these cases, on account of the fluid.

The animal died at 5 o'clock on Tuesday morning, and I made a post-mortem examination in the evening. The liver I found very hard round the circumference of its lobes, but the centre of the organ was of a light colour, and softened. It was also of its usual size. On opening the chest I found the lungs a little reddened, and the pericardium of an enormous size, and on cutting into it an immense quantity of pale, straw-coloured fluid escaped, but there were no flocculi of lymph. The heart I have sent to you, the state of which you will better describe than I can, although I must attempt it.

I found the entire surface of the heart and pericardium covered with lymph; the external surface of the organ was of a dark-red colour, but the internal structure was of a lighter colour than is natural.

Permit me to ask, have you seen so severe a case as this, and what time do you think it has taken to deposit so large a quantity of lymph? You will see I have taken a piece of the right ventricle and of the pericardium, to preserve as specimens of disease for myself. I have examined the effused matter with the microscope, and I find it is lymph, but I also perceive some fat globules in it, but not to any extent. The muscular substance of the heart is not degenerated, although it is a little softer than natural. I find none of the flocculi to be vascular. Could such a large deposit take place in so short a time?

I may in conclusion, remark, that the symptoms were not very severe until during the last few hours.

REMARKS BY ASSISTANT-PROFESSOR VARNELL.

Specimens of heart disease, similar to the above, are by no means rare. Nevertheless, from the importance of the organ involved, a large amount of interest is attached to such cases, therefore, as many of them, with the symptoms observed during the illness of the animal, and the collateral circumstances connected with each case, should, as often as convenient, be recorded.

That the mare should have passed over the usual period of utero-gestation as much as two weeks, without showing signs of parturition, is no uncommon occurrence; and it is wise, in most instances, not to be over anxious or to interfere.

The precise period when the attack of pericarditis commenced, or the cause which gave rise to it, appears not to have been noticed. At any rate, the early symptoms are not at all well defined. It appears, however, that after a time the true character of the disease was recognised, and such treatment, as was thought proper, adopted for its relief, but as the sequel proved, without having the desired effect.

We see no necessity to offer any remarks on the pathological conditions of the organ affected, as the description given by Mr. Jones sufficiently explains the changes that had taken place, both in the structure of and upon the surfaces of the pericardium, and which are so strikingly characteristic of pericarditis that no one would think of giving any other term to the disease.

The first question asked by him is, Did you ever see so severe a case? My answer to which is—Several, for, as I have before stated, such cases are not by any means rare. The second is, What time did it take to deposit the lymph on the surfaces of the pericardial membrane? Judging from its nature, I am of opinion that it could have been deposited in ten days, or even less. It is not converted into structure, nor has it become vascular at any point.

The most interesting part of the history of this case, and one, as far as I am aware, unrecorded, is the occurrence of pericarditis just at the period when parturition was expected to take place, and, as far as we know, without any assignable cause being in operation.

The post-mortem examination did not disclose any disease as existing in the organs of generation, and the fœtus was a fine colt foal, in a natural position, and apparently alive at the time the mare died—as I have been subsequently informed by Mr. Jones, who adds, that had he been present he would have performed the Cæsarian operation on the mare; therefore we cannot trace the cause of pericarditis to any affection of these organs; neither can I understand how the disease of the pericardium could by its influence prolong the period of utero-gestation.

BOTANY AS APPLIED TO VETERINARY SCIENCE.

By W. Watson, M.R.C.V.S., Rugby.

(*Continued from p.* 269.)

Having given a brief outline of the botanical characters, &c., of the principal grasses, I shall now for a time leave the natural order *Graminea* (to return to it again when considering the cereal plants), and proceed to make some observations on those plants that belong to quite a different class of the vegetable kingdom, and which yield a large supply of food for animals—the natural order *Leguminosa.* This is so named from the fruit being contained in a legume, or pod. It contains a great variety of plants, which not only furnish much food for animals, but also a number of substances of great utility in "medicine, the arts, and domestic economy."

This order, unlike the one previously described, belongs to the class of *exogens* (known by having the wood in concentric layers, the veins of the leaves being reticulated, the flower in parts of five, and by the embryo being dicotyledonous), and to the sub-class *Calyciflora* (from its stamens being *perigynous,* or attached to the calyx), and may be distinguished by the following general characters:—The plants being either *trees, shrubs,* or *herbs,* with *alternate leaves, five sepals,* more or less united, *five petals papilionaceous, ten stamens monadelphous* or *diadelphous* (the whole in one bundle, or more frequently nine and one, the separate one being superior), *style* and *stigma* simple, *fruit* contained in a *legume,* and *seeds* destitute of *albumen.*

The order may be always easily recognised, as far as British plants are concerned, by the papilionaceous or butterfly-shaped corolla, and the seeds being contained in a legume or pod. Examples may be seen in the *garden bean* (*Faba vulgaris*) or the *garden pea* (*Pisum lativum*).

This order is "at once, one of the most strictly natural, one of the most generally familiar, one of the most extensively useful, one of the most strikingly pleasing and beautiful, and one of the most wonderfully diversified of all the orders into which plants have been distributed." Occupying a prominent position among the plants of this order, as affording a large supply of food both in a green and dried condition for animals, are the different varieties of *trefoil* or *clovers*, so named from having trifoliate leaves, and which, like trefoiled plants generally, "were considered by our forefathers to be antagonistic to evil and evil things; especially were they thought to be 'noisome' to witch and wizard, the united triune of the leaflets, doubtless, connecting the ideas with what was sacred."

There are a great many varieties of clover, all of them well worthy of the deepest attention of the agriculturalist, as affording a supply of food for animals throughout many months of the year. But a brief description of two of the principal varieties will be sufficient to give an idea of the characters of these plants generally.

Trifolium repens, *creeping white or Dutch clover.*—This indigenous perennial plant is found in great abundance in almost all situations, and is remarkable for the vitality of its seeds and its wide adaptation to almost every variety of soil and climate. It is distinguished by its *creeping stems,* which take root at the joints; by its tripartite leaves, having a dark-coloured zone at the base; by its *white* flowers and four-seeded legume. It flowers from May to September, and yields a large amount of nutriment; containing, according to Sir Humphrey Davy—

Nutritive matter . . .	3·8 per cent.; or—
Mucilage	2·9 ,,
Sugar	0·1 ,,
Gluten	0·3 ,,
Insoluble principles . .	0·5 ,,

But being somewhat of slow growth, it is chiefly valued, when mixed with the grasses, for laying down permanent pasture.

Trifolium pratense, or *common red clover.*—Of this there are many cultivated varieties, both biennial and perennial. It is distinguished by its *upright stem,* which is about two feet high, oval leaves, and by its dense, sessile, purple flower-heads, having a hairy, tooth-like calyx, the inferior tooth being the longest. It is largely cultivated in most parts of England, either by itself or mixed with the grasses. It contains more nutriment than the white clover. Sir Humphrey Davy's analysis is—

Nutritive matter	3·9 per cent.; or—	
Mucilage	3·1	,,
Sugar	0·3	,,
Gluten	0·2	,,
Insoluble principles	0·3	,,

The clovers generally, both in their green state and when made into hay, are of greater value to cattle, on account of their feeding properties, than to horses, and should not be given to the latter except to those employed for slow purposes. For animals, like the race-horse or hunter, in whom the great exertions of speed and endurance are called forth, food occupying a smaller bulk, and containing a much larger quantity of nitrogenized principles, is required. Although the clovers are much liked by all kinds of cattle, and as a rule prove beneficial to them, yet instances are recorded of its causing injurious effects. One very frequent effect it produces in its young and green state, and especially when animals are allowed to feed upon it when wet from dew or rain, is what is called hove. The animal consuming a large quantity of this green food, it rapidly decomposes, and from the gaseous elimination distending the stomach, unless relief be speedily afforded, it proves fatal. A very interesting instance is recorded in *The Veterinarian*, for October, 1859, by Mr. G. Wentworth, showing the effects produced upon a flock of sheep that were allowed to feed for a considerable time on the *Trifolium pratense*, or common red clover. In this instance, extensive disease of the liver and kidneys was produced. From my own observations and the inquiries I have made, I am satisfied that when animals are kept for a length of time on clovers, especially when the plants get old, they become a great tax to the digestive system, and are calculated to be productive of serious injury. A case in connection with this subject occurred to an animal, our own property, during last spring, which I think of sufficient interest to relate. On February 17th, 1860, a well-bred filly, four years old, which had been lying idle in the straw-yard all the winter, was noticed by the attendant, on his going to feed her in the morning, to be standing in the middle of the yard, and when made to move she did so with great difficulty, appearing to be very lame on the off hind leg. He placed her in a box, and came to inform us of it; but we being much occupied during the day, and she being at the farm buildings, a mile distant, she was not seen until eight o'clock at night, when my partner, Mr. Walker, found her standing in the box, sweating profusely. It was with great difficulty she was made to move the hind extremities at all, and when doing so she seemed to be excessively lame of the hind leg; pulse 90, breathing very much excited. The injury evidently being situated high up, the impression formed at the time was, that some fracture of the pelvis had taken place. Warm fomentations were employed, and a dose of sedative medicine administered. The attendant left her about twelve o'clock the same night, and the following morning he found her dead. I made a careful post-mortem examination the same day; and upon removing the skin, I first sought for some external bruise to point out the part supposed to be injured, but found none. I then opened the abdomen, and removed the stomach, intestines, &c., and found them healthy, the mysentery being about three inches thick of fat; when I discovered the kidneys to be the organs affected. Upon removing them, I perceived them both to be in a high state of inflammation, the whole of their structure being more or less congested with black blood. Of course, I made an examination of the pelvis and adjacent parts, but could find no signs of injury. All the other organs of the body were healthy.

Unquestionably, the animal's death was caused by inflammation of the kidneys; and the chief point of interest for consideration is the cause in operation to produce this. That it was from no external injury the post-mortem examination proved, and I can only attribute it to the following cause, viz., that this young animal, after being idle all the winter, and gained much in condition, had been kept, during the three weeks previous to her death, upon some slightly *heated* but in other respects very good old clover, and being allowed an unlimited supply, she had so completely overtaxed the digestive and vascular systems, that only a slight disturbing cause was required to bring on a violent inflammatory attack, and this, in all probability, was supplied by the irritative action of the acetate of potash, formed in the organism, upon the kidneys, thus determining the blood in undue quantities to these particular organs.

(*To be continued.*)

LARGE OVARIAN TUMOUR IN A BITCH.

By E. J. Bovett, M.R.C.V.S., Bridgewater.

The tumour forwarded I found in the abdomen of a retriever bitch, aged about eleven years, the property of C. W. Tinling, Esq., of Maunsell Grange. It was attached by a small peduncle to the uterus.

The history of the case, as far as I can learn, is as follows: The animal had always been a bad breeder, seldom if ever bringing forth more than one puppy at a time. A few months since, it was thought she had "stolen dog," and to be in whelp, from being rather large. Ultimately, it not proving to be so, and the œstrum coming on, she was sent to dog, and *supposed* to be pregnant, but again was not so. After her time had expired, she was perceived to be rather unwell, and her owner obtained a little medicine for her of a veterinary surgeon who lived in the neighbourhood, which apparently set her right; but after a little while she was again ill, and appearing very large, was considered to be dropsical, and treated accordingly by the same person. In spite of all treatment, however, she continued to increase in size; and being greatly distressed, the owner wished to have her operated on; but the veterinary surgeon demurred to doing so, as he did not think it would prolong her life, which was the chief object of the owner, she being a great favorite. She was therefore taken home, and her owner wrote for me to come and see her, mentioning that she was dropsical, and so ill that, unless at once relieved, he believed she would soon sink. Consequently, on Wednesday, the 11th July, I drove over and saw her. I concurred in the correctness of the before-mentioned diagnosis, but considered that there was also an enlargement of the liver, as by manipulation I could discover something abnormal besides the effused fluid, at the infero-lateral part of the abdomen, on the right side. I at once informed the owner of the hopelessness of the case; nevertheless, at his urgent request, I agreed to take the bitch back with me, and to perform the operation of paracentesis, although not anticipating much good to result from it. At the suggestion of a medical friend, I made a decoction of the inner bark of the elder, and gave one-ounce doses of it, morning and evening, until the following Saturday, when her owner again requested the operation to be performed, as he said it could not make her worse than she was; I therefore complied, having given her, two hours previously, about three ounces of the concentrated essence of meat, in a small quantity of water, into which I put Liq. Arsenicalis, f℥j. I withdrew about ten ounces of a sero-sanguineous fluid at first, and half that quantity two or three hours after, which was all I could obtain. The bitch seemed more lively during the remainder of the day, and sat on her haunches, which she had not done for several days before.

On Sunday morning she was much worse; the breathing was again much disturbed, and the heart fluttering, as it were. She remained in much the same state throughout the day, and on Monday I found her dead.

Having communicated with the owner, he wished to be present at the *post-mortem*, but stated he could not attend until the following day, when he brought a medical gentleman with him to see the cause of death.

Post-mortem examination.—On making an incision through the linea alba, something presented itself which at first sight we thought was the liver enlarged; but on a closer examination, it proved to be the tumour which I have sent you, and which was attached by a small peduncle to the body of the uterus, near the termination of the Fallopian tubes. The fetid exhalations from the body compelled us to retire for a few minutes, when, I regret to say, the carcase rolled on one side, and the weight of the tumour caused it to become detached, by falling over the edge of the table, or I would have sent you the uterus, &c., as attached to it. There was still a little fluid in the abdomen. The viscera generally were healthy, with the exception of their being a little pale-coloured, as might have been expected. On cutting into the tumour, from one to two pints of a serous fluid escaped, as near as we could judge; and after that had escaped, we found the tumour weighed thirteen pounds; therefore the total weight could not have been much less than fifteen pounds.

To Assistant-Professor Varnell.

PARTURIENT APOPLEXY, OR DROPPING AFTER CALVING.

By T. Jarvis, M.R.C.V.S., London.

In the month of April last, when residing in the country, I was requested to see a cow, the property of Sir J. H.

Crewe, of Calke Abbey, Derbyshire. She was described as having dropped after calving. On my arrival, I found the statement to be a correct one. The symptoms present were as follows: the animal lying on her side, stertorous breathing, consciousness lost, the pulse hardly perceptible, the extremities cold; when pricked, the animal evinced no sensation, and the head was being thrown from side to side with great violence.

Treatment.—I gave a stimulant, consisting of Tinct. Pimento, f℥viij, with the same quantity of brandy; in the mean time I despatched one of the farm-servants to the abbey for some ardent spirits, who having arrived about the time I had given the above dose, and the pulse not responding, I proceeded to give the animal an additional stimulant, and used a bottle of whisky before the pulse became altered in its character. I then let the beast rest about half an hour, and the pulse again decreasing in strength, I gave a bottle of brandy, which had the effect desired, viz., an increase in the force ot the pulse. It was now about one o'clock, and having been three hours with my patient, and the convulsive fits decreasing, I considered I could do no good by staying; therefore I determined to return; previous to which, I gave orders that she should have a pint of old ale, warmed, and administered every half hour.

By persisting in the above treatment, the cow towards five o'clock rallied; the convulsive fits gradually disappeared, and consciousness returned.

I prescribed some purgative medicine, consisting of aloes and croton seed, with gentian, directing it to be given in ale every two hours, until purgation ensued. During the intervals, I ordered the following diffusible stimulant to be administered in a pint of warm ale—carbonate of ammonia, gentian and ginger, of each, two drachms; and requested a man to sit up and give the same during the night; also to bathe the poll frequently.

On my visiting her the next morning, I found she had risen, and been removed into a loose box. The purgative had also acted, and the pulse was more natural, although she still looked a little wild.

I continued the stimulants three days longer, when she was entirely recovered, and before the week was out she was grazing with the rest of the herd.

I think the case more interesting, as she had been treated for mammitis three days previously, and had apparently got well.

CASE OF DIARRHŒA IN A COW.—POST-MORTEM APPEARANCES.

By the Same.

In May last I was called to attend a cow, in the village, described as suffering from the above disease, and such on my arrival I found to be the case. The alvine evacuations were profuse, and accompanied with much fœtor. I therefore prescribed a purgative, consisting of three ounces of sulphate of magnesia, half a pint of linseed oil, in conjunction with one and a half ounces of ethereal tincture of opium.

The next day the owner called to say that the cow was down, and voiding large quantities of blood, which proved to be the case. I ordered the ammonio-sulphate of copper to be given, but before the owner could administer it the animal died.

Autopsy.—Reticulum ecchymosed; omasum in the same state, as were also the abomasum and the small and large intestines.

The heart.—The left auricle, and right and left ventricles, of a Modena-red colour; the right auricle pallid; the interior ecchymosed in spots; the pleura pulmonalis slightly inflamed.

On my first visit, I could hear the heart beating violently against the ribs; but the owner telling me that she was, when well, a very excitable animal, lulled my suspicions respecting the heart being affected.

VETERINARY OBSTETRICS.

By A. Calley, Kirkton-by-Burntisland.

Gentlemen,—I feel much obliged to you for inserting in the *Veterinarian* of June my letter relative to Mr. Gamgee's first remarks on my case of "A Mare destroyed from difficult foaling." But as he has thought fit to renew his attack upon me in a lengthened article which appears in the same number of your journal, I feel myself called upon, not less in self-defence, than for the sake of truth and justice and the interest of veterinary science, to claim a parting word in reply, which I entertain the hope you will do me the favour of publishing in your next. For I apprehend that leaving his offensive effusion uncontradicted, and to the silent contempt it deserves, would have the effect of only magnifying his own preposterous pretensions, as well as encouraging his unjustifiable attempts in aspersing and depreciating others, and thus lead him to imagine that he had successfully palmed on the profession conclusions which are utterly untenable and unwarranted.

I remain, Gentlemen,
Respectfully yours,
ANDREW CALLEY.

To the Editors of 'The Veterinarian.'

KIRKTON-BY-BURNTISLAND; *July* 1, 1860.

Mr. Gamgee, in his accompanying note to the Editors of the *Veterinarian,* has solicited the insertion in their periodical of what he has been pleased to call an "Essay on Veterinary Obstetrics," which originally appeared in the *North British Agriculturist,* on the grounds, as he says, "that it contains a very satisfactory refutation of all that has been said to injure my (his) professional reputation;" and he enforces his appeal to editorial sympathy for publishing his paper, which he volunteered to read before the *West of Scotland Veterinary Medical Association,* along with the discussion which followed; which he states was "drawn up by a reporter," who, he however omits to mention, was employed by himself, and not by official authority; the report being, as I learn, unauthorised, and refers to much which not a few of the members who attended the meeting, I know, deny and disclaim. Had the Editors been solely guided by their own feelings, to "scorn (using his own phraseology) the attempt of some to raise themselves by the detraction of others," his communication, I readily believe, would not have been honoured with a place in their journal; but, influenced by a strong sense of justice and impartiality, they did not refuse him the opportunity he sought in their pages, to show how effectually, out of his own mouth, he convicts himself of the very charge he prefers against others, viz., of being actuated by improper motives, from a reckless spirit of detraction and self-glorification.

My next complaint against Mr. Gamgee is his stigmatising my position, as being the author of the narrative of the case, as one "extremely objectionable," on the ground that his foes, who dared not confront him, used me as an instrument, incapable of judging at all, in order, if *possible,* "to shake his position as a practitioner." Let me whisper in Mr. Gamgee's ear, that any endeavour "to shake a position" which has no existence would be an undertaking as ridiculous as Don Quixote's fanciful attack upon the windmill. He next classifies, in the same list with myself, Mr. Balfour, a highly respectable veterinary surgeon, who possesses, in an extensive practice in this district of the country, the fullest confidence of his employers—proprietors and tenants, &c., who, he asserts, "entered the arena, but in equally false colours as myself," to serve the same "purpose of his foes." And all this, because Mr. Balfour had published the results of his experience in the management of similar cases of malpresentation, and had dared to question Mr. Gamgee's mode of practice.

The Profession, to whom he makes his appeal through the *Veterinarian*, cannot fail to perceive that his mode of vindication, by such imputation of motives, is not only not an honorable defence, but affords proof that the case must be a very bad one, when the scent of investigation is attempted under a false trail to be evaded. When Mr. Gamgee complains that "the case has been hitherto misrepresented," his obvious line of duty, both to himself and the Obstetric cause he affects to be so desirous of promoting, is to point out and prove in what respects it has been so. In place, however, of disproving my statements of all he said and did in the case, for the truth and accuracy of which I hold myself solely responsible, and showing their incorrectness, he conjures up a host of imaginary assailants, would make people believe he is a grossly injured man, and indulges in unfounded allegations of ideal misrepresentations. He ought to have known that a discerning public would protect him, if he had been unjustly traduced; but having no confidence in the merits of his case, he declined such support. To use, then, his own words, I dare to confront him to his face, and tell him that my version rests on indubitable evidence, and that his assertion to the contrary has no other foundation than in his own envious delusions. Indeed, any one who takes the trouble to peruse the rambling and incoherent observations contained in his letter, can be at no loss to discover, that the case, as related by me, has not only not been contradicted in one point by him, but, on the contrary, that every statement I made has by his silence been left unrefuted, and substantially confirmed.

It is, I am well aware, altogether beyond my province and wish to appear as a veterinary controversialist. But in the account I published of the case, I confined myself to giving a "plain unvarnished tale" of the proceedings. In my capacity of blacksmith and farrier, I have been repeatedly called upon in obstetric cases of difficulty and danger, to act, when professional assistance could not be obtained; and I feel it therefore to be of the highest importance, that all following my calling should have a sound practical knowledge of the safest and best-established operative procedure in everything that relates to the management of preternatural presentations, which they may at a moment's notice be summoned to superintend in such valuable animals as the mare and cow.

Mr. Gamgee indeed says, "On the whole subject of veterinary obstetrics, I should say that recent discussions afford the best proof that this branch of veterinary science, if possible more than others, has been neglected in Great Britain." The publication of the case, therefore, by me has the merit, if it possesses no other, of instituting that professional discussion; for there can be no breach of charity in alleging, so far as Mr. Gamgee was concerned, that his oration, like the mare itself, would never have been delivered, nor would the practice he adopted, as recorded by himself in his own peculiar maze of unmeaning words and irrelevant matter, have reduced him to his proper level as a mere experimenter and a tyro in his profession. He roundly taxes Mr. Balfour and others, for their successful operations in similar cases, as "adopting a very old plan," and abuses them for "only trusting to the ignorance of the uninformed for praise." But Mr. Balfour's practice has received the approval of the profession. It seems to be the safest and most judicious one, and such as I feel myself warranted in following; for it can be performed by any one possessed of ordinary tact, nerve, and capability of operating, and, fortunately, requires but few instruments, which with the requisite assistance can always be readily procured. But let me ask, in what quarter can he seek for or expect to obtain "praise," who, in parading his knowledge of German, by referring to such authors as Gunther and Baumeister, passes over in silence the labours of those who have contributed so much to diffuse through Great Britain sound scientific information in the same field of inquiry and practical knowledge in the obstetric department? and especially of one, a Professor in the Royal Veterinary College, and a member of the R.C.V.S., with which body he has so ardently sought to be associated, whose illustrated lecture on the same subject, published several years ago in the *Journal of the Royal Agricultural Society of England*, had it not been perversely ignored by Mr. Gamgee, would have furnished him with invaluable instructions, and saved him from his subsequent blundering.

The case which Mr. Gamgee adduces to exalt himself at the expense of others, and to justify his former destructive treatment, condemns him to his face; for he stands convicted by his own account, which affords the strongest evidence, adduced by himself against himself, that the *pithing* of the mare was an unadvised and altogether indefensible act. Mr. Gamgee distinctly states, that he "found the presentation (in the case he was sent to in Perthshire) precisely similar to the former one" I attended in Fifeshire. From his own account of the case, the mare had been in labour for nearly two days before he saw it. In the case published by me, Mr. Gamgee was in attendance in a very few hours after labour had commenced. For the extraction of the foal in the former case, he says, that "the whole operation took nearly two hours." In the latter he was engaged for five or six hours, using every violent means in vain, simply because he did not employ the right one, to accomplish delivery. On such an occasion, why did he not telegraph, as was suggested to him, for his instruments, which could have been forwarded to him in a couple of hours? or why did he not at once proceed to Edinburgh, and fetch what he considered so necessary? For although he had not returned until the following day, he would have been sooner back, and in a far shorter space of time, to have rendered assistance, than in the case he was sent to attend in Perthshire; a case, be it remarked, which "must prove fatal in consequence of the bungling of empirics"! Be it remembered, that he had the whole management of the case recorded by me; and let me ask, Who was the bungler and destroyer of life on that occasion? No one but himself put violent hands upon the mare; for his statement, I affirm, is without foundation, that "the vagina was irritated by the explorations already made, and the irritant discharges." I appeal to the profession, if the sound practice was not either to disarticulate the head from the neck, as I had in a similar case done safely, and suggested to be adopted in this case, and to push back the presenting neck and body, and bring down the head; or if necessary to give more space for doing so, to remove the fore leg and scapula from the shoulder? But I need not now further go into this part of the subject, as I have in my former letter sufficiently adverted to his impracticable efforts.

The attempt which Mr. Gamgee has resorted to for protection and defence, by the publication of the letters he has received from his correspondents, must appear at once to every mind, except to one like his own, "perplexed in the extreme," to be an utter failure; but what is more, it is an egregious blunder;

for, in place of serving, in the clearest and most equivocal manner they condemn him. He will be taught, if experience be not lost on him, to remember the saying, "Save me," not from my foes, but "from my friends," whom I sought "for safety and for succour." For instance, Mr. Cartwright, whose letter he publishes, writes thus: "I cannot say that I ever *lost* a *mare* from the foal being in this position (that of the two cases referred to), but I candidly admit that I have been fortunate enough not to meet *with many of these presentations.*" And Mr. Robertson, whose skill and experience Mr. Gamgee has adduced as an authority in such matters, writes plainly to him, stating, "*I have never as yet been baffled to effect delivery*, having at once recourse to embryotomy."

Mr. Gamgee says, "When he *first* came to Scotland, not three years ago, he found the obstetric instruments hitherto used amounted to three or four, two out of the number little better than useless." Since then he has invented and sought for operating tools, which, when completed, will be the *largest collection of instruments in the world.*" As one who undertakes the onerous duty of a teacher, it would better serve his office, to prove, as occasion offered, how he could use them, and show in what cases they are applicable; for his attempt to classify the different kinds of labours, and the causes of obstruction, are so vague and unscientific as to be altogether valueless, theoretically or practically.

Believing that to reason with Mr. Gamgee would be as futile an undertaking as the task would be hopeless to persuade or convince him, I have therefore not attempted either; but I have some hope that my letter will not be wholly lost upon him, for I feel, although my remarks have been necessarily strong, that they have not violated the rules of courtesy or fair discussion.

[We have given insertion to the above communication, in right of reply; but we sincerely hope it will be the last containing so many personalities.—EDITORS.]

Facts and Observations.

INFLAMMATION.

An antiquated doctrine, insufficient, narrow, feeble, and ill-conceived; and its companion, venesection, a lamentable method, a sanguinary consequence of incapacity of observation.—*Gazette Médicale.*

NUMBER OF HORSES IN THE WORLD.

Denmark has 45 horses to every hundred inhabitants, which is more than any other European country. Great Britain and Ireland have 2,500,000 horses; France, 3,000,000; Austrian empire, exclusive of Italy, 2,600,000; Russia, 3,500,000. The United States have 5,000,000 horses, which is more than any European country. The horses of the whole world are estimated at 57,420,000. The swiftest horse ever known was Flying Childers; he performed 4 miles 380 yards in seven minutes and a half, which is at the rate of more than 33 miles per hour.

SPONTANEOUS HYDROPHOBIA.

In the *Gazette Hebdomadaire* of last month is published a case, by M. Putégnat, of a boy, nine and a half years old, who was bitten by a dog that was driven from a house whither he had followed a bitch. The wounds healed in about ten days, but forty-eight days after the accident the boy was seized with all the symptoms of hydrophobia, and died in less than twenty-four hours. The dog presented no symptoms of the malady, but was, when he bit the unfortunate boy, in a fit of anger, increased by the venereal appetite. The case proves that anger, accompanied with the reproductive endeavours, may engender the rabid virus.

TRANSFORMATION OF STARCH INTO DEXTRINE AND GLUCOSE.

M. Musculus believes that the formation of dextrine and glucose is rather the result of a decomposition of the amylaceous matter than the simple assimilation of water. His reasons for supposing so are: 1. That diastase has no action on dextrine. 2. That dextrine and glucose appear simultaneously when starch is acted on by diastase, and always in the same relation, viz., one equivalent of glucose and two equivalents of dextrine. 3. The dilute sulphuric acid acts at first in the same way as diastase, but differs in this, that the reaction continues after all the starch has disappeared, only more slowly. If glucose be formed from dextrine by the assimilation of water, it is difficult to understand why its formation should be more rapid while some unchanged starch remains in the liquor than when only dextrine remains: the contrary ought to be the case. 4. The simultaneous appearance of dextrine and glucose takes place with sulphuric acid as well as diastase, and the proportions are the same.—*Comptes Rendus.*

ESTIMATION OF SUGAR IN URINE.

Some time ago Brücke published the following process for detecting sugar in urine. Fresh urine is first treated with a concentrated solution of neutral acetate of lead, and filtered. The filtered acid is then precipitated with subacetate of lead, and again filtered. Ammonia is now added to the filtered liquor, and the presence of sugar in the precipitate so obtained is proved by the ordinary tests. The author now points out that the precipitate occasioned by the subacetate of lead always contains a small quantity of sugar, and therefore this reagent ought not to be employed when a quantitative estimation of the sugar is made. The subacetate of lead, the author states, gives no precipitate with a solution of pure glucose; but when glucose is added to normal urine containing only a trace of sugar, the precipitate obtained with the subacetate always contains sugar. It would appear, therefore, the urine contains something which makes sugar precipitable by the subacetate. The author confirms the statement he made in his former paper, that healthy urine of the human subject always contains small quantities of saccharine matter, and shows that this matter is fermentable.

THE VETERINARIAN, SEPTEMBER 1, 1860.

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

PRESENTATION OF A TESTIMONIAL TO PROF. MORTON, ON HIS RETIRING FROM THE CHAIR OF CHEMISTRY AND MATERIA MEDICA, AT THE ROYAL VETERINARY COLLEGE.

It might possibly have been thought that we should have allowed the present number to speak for itself, since a goodly portion of its contents refers to one of us. Nevertheless, such is the peculiarity of the circumstances, that we must be permitted to advert to them, even though we should be charged with self-laudation. Indeed, we know no reason why our sentiments should be withheld: surely the relative position in which we stand to each other is no just ground.

We need hardly say that we allude to the Report of the retirement of Professor Morton from the Chair of Chemistry and Materia Medica in the Royal Veterinary College, which we have given in full, thus increasing considerably the number of our pages.

To all concerned the event was alike honorable, and the recipient of so marked a distinction, from a large portion of the members of the profession, could not fail to be highly gratified.

Seldom has it been our good fortune to attend a public meeting at which such a oneness of sentiment prevailed, and so great a desire was evinced to accord an approval of his conduct to one about to relinquish his professional duties in connexion with an institution with which he had been for so many years associated.

In a former number we recorded the expression of the students of the College towards him, and now we have the satisfaction of giving insertion to that of the profession. Well may it be said that he retires with honours thick upon him;

and, that he may long live to enjoy them, is a sentiment which we are sure will meet with a response from all of his friends.

After the lengthened statement we have elsewhere given, and conscious that it would have been far better for others rather than ourselves to have commented upon the subject, we must now ask our readers to peruse the many excellent speeches made upon that interesting occasion, as from them will be best gained a knowledge of the feelings that obtained. We believe the day, as well as the event, will be long remembered by those present. It stands alone in the history of veterinary science in this kingdom, and sincerely do we hope that it will prove the means of contributing to its onward progress, by opening up new sources of information to the student; since it is by education alone that we can advance, or even maintain our present position.

We may have omitted some of the names of those who were present at the meeting, and if we have done so we must apologise. It was exceedingly kind on the part of many to come from so great a distance as they did, and was felt to be so by him on whom the honour was conferred.

MR. VARNELL'S CASES OF DISEASE IN THE OSSEOUS TISSUE OF THE HORSE.

We believe that the annals of veterinary medicine, in this country at least, will be searched in vain for cases equal in interest to those recorded in part by Mr. Varnell in the present number.

Alike do they tend to call forth investigation by the pathologist and the chemist; since to the mal-assimilation of the food, or the preponderance of some of its elements, or the absence of others, can alone, we presume, the origin of the disease be traced. This shows how one division of science comes to the aid of another, and how absolutely necessary it is that chemistry should constitute an integral part of the curriculum of the medical student, study which division of medicine he may. It cannot, in fact, be done without, condemn it as some persons may. Is not their ignorance of it the cause of this? To throw down is easier than to build up; and to pass over slightingly a subject, more facile than to study its principles so as to master them.

PRESENTATION OF A TESTIMONIAL TO PROFESSOR MORTON.

On Friday, the 3d of August, a meeting of the members of the Royal College of Veterinary Surgeons took place at the London Coffee House, Ludgate Hill, for the purpose of presenting a testimonial to Professor Morton on his retiring from the Professorship of Chemistry and Materia Medica at the Royal Veterinary College.

About fifty gentlemen sat down to an excellent luncheon, under the presidency of J. Wilkinson, Esq., Principal Veterinary Surgeon to the Army: among them were—

Professors Spooner, Simonds, Varnell, and Brown.

Messrs. E. and F. Bailey.
J. D. Barford.
R. Barrow.
H. T. Batt.
R. Bowles.
E. Braby.
J. Broderick.
T. D. Broad.
W. Burley.
W. Burt.
B. Cartledge.
H. J. Cartwright.
J. E. Cornelius.
C. Dickens.
J. Ellis.
S. Evershed.
W. Field, sen.
R. Fletcher.
J. B. Gregory.
J. Hall.
E. Harrison.
R. L. Hunt.
R. T. Lambert.
T. J. Lang.
H. Lepper, sen.
J. S. Lupton.
J. Moon.
W. Raddall.
W. Robinson.
A. Rushall.
F. R. Silvester.
E. and W. Stanley.
H J. Surmon.
W. Wilson.
J. and J. Woodger,
and other friends.

At the termination of the repast, the Chairman said,

Gentlemen,—The first toast which I have to propose for your acceptance is one which I am sure every gentleman present will fill a bumper to. It is the health of a lady who sheds lustre upon the diadem she wears, by her private virtues—"The Queen." (Cheers.)

This toast, being duly honoured, was followed by "Prince Albert and the rest of the Royal Family."

The CHAIRMAN then gave "The Army and Navy," coupling the toast with the name of Mr. Harrison, V.S., Royal Artillery.

Mr. HARRISON said: Mr. Chairman and gentlemen,—I feel quite at a loss to express my feelings for the honour you have done me in coupling my health with the toast of the Army and Navy. I assure you I am sensible of the proud position in which I am placed, and my only sorrow is, that I am not able adequately to respond to the toast. I will only say, with reference to the Army and Navy, that I am sure they will give, as they always have heretofore given, a satisfactory account of their proceedings when called upon to perform their duties. For myself, I am happy to belong to that division of the Royal Artillery which is a portion of the army. I believe the army of this country, whenever it has been brought in contact with any foreign power, or any power upon earth, has always satisfactorily proved, and will for ever prove, its great strength, its endurance, and its indomitable courage. The navy bears with it the same standard of merit. Wherever it is wanted it is always present, and in the hour of strife it has always had strength to sustain and power to show to the enemy what English bulwarks are. I beg again to thank you for the flattering manner in which the toast has been proposed and received. (Cheers.)

The CHAIRMAN: Gentlemen,—I have now to address you on a subject which is at once one of pleasure and regret. Of pleasure, because I am afforded an opportunity of performing a most agreeable task, for which I am entirely indebted to your kindness in having, by your suffrages, been elected to the Presidential Chair of the Royal College of Veterinary Surgeons. But there is a beginning and an end of everything, and my regret arises from a prescience that this may be the last ceremony of its kind. I rise, gentlemen, to join you in doing homage to all that is of worth in man, to pay tribute to a sincere friend, a wise counsellor, and a successful teacher—the cynosure of this occasion. You all know the individual to whom I allude; he has been a long time honorably connected with our profession. I have known him for many years; from the *alpha* of his career at the Royal Veterinary College—a career of eminent success—and I have now the honour of presiding at a meeting which is to mark the *omega* of his professional life. Your personal acquaintance with that gentleman will enable you all to agree with me when I say that he is one who deserves everything that can be called forth as friendship's offering. (Cheers.) There is scarcely a gentleman who has been at the College, since he has held a professorship there, who is not extremely indebted to him in one way or the other. We know how many of his contemporaries have been benefited by his friendship. We also know how mildly he has checked the violent passions of some of the students whilst careering through "the wild labyrinth of youthful frenzy;" and with what solicitude he has encouraged the diffident, and those who almost despaired of success in acquiring that professional knowledge which they hoped to obtain when they entered the College. I think he has been a friend to everybody (Hear, hear); and here I speak personally, for during an acquaintance of, I think, five and thirty years, not a cross word has passed between that gentleman and myself. I have been indebted to him on many accounts, and especially for the manner in which he has supported me in selecting proper candidates for military honours. How he has been connected with his colleagues it will be for them to say, and I have no doubt they will express themselves in terms which will be satisfactory to us all. I am sure we are all indebted to him, and we never can sufficiently express the depth of our obligations. (Loud cheers.)

It now remains for me to present you, sir (addressing Professor Morton), this silver salver and this purse; and we trust that you will receive them as a slight testimony of our gratitude, and also of our esteem and friendship. (Loud cheers.)

The salver, contained in a handsome oak case, was then uncovered. It bore the following inscription:

TO

WILL^{M} JN^{O} THO^{S} MORTON, Esquire,

This Salver,

TOGETHER WITH A PURSE OF ONE HUNDRED AND THIRTY-FIVE GUINEAS,

IS PRESENTED BY

THE MEMBERS OF

THE ROYAL COLLEGE OF VETERINARY SURGEONS,

ON HIS RETIREMENT FROM THE

PROFESSORSHIP OF CHEMISTRY AND MATERIA MEDICA AT THE ROYAL VETERINARY COLLEGE,

AS A MEMORIAL OF

HIS LONG AND HONORABLE CONNECTION WITH THAT INSTITUTION, THEIR APPRECIATION OF HIS EMINENT ABILITIES AS A LECTURER, AND IN ACKNOWLEDGMENT OF THE DISTINGUISHED SERVICES RENDERED BY HIM

TO VETERINARY SCIENCE;

AS WELL AS TO RECORD THE UNIFORM KINDNESS MANIFESTED BY HIM TOWARDS THE MEMBERS OF THE PROFESSION, WHICH HE ADORNS.

LONDON, AUGUST 3D,

1860.

Professor Morton, on rising, was received with loud applause, which having subsided, he said: Mr. Chairman and dear friends,—I assure you that it is with no ordinary feelings I accept from you this munificent, unexpected, and, I fear, undeserved gift. ("No, no.") I feel my utter inability to give expression to my feelings upon the present occasion. I do hope, however, that I shall be able to grapple with them, and overcome the little trepidation which at present oppresses me. I know we are told that "out of the abundance of the heart the mouth speaketh;" but I am quite sure that there are times and seasons when we are not able to express in words what the heart feels—when it is too full for utterance. Such a time and such a season to me is the present. But it will not do that, by "expressive silence," I allow you to conjecture my thanks. No, for I have cause indeed to thank you, and that most sincerely, for this marked manifestation of your kindness. Such a meeting as this, I confess, I had not anticipated. The number of friends present of course enhances very considerably the compliment paid to me, whilst at the same time my obligations are increased by the very handsome testimonial which you have been pleased to present me with. I stand before you in a threefold unprecedented position. As I am the first who has filled the Chair of Chemistry and Materia Medica at the College, so I am the first who has retired into private life in connexion with your *Alma Mater;* and I believe I may add, that I am also the first to whom so magnificent a present as that which I see before me, with this purse I hold in my hand, has been presented by the members of the profession. You thus see how great are my obligations; and in a corresponding ratio will be the regret I must feel at the separation which is about to take place between us; inasmuch as, I presume that from this day our professional union may be said to be severed.

The day, independent of this, may well be marked by me with a white stone, as one never to be forgotten. I shall ever bear in remembrance your kindness upon this interesting, and, I may add, important occasion. But I fear that there has been too favorable a view taken of my humble endeavours by you. It has been my good fortune to make many friends in the profession, and among them the oldest is your chairman. He has told you that he knew me at my first entering the College. I am indebted to him for many kindnesses which commenced then, and have been continued up to the present moment. May the friendly feeling which has sprung up between us never be lessened! There has been such consideration manifested throughout this transaction, that I shall ever remember it; all my omissions seem to have been forgotten by you, and my commissions forgiven. This meeting has been convened for the special purpose of doing me honour, or as it is handsomely expressed in the advertisement with which you are all familiar, but which I shall take the liberty of paraphrasing and applying—"that the gratitude of the profession may be exhibited in some shape more tangible than mere words, so that on my retirement I may carry with me into private life, not only the good wishes of the members of the profession, but a lasting proof of the estimation in which I am held by them, and an assurance of their regret that I shall have ceased to be, in a professional sense, one amongst them." Such a statement as this is well calculated to awaken feelings of pride in me, were it not that they are immediately checked by a consciousness of how little I have really merited this proof of your esteem and regard. But whilst I say this, gentlemen, I will be honest and tell you that it has ever been my desire to obtain the good opinion of the members of the profession, and therefore it was that in the fulfilment of the duties of the appointment which I have for so long a period held, I have, to the best of my abilities, endeavoured to meet the wants and the wishes of those who have been more immediately placed under my instruction.

Now as I have been for thirty-five years connected with the Royal Veterinary College, it may justly be expected that something will be said by me in reference to the past and present state of that institution, so far, at least, as the educational department is concerned, with which I have had most to do. And it affords me the highest gratification to be able at once to state that there is no comparison between the means as they exist now and those which existed when I first became acquainted with the College. They are both more extended and more varied, so that it is a student's own fault—provided, of course, that he possesses the necessary preliminary education and abilities—if at the termination of his studies he has not acquired that amount of information which shall not only enable him to obtain his diploma from the Royal College of Veterinary Surgeons, but to go forth into life and practise his profession with honour and profit to himself and his employers. (Cheers.) My colleagues, who are present on this occasion—I should perhaps have said my *late* colleagues, but I am sure they will allow me to continue them on my list of friends—can tell you how feeble were my beginnings, how imperfect also, and what difficulties I had to contend with. Nevertheless, I was enabled through the kind support of friends, effectually to combat with any little obstacles which for a time presented themselves; although

I must be permitted to say that I did not think I should have had so much decided opposition to contend with, since, as it appeared to me, the necessity of the thing was so obvious, that that alone would have disarmed all opposition. But such was not my good fortune. It was said, and said too often to be pleasant, that there was no need of chemical instruction within the College; that the student might avail himself of the privileges which then existed without the institution, which were quite sufficient for all his wants; and sometimes it was even boldly asserted that chemistry was not necessary for the education of a veterinary surgeon; a statement I hold to be as destructive as it is fallacious, and calculated, if it were acted upon, to throw back the science of veterinary medicine into the dark and brutal ages of farriery. There was, however, another section of my lectures that certainly did not meet with so much opposition. It was allowed that some necessity did exist for instructions being given on the medicinal substances employed by the veterinary surgeon. But I think the advocates of this view of the matter did not reflect upon the fact that an acquaintance with the principles of chemistry is called for before *materia medica* can really be understood. Besides which, how often do they come to the aid both of physiology and pathology? so that, like the links of a chain, one is bound to the other, gaining and giving strength by union. Still, despite opposition from those I will not now name, I, nevertheless, persevered; and some good, I hope, has resulted. A portion of the fallow ground has been turned up, a little seed sown which has yielded fruit; the most grateful, perhaps, is that which I am reaping this day. The kindness, indeed, which has accompanied the presentation of this testimonial has been so marked as to raise it highest and first in my estimation. My successor has a rich field before him, from which much may be gathered; nor will he meet with the difficulties I have; for we all know that he who first opens up a pathway has more to do than those who follow him in it, and the first plunge into water is always the coldest. Yet, although this is the case, I have frequently thought, nay I feel convinced, that the opposition I have met with has generally resulted in good to me. Thus, as Shakspeare says,

> "There's a divinity that shapes our ends,
> Rough hew them how we will."

I well remember that the first opposition of any moment arose at a time when, perhaps, I least expected it; and much was said and much was done too, that I care not now to remember. Faction seemed to have done its worst; and then it was that I wrote my 'Manual of Pharmacy for the Student.' I had long promised the pupils that such a work should be attempted by me, but I had never dared to make the attempt until this threatened opposition came, when I boldly set to work and thus fulfilled my promise. Now, as that 'Manual' has reached its sixth edition, I am willing to believe that it possesses some merit; the profession being its judges.

Not long after that, and again in self-defence, I compiled the 'Toxicological Chart,' on a second edition of which I am now engaged; and, when peace and concord seemed to have returned, I wrote two essays upon 'Calculous Concretions in the Lower Animals,' which were read by me at the meetings of the Veterinary Medical Association, and subsequently dedicated to my colleague, Professor Spooner. These, being out of print, may hereafter appear in another form.

Thus a brief history of my feeble literary efforts, in connection with veterinary science, has been given you. I leave out of notice here those serials with which my name has been associated as co-editor, namely, '*The Transactions of the Veterinary Medical Association*,' '*The Veterinary Record*'—a work that never ought to have been discontinued—and the one still carried on by me, in conjunction with my colleague and friend Professor Simonds, '*The Veterinarian*.'

But in addition to the extended and varied means of education now adopted at *Alma Mater*, I may be allowed to refer to another circumstance which did not exist when I was first acquainted with that institution; namely, the concentration of the instruction within its walls. Pupils are not now required to go from one end of London to the other to acquire information, as they were wont, for all is taught there that is at present thought necessary for the education of the veterinary surgeon. And besides all this, I may be permitted to allude to the incentives to study. These, too, are very different from what they were. The *Veterinary Medical Association* continues to give certificates of merit and medals for the best essays introduced for debate during the session; and the governors of the College, in the exercise of a sound judgment, in my humble opinion, and at the same time carrying out the intentions of the donor, have lately determined on awarding the "*Coleman bequest*," for which there has been no claimant for several years, to the students of that institution. Consequently, for the first time this session, two medals, a silver and a bronze one, have been adjudged, and also a certificate of merit, to the authors of the three best essays on a selected subject; the proposers of which were, of course, the professors of the College, as they were also the examiners of the essays, and reported to the governors their respective merits. I hesitate not to assert thus publicly, that the essays sent in this year redounded much to the credit of the different competitors. I, for one, confess that I was astonished at their length and amount of thought and industry manifested in their compilation. Now you will bear in mind, that these essays were written without the aid of books; the students being required to write the papers in a room together, and then to leave them in the hands of an appointed officer, to be by him retained until they had been examined. We are quite aware that young men can, if there be an aptitude to learn, soon acquire such an amount of information as will enable them to put to paper that which they have duly impressed upon their minds; but as books were withheld for a time, there is but a short period, at any rate, that can be allowed for making those notes which they have afterwards to record. I repeat, I was not at all prepared for such elaborate and well-digested essays as were placed before us, and I believe that feeling was participated in by my then colleagues. (Hear, hear.)

From what has been advanced, it is, I think, satisfactorily shown, that much has been effected conducive to the onward progress of the profession. But are we now to stand still, contented with what has been done? Forbid it, science! Forbid it, common humanity! We live in an age remarkable for progress. Everything around us is indicative of movement. To stand still, therefore, is virtually to retrogress. Turn to what we may, religion, the sciences, politics, commerce, each seems pressing onwards with giant strides to some as yet undiscovered goal. Surely this unquiet must eventuate in some great moral change. It appears to me that we have arrived at the beginning of the end. We must then be up and doing; must be no laggards, or we shall be left behind in the race. And shall it be said that of all the sons the profession has brought forth, there are none to guide her in the onward march of mind? Hitherto there has been no lack of them. One after another has risen up; in confirmation of which I look upon my right hand and upon my left, and see those who are doing honour to the appointments they hold. Why therefore should we give way to fear? I have none. I am satisfied that we must continue to go on, and going on we shall in the end succeed.

And now, without I trust giving offence, or being thought over-officious, I will venture to point out what I believe would prove an effective and a simple means to carry out what has been so nobly begun by the governors of the College, and to perfect the curriculum of the student. It has long struck me, indeed I am convinced of the truth of it, that during the summer months the mind of the pupil becomes dissipated through having nothing to do, and much is forgotten by him that has been learnt during the winter; so that on his return to the College for the second session, he has to go over the same ground again as before. It is true, that the mind quickly resuscitates what it has once known; but where is the necessity for this loss of time and mental labour? Now, as I know nothing of what arrangements may be made hereafter in that establishment, I would suggest that, if the summer months were devoted to lectures upon materia medica, associating with them therapeutics and botany as applied to veterinary medicine, the winter session could then be given entirely to the chemical lecturer, who might extend his remarks to agricultural chemistry. I assure you, that I often found it extremely difficult to condense my lectures on chemistry and materia medica within the time that was allotted to me; and I am afraid that I sometimes went slightingly over some things, and by endeavouring to do justice to both divisions, did justice to neither. However, I availed myself of the favorable opportunities which from time to time presented themselves, and thus was enabled to get through my duties pretty satisfactorily, at least to myself. Still I think, if the summer were occupied in the way I have named, in conjunction with other divisions of science which I have no right now to enter upon, it would be a means of considerably enhancing the value of the instructions given to the students, and I believe that by so doing, the profession, as a body, must in the end be benefited, since we have to look to the young aspirant for the future position of the profession. "As the twig is bent, so grows the tree," and "the boy is often father to the man," are adages well known to you. I am aware it will be said, that this increase of instruction must necessarily be attended with an increase of expense; and it will be asked, how is this to be met? I see no difficulty at all here. Lately the educational fee has been raised, and has any evil resulted from it? I answer, No. We have had an equal number of pupils during the session, and there has never been the slightest objection, that I have heard, raised against it. Why not, then, increase it a little more? (Hear, hear.) When it is so increased, it will not be one third of the amount which is generally paid by the student of human medicine for his fees. And who will be bold enough to say that the veterinary profession is not worth one third of the other profession to the community at large? I hold, it is: and upon this ground I think we can justly call upon the public to pay an increased fee; and I believe they would not refuse it, but would consider that they were getting a *quid pro quo* for the money thus laid out. (Hear, hear.)

I must now be permitted to say a word or two in reference to the nature and character of the handsome present which is before me. The committee appointed from amongst you did me the honour to ask me in what form I would like an expression of your feelings to be made. For a time I was at a loss what to select. It has been my good fortune to receive many presents from the profession—I believe this makes the twenty-first. (Cheers.) And among those presents have been a goodly amount of silver articles. Now an old bachelor does not want many of these things; the ladies want them more! (Laughter.) Still they are very agreeable when possessed. Now as I happen to possess them, and reflecting upon the kind present made to me by you, in 1844, of a silver tea and coffee service, I thought a salver to carry that service would be somewhat appropriate. But, in addition to it, you have been pleased to give me a purse, containing 135 guineas! so that it has, indeed, assumed "a substantial form." Then with regard to the *manner* in which it has been done. I have only to look round upon the present assembly, to see abundant proof of the kindly feeling that has actuated you, many of you having come from almost the extreme points of England to confer this honour upon me. But I must advert, for a moment, to individuals; and I will commence with my old and sincere friend, your President. Had the whole profession been passed before me, no member of it could have been more acceptable to me than he who fills the chair on this occasion. I was early indebted to him; for, at the outset of my career in the College, he undertook to perform the duties of the office which I filled, for a short time, until I was able to perform them myself. Then as respects your Secretary, I can only say it affords me the highest gratification to remember that he was once a resident pupil of mine; so that he is more intimately acquainted with me than many others of you are. I have no doubt he knows some of my failings too, and remembers how often I neglected doing that which I ought to have done. But, besides him, there are several of my resident pupils here, and it gives me the greatest gratification to be enabled to address them upon this occasion, because I know they will forgive and forget all my remissnesses. In this way it is, supported by the large number of names which are appended to a document I saw just now, that this liberal testimonial has been got up. I have now only to refer to another, and almost as interesting a circumstance, which took place not long since at the College, when the students thereof, before returning to their homes, presented me with a very handsome memorial, acknowledging the benefit they had derived from my instructions. These two testimonials, gentlemen, I shall bear with me into private life. They will ever be to me sources of considerable gratification; they will awaken reminiscences of a highly pleasing character, and serve indelibly to impress upon my mind those sentiments of your esteem and regard which otherwise might, perhaps, have been through time somewhat weakened—I dare not say forgotten.

I must, however, draw these lengthened remarks to a close. I have endeavoured freely to express my sentiments to you on this occasion. I have not said all that I was desirous of saying, nor in the way, perhaps, it ought to have been said; but I have given vent to my feelings, nearly as they have arisen in my mind. That I have had to do battle with a few of the difficulties of life, will have been gathered from the statements I have made. They have, however, been but few as compared with many others; still, I can say with Longfellow—

> "I have had my trials. Time has laid his hand
> Upon my heart; gently, not smiting it;
> But as a harper lays his palm
> Upon his harp to deaden its vibrations."

I have been maimed in your cause, and grown gray in it; and I am now contented to leave my place to a younger and a better man, for I would not have it said—

> "Superfluous lags the veteran on the stage."

I can look back to the time when there was more energy in my composition than there is now. Age, we all know, chills the blood, and causes it to flow less vigorously than in youth. Notwithstanding, I am extremely happy to say that as yet I do not feel myself quite "used up." (Cheers and laughter.) There is still a little stamina left in me; and, if circumstances permit, I shall be very happy to continue to employ it in your service. (Cheers.) A period of thirty-five years is a long one to be connected with a profession and to maintain with it a friendly intercourse, which has increased with increase of years, until the point of culmination appears to have been reached in the present meeting. And now I retire from it, not a rich man, as I have on an occasion similar to the present said, but God has given me sufficient for my wants, with which I am contented, and for which I desire to be grateful. I am not a man of extravagant habits, and have been taught to keep my desires within bounds.

It now only remains for me—and it is a hard task—to say to you Farewell! This your generous approval of my conduct is to me, in every sense, most gratifying. It is the crowning of my labours at their close; reflections thereon will be fragrant even in death, and my gratitude shall be more enduring than the material of which the testimonial is composed; for when the heavens shall be rolled up as a scroll, and this earth, and all that is in it, are burned up, then the emancipated soul will, I trust, rise to a higher and a better world, bearing there a remembrance of the kindnesses it received below; only with this difference—that the impressions made can never be effaced, but rather will become intensified, because the mind, being rendered pure, will be more fitted to receive the impress of that which is true and good. Again and again, gentlemen, accept my sincere thanks for this marked manifestation of your kindness. May health, long life, and prosperity, be yours in this world, and all happiness in that which is to come. (Loud cheers.)

Professor Spooner, addressing Professor Morton, said—Sir, as the President of the *Veterinary Medical Association*, I am deputed by the Council of that body to present to you the Vote of Thanks which is emblazoned on this parchment scroll. The Association is one with which you have been connected ever since its foundation, and you have laboured hard for its advancement. I need not say, that to the labours which you have performed in connection with it, its present prosperity is entirely due. It is, therefore, with the greatest degree of pleasure that I, as the President of that Society, present you with this Vote of Thanks. (Cheers.)

Professor Morton—I accept the thanks of the Council of the Veterinary Medical Association with the highest satisfaction. First, sir, I will address myself to you, inasmuch as you and I were associated together at the formation of the Association. We will not advert, upon such an occasion as this, to the circumstances that compelled us to go forth to the profession and solicit their support; but we may venture, I think, to say, that that support was most cordially given; and an appeal having been made by us to the Governors of the College to allow the meetings of the Association to be held within its walls, they at one granted our request, and we commenced, I believe, the first year, with more than a hundred members. From that time to the present the Association has continued to increase in the number of its members, but unfortunately perhaps in a certain sense, it may be said that it has now become a pupils' society. There was a time when the older members of the profession came amongst us, and freely entered into the debates. We happen, however, to be located at one end of London, and it was soon found to be inconvenient to the members of the profession to come such a distance. Nevertheless, the Association has continued to progress satisfactorily. You will remember that when we first began, there were only a very few books in the library, and these did not really belong to the Association, for they were borrowed partly from yours, partly from my own library, and also from others; but now there is a library of above two thousand volumes, to which the pupils have ready access, while the weekly meetings are extremely well attended, and the debates carried on with very considerable spirit. During the past session there have been introduced thirteen papers for discussion, some of which were of a very high character. In proof of this I will give you the titles of only two or three of them: 1, "On Comparative Anatomy, preceded by a brief description of its rise and progress as a Science;" 2, "On Chemistry, in its relation to Health and Disease;" 3, "On the Anatomy, Physiology, and Pathology of the Foot of the Horse." This last extended to no less than 150 pages. These, gentlemen, you will bear in mind, are all pupils' essays. And have we not here a proof of an aptitude to acquire knowledge, and also to communicate it? When we have such germs as these showing themselves in early youth, what may we not expect in mature age? I can only say, that the committee to whom these essays have been given for adjudication will have an arduous task to perform to peruse them all, and to select from them those that are most worthy of the thanks of the Association. But I have no doubt they will satisfactorily perform their duty, as they have had—though perhaps not to such an extent as this—a similar task to perform before. After this, is it any wonder that I should feel gratified in the expression, on the part of the council, of their thanks for any services that I may have rendered to an institution which I believe to be so useful to the student of veterinary medicine? When I was in the habit of sitting in my place as their secretary, I have sometimes seen young men fresh from the country so diffident as to be unable to express their ideas in words; fearful almost of hearing their own voices; but before they left the College they were enabled to enter freely into debate, and make during it somewhat lengthened speeches. Here was a calling forth of the powers of the mind, and I believe such efforts must prove, in the end, conducive to the advancement of veterinary science. The longer I live the more I am convinced that it is only by union amongst ourselves, by education, and a determination to maintain the position to which we have already attained, that we shall continue to secure that estimation in the public mind which is so justly our due.

The Chairman—It appears to me, and the friends around me, that as the time has arrived when our friend must retire from the position he has so long held among us, that we ought to give him three rounds of applause.

The suggestion was cordially responded to by the assembly, and Mr. Morton rose and bowed his acknowledgments.

Mr. Robinson—I assure you, gentlemen, that I feel quite proud to be called upon to give the next toast, although there are others present much better able to do it than I am. It is to propose the health of those gentlemen whose merits as professors are so well known to us all. I beg to give you the health of Professor Spooner, and the other professors of the Royal Veterinary College. (Cheers.) We have heard that Professor Morton is about to retire from among us, taking with him that splendid testimonial of our esteem and regard for having performed his duties as Professor of Chemistry and Materia Medica with so much satisfaction. I am sure I need not say that I believe the other professors will imitate his example, and confer all those advantages upon the profession to which allusion has been made by Professor Morton. (Hear, hear.)

Mr. Spooner—Mr. Chairman and gentlemen, it has fallen to my lot on many occasions to be called upon to express, on behalf of my colleagues and myself, thanks for a similar honour to that which you have now conferred upon us. But, gentlemen, this occasion is one which is peculiar in itself. The circumstances connected with it in some respects call forth in my mind sentiments which are far from pleasurable. When I look on my left hand, and see seated by my side one with whom I have been associated through the whole of my professional career—when I see that esteemed friend, instead of standing by me and supporting me as a colleague, seated, it reminds me that I am robbed of the support of one who has ever rendered me the most able and earnest assistance. And it reminds me also that I am fast going on to those days when I shall no longer be able to exert my efforts for the advancement of the veterinary art. Gentlemen, deeply, however, as I feel this occasion to be sorrowful to me, at the same time I am happy to say that sorrow is mingled with pleasure. I am delighted to think that our worthy friend Professor Morton is enabled to retire from us—I was about to say almost in the bloom of youth (cheers), but if not so, certainly with those buoyant spirits, and that healthful physical energy which will enable him to enter upon private life, and to enjoy that rural society for which I have reason to know he has so long yearned, and to which I am sure he will at all times be welcomed as one of its brightest ornaments. At the same time I feel assured that I and my brother colleagues will in future be able to look upon him as a sincere and warm-hearted friend; and that we shall at all times, with confidence, be able to appeal to him for that advice and support which he is so competent to give. Gentlemen, on behalf of my colleagues and myself, permit me to express to you our sincere thanks for the honour you have conferred upon us. We feel, as professors in connection with the Veterinary College, that we hold a position which is in itself honorable, but it is also associated with high responsibilities. It is our anxious desire, in the exercise of our efforts to advance veterinary science, by teaching those who are aspiring to become members of it, so to impart to them the fundamental principles of science, as to enable them in after life to pursue the practical avocations to which they will be called with honour to themselves and with benefit to all who may employ them. We trust that we shall be enabled to carry on the instructions of the institution (although we have lost so able a colleague), in such a way as shall be creditable to ourselves, and that we shall not fail to promote the onward advancement of our Art, so as to secure for it that ultimate success which our friend Mr. Morton has said the veterinary profession has a right to aspire to. And what I mean by that success is, that the members of the profession shall obtain a position in connexion with society, and in the estimation of the public at large, which shall enable our profession to rank second only to the sister profession. That is the standing we ought to occupy, and that is the position we must, if we are true to ourselves, ultimately attain to. I may, however, observe, if we desire to wipe away every existing prejudice in the minds of the public against our calling, we must be careful to observe good-will towards each other, urbanity and gentlemanly bearing towards all, and to exercise more noble sentiments of humanity, and that industry of habit which should be considered as necessarily appertaining to every branch of the healing art. If, in a word, we would occupy a position to be honoured by those by whom we are surrounded, our success must in a great measure depend upon ourselves. Allow me, in conclusion, again to thank you in behalf of my colleagues and myself, and to say that we trust we shall live long to meet you in associations like this, and that we shall ever merit your esteem and regard. (Cheers.)

Professor Spooner again rose, and said—Gentlemen, I feel that a very high privilege has been granted me in being permitted to call your attention to a gentleman who is now amongst us, and who, I am happy to say, does us the honour of presiding over us. (Cheers.) When I request you to join me in drinking the health of our chairman, Mr. Wilkinson, I am sure you will all do so with the utmost feelings of cordiality and sincerity. Mr. Wilkinson is the principal veterinary surgeon in the army. He is also the President of the Royal College of Veterinary Surgeons. But irrespective of these high positions which that gentleman has the honour to fill, he holds another position which is very high—he holds the position of being appreciated by us all as a man most worthy of our esteem. (Hear, hear.) I have had the honour of his acquaintance now for many years. I am sorry to say I cannot number so many years of his acquaintance as my friend on my left, but I have known him for a long period, and the longer I have known him the higher has been my esteem for him. These are not sentiments peculiar to myself, but they are sentiments which, I am quite sure, pervade the bosoms of all the gentlemen present, and there are many of you who have been in intimate and frequent association with him. Mr. Wilkinson has presided over the meeting with that degree of urbanity and ability which peculiarly belong to him. We are all of us very much indebted to him for the kind manner in which he has come forward, and I am sure that when we take into consideration the high position he occupies amongst us, and bear in mind the obligations we are under to him for his exertions here to-day, we shall all of us most cordially join in drinking his very good health.

The toast having been duly honoured,

The Chairman, in reply, said—Gentlemen, adequately to respond to the eloquent, friendly, and kind manner in which my friend Professor Spooner has proposed my health is beyond my power. I had no idea when I came here that I should be in the painful but pleasurable position in which I now stand—for it must be a pleasure to any one to find that he is appreciated by his professional brethren. It has been my endeavour, from the time when I entered the Royal Veterinary College, to take the position which has been so properly described by the worthy professor in his speech as the *desideratum* of the veterinary profession; that is, a position which may be considered as equal to that of any other, either in the profession or out of the profession. There are gentlemen here, who are almost in daily intercourse with me, who would tell you, if they had the opportunity, how constant my endeavour is to inculcate into the minds of young men with whom I have to deal—those who enter the army in our profession—how absolutely necessary it is that they should be *gentlemen*. A man may be a very clever veterinary surgeon, and yet he may not have those qualities which fit him for that position in the army. I am particularly pleased to say that the efforts which have been made, with the assistance of my kind friends at the College, to select for the army such persons as should be properly placed there, have been attended with the greatest success. I can only, in conclusion, say that I am much obliged to my friend Professor Spooner for the kind manner in which he has proposed my health, and to you for the manner in which you have received it. I see present a great many persons whom I knew in early youth, and have not seen for many years, and it reminds me of what the poet says:

"And doth not a meeting like this make amends
For all the long years I've been wandering away
To see thus around me my youth's early friends,
As blithe and as gay as in that happy day."

Mr. Burley—I assure you, gentlemen, that I am taken entirely by surprise at the unexpected compliment paid to me in having to propose a toast to you. It is, however, one that is so identified with the interests of the veterinary practitioner that I need make no apology, further than to regret that it has not fallen into abler hands than mine. I have to give you "The Royal Agricultural Society of England," and to couple with the toast the names of Professor Simonds, and Professor Brown, of Cirencester.

The veterinary practitioner, in the country particularly, is very much connected with the farmer and grazier, and he has had the opportunity during the last twenty years of witnessing a very marked and rapid improvement take place in all agricultural matters. We see this in the character and increase of the crops, and almost everything seems to be progressive, for which we are entirely indebted to the Agricultural Society of England. And we can also see a great improvement existing in the stock; indeed those who have been in the habit of visiting the Agricultural Society's meetings must have observed a decided improvement in every description of stock; but I could wish it had been more manifest in regard to horses. I believe that we are greatly indebted to the society for having directed their attention to this subject, and also for having given large premiums for the best stock that could be introduced. With regard to these premiums there appears to me to be only one drawback, namely, that while they give ten premiums for steam-power for the improvement of the soil, they only give one for horse-power. But our friends Professors Simonds and Brown will tell you that they are actuated by the best motives. It is true, some of the old members of the society are determined to carry the thing with a high hand; but there is another class of men who have got into their meetings, and depend upon it they will turn them out if they are not very careful. Too much independence won't succeed now-a-days. We see it in our own practice, that a man must not be too "uppish." (Laughter.) Our friend, to whom we have met to do honour, has told us that there is a class of the right men rising up, and I do hope and trust that they will be enabled to place themselves in such a position as to advance the profession.

But I was speaking of the Royal Agricultural Society, and let me tell you that we are greatly indebted to its council for having appointed to an important office a gentleman who has devoted a great deal of time, and who has also placed us in a very good position with them—I need hardly say I allude to Professor Simonds. He, as you know, has been very desirous to find out, if he possibly could, a successful mode of treatment for that bane of cattle pathology, pleuro-pneumonia. He travelled nearly all over the continent for this purpose, and the result is, that we are not worse off than they are. We have but little chance of curing it here; we have, however, the gratification of seeing the animals live two or three days, but there they die before you can turn round and look at them. I assure you Professor Simonds has placed us in a much better position than we were. There was a time when we used to walk into their stables, and be on terms of friendly association with the farmer and the grazier; met them at the festive table; went out hunting with them; hob and nobbed with them every day; but we were not allowed to go into their cow-sheds. It is to our friend here that we owe this introduction, for we are allowed to look into their cow-sheds now. There was a class of men, no doubt—but I am glad to find, as my friend states, that they are not now to be found—who got the whole of their knowledge from their fathers before them; who fancied they could treat the cattle themselves, and that veterinary surgeons knew nothing about them. As there are many gentlemen present anxious to speak, I must draw my remarks to a close, assuring you that there is no man who feels more desirous for the advancement of agricultural pursuits than I do. I have been brought up in the country, and I wish to die in the country, though not at present, thank you. (Laughter.) I have very great pleasure, therefore, in proposing the health of the worthy professor. You all know how industrious he is. I see him, not only at the meetings of the Agricultural Society, but also those of the Farmers' Club, although he is very modest, and does not often intrude his opinions upon the public. Then he has been the means of bringing another gentleman into association with the society, one whom we have long known—Professor Spooner. Graziers tell me that he is a little particular, and that it will require a very clever man to bring a cripple into the show-yard which will escape his scrutinising eye. (Laughter.)

With the health of Professor Simonds I have to join that of Professor Brown, of the Cirencester College. I hope the institution of which Mr. Brown is the veterinary professor will prosper, as I have no doubt it will. There is nothing like "teaching the young idea how to shoot" early in life. If we can only give them some veterinary knowledge at a time when they are being instructed in Greek and all the "ologies," we shall be doing a very good thing. They will be able to progress with the times, and when they get to St. Pancras they will be half initiated into the secrets of the profession. You will all join with me in drinking to the health of those gentlemen, expressing a hope that they may yet live many years to fill the distinguished position they now hold, and that every year may add to the advancement of our profession. (Cheers.)

Professor Simonds—Mr. Chairman and gentlemen, my friend who introduced this toast to your notice observed, at the outset of his speech, that he little expected he should have been called upon to perform so pleasurable a duty; and most certainly I did not anticipate that I should have had the honour done me of associating my name with "the success of the Royal Agricultural Society of England."

It is true that I have been, from the time of the formation of the society, connected with it, and therefore even before I became a teacher in the Veterinary College. My friend will, I am sure, allow me to explain with regard to one point he has mentioned, namely, that it was owing to the society that I had the honour of receiving the appointment which I hold within the College. All must admit that the society has done a very great deal in support of veterinary science, but the steps which it originally took for the advancement of our art were unconnected with those which were adopted by the profession itself. The governors of the College saw the feeling which existed, and they believed, with the profession, that the time had arrived for an extended curriculum of the studies of the pupil to be made. In consequence of this, measures were taken, which led to my being elected. A little before this time, the late Professor Sewell had undertaken the teaching of cattle pathology, in which course he was, perhaps, influenced by what he saw of the proceedings of the society, and of which he also was an original member. The pecuniary support given by the society to the College has continued to the present period, with but few interruptions, and those arising out of matters which need not now be inquired into.

With regard to anything which I may have been instrumental in doing with a view to raise the veterinary profession in the estimation of the agriculturist, all I can say is, that the expression of such being the case amply repays me for all the trouble I may have had. It is true that, years ago, we did see, "within the cow-shed," as my friend says, men who were uneducated, who were totally unfit to be called upon to minister to the wants of animals when suffering from disease. Now, happily, a different state of things exists, and, without doubt, this is to be traced to the efforts that have been put forth by the Royal Veterinary College, in conjunction with other colleges and schools and agricultural societies.

If I have introduced my friend into the cow-shed, and he feels himself professionally at home there, I trust that, if he will go with me a little further, and pass from the cow-shed to the fold-yard, and from the fold-yard to the pig-stye, he will not think he is thereby doing outrage to his professional reputation, by ministering to the wants of the animals he finds therein. We must bear in mind that the occupants of these places furnish food for the people, and it is our bounden duty to maintain their health in the best possible manner.

Allusion has been made to the improvements that have taken place in agricultural machinery, and these have been contrasted with the very little improvement which has been made in regard to the horses that are brought together at our agricultural shows. A lecture has been read in the hearing of my friend and colleague Professor Spooner, with regard to the scrutiny these animals have to pass through before they can be reported as fit to be brought into competition for the prizes. Why do I allude to this? To show that thereby the country has the best guarantee that, if an improvement is needed in agricultural horses, that such is in a fair way of being effected. What is the reason that so many horses, which are still sent to many of our agricultural shows, are not even considered fit for competition? Simply because there has not been a sufficient amount of attention given to their freedom from hereditary diseases, and veterinary surgeons have not been appointed to examine them. A check has been given to the practice of sending unsound animals to the meetings of the Royal Agricultural, and also some other of the principal societies, by the appointment of veterinary inspectors; but to be effective for all the good that is needed, similar appointments must be made by every local society. Breeders and exhibiters of horses will never give that attention to this subject which its importance requires while they can win prizes at local shows with unsound horses, nor will our national exhibitions be free from such animals being sent to their meetings. With regard to the Royal Agricultural Society, as I have said, a considerable improvement has taken place, and it is well known that, assisted by Mr. Hunt, of Birmingham, I have for some years examined the horses at its annual meetings. The society, however, has grown so large that more assistance was required for the proper performance of the veterinary inspection, and in seeking this, it wisely determined to appoint my friend and colleague Professor Spooner as the examiner of the horses. In this appointment we have the best guarantee that the improvement which has taken place will not only be continued, but that it will be yearly increasing in value.

With reference, also, to the question of greater encouragement being given to agricultural machinery than for the horses, I confess that I strongly approve of the introduction of steam-power for the cultivation of the soil, although, to some extent, it may usurp the place of horses upon the farm. In making these observations I, of course, am speaking with regard to the advantages which will be derived by the country at large. Still I do not believe that if every farm of any size in this country, and it is only on large farms that steam is applicable, had either a fixed or a locomotive engine, there would be one horse the less employed or bred by the farmer. That which experience has proved in regard to railways would, I believe, be found to be the case with reference to the introduction of the steam-engine upon the farmer's premises, namely, that there would positively be a greater demand for horse-labour. By increasing the productive power of the soil, a larger quantity of corn would be raised, and of other crops in proportion, which would create an extra demand for labour—horse and otherwise. Even the increased quantity of corn would require extra horse-strength to carry it to market.

Having said thus much for the Agricultural Society and the connection which it holds with our profession, I must turn to another point—the one which has been the means of bringing us together to-day. I congratulate you all upon having done that which I certainly must consider an honour to yourselves as well as to my friend and colleague—for I must still call him my colleague—Professor Morton, in presenting him with that handsome testimonial which I see before me. I knew that he stood high, and deservedly so, in the estimation of the profession; but I certainly did not think he stood so high as to receive at your hands so splendid a gift as a silver salver of the value of nearly £100, and a purse containing 135 guineas; a greater sum than has ever been collected on any similar occasion. No one of the present assembly is ignorant of the long services and elevated position of the late Professor Coleman. In one sense we are all his sons, and as sons, we are exceedingly desirous of doing honour to his memory. There is no one here present, I am sure, who numbers the years that I do in connection with the profession, who does not look back upon Professor Coleman as a bright ornament of the veterinary profession, and not only to it, but to society at large. After something like fifty years' occupancy of the professor's chair, the members of the profession saw fit to present him with a testimonial, which consisted of a marble bust, thus perpetuating his memory so long as time shall endure, but the amount raised fell far short of that which has been now subscribed.

Again, there was another gentleman connected with the profession whose memory we all also revere; I allude to the late Professor Sewell, who received at the hands of the profession a testimonial, in the shape of a silver tea-service, but the sum which was collected for the purpose fell short even of that which had been raised for Professor Coleman.

The next individual who was thus honoured was the late Mr. Youatt, a name identified with the literature of our profession, and one which we must respect for many reasons. But standing deservedly high as he did in the profession, and among literary men in general, many of whom were willing to join the members of our profession in presenting him with a testimonial, the amount subscribed fell far short of that which has been collected on the present occasion. Besides these, we have our much respected Secretary—Mr. Gabriel—who also received a testimonial from the profession, but, again, one not of equal value to the present. When, therefore, I bring forward these, the only instances in which the profession, as a body, singled out an individual to express its feelings towards him, and contrast them with the present, I feel that I am justified in saying that you have done honour to yourselves in the liberal manner you have responded to the call. And if honour has been done to yourselves, I am sure you have also done equal honour to the recipient of your bounty. I know he feels it as such, deeply feels it, for when thanking you for your kind appreciation of his labours as one of the teachers in the College, he wanted words to express to you the sentiments of his heart. Well, gentlemen, allow me to say that, as one of his colleagues, I also feel that this honour is to some extent reflected upon every one of those with whom he has been so long associated, and I desire to sincerely thank you, therefore, for your kindness towards my friend Mr. Morton. I speak thus, because not only have we been associated together for a great many years as colleagues, but as sincere friends. I may say that we have known each other intimately, and that in most things our feelings and sentiments have fully accorded. I believe it has sometimes been said that, like the Siamese twins, we were inseparable, and that where the one was to be seen the other was sure to be close at hand. The unity of sentiment which has so long existed between us will, I am sure, be continued, for we are bound together by ties that cannot be severed. It has been said that he has now separated himself from you professionally, and to a very great extent this is the case; but I hope I may say that he has nearly half promised not to separate himself from me as joint editor of *The Veterinarian.* (Hear, hear.) I say nothing as to the manner in which that journal is conducted; but I will say that if Mr. Morton were to leave it, it would suffer very considerably. Nothing, I am assured, will give you greater satisfaction than to know, as I trust it will in due time be announced, that Mr. Morton has fully determined to continue his labours in connection with that periodical. (Hear, hear.)

I will not detain you any longer, except to say that I have purposely avoided making any allusion to the Cirencester Agricultural College, because I see on my left my friend Mr. Brown, the veterinary professor of that institution, who will be better able than I am to point out to you the advantages the College possesses, and the good it does in the advancement of veterinary science. He will tell you, among other things, I doubt not, that the example which was set by the Royal Agricultural Society in appointing veterinary inspectors, has been adopted by the Bath and West of England Society, of which he himself is the veterinary inspector; and that those who are educated at the college are not found to be among the agriculturists who consult the charlatan and uneducated practitioner when disease appears among their flocks and herds. He will also tell yeu that we shall not cease our labours until we see veterinary surgeons holding official appointments with every agricultural society of influence in the country. (Cheers.)

Professor Brown—Mr. Chairman and gentlemen, on entering this room, with the sole intention of paying a tribute of respect to my friend Professor Morton, I hardly expected that the subject of agriculture would be brought before you. Permit me to express to you my satisfaction that it has been, because for the last ten years I have longed for an opportunity of meeting my professional brethren, in order that I might in some shape indicate to them the policy of the Agricultural College, which I know has been utterly mistaken by nearly the whole of the veterinary profession. When I accepted my appointment, I am aware it was said, "You are going to teach all these young men to be veterinary surgeons, and that is taking the bread out of our mouths." But, gentlemen, I have the honour of remembering that I accepted that appointment with the concurrence, nay, at the instigation, of the professors of the Veterinary College; and if they had opposed their influence to the step, I should not have dreamt of taking it. I say that distinctly. As to the charge of teaching farmers to be veterinary surgeons, I return you one distinct answer—it is altogether unfounded and fallacious. The real difficulty which you have to contend with amongst agriculturists is the employment of the cow-doctor and farrier. It has been remarked by Mr. Burley, who has had very much more practical experience in the matter than I have, that these men are constantly about. I give you my experience of the last ten or twelve years in the country to add to the weight of the information he has afforded you. I am called upon to visit stock in different parts of the country, and I see these men about. I say nothing against them individually. They are very quiet, inoffensive, harmless, ignorant individuals. I can hardly find it in my heart to say anything harsh about them, or to request that they may not be allowed access to the premises while I am treating the animals. They are the main cattle pathologists at the present time in different parts of the country. They go about the farms, walk round the stock, and say, "There is one animal I will send this drink to; here is another requiring this or that." They charge merely for the medicines they supply, so that the expense is very trifling, and the farmer has a sort of satisfaction in reflecting that there is some one about the stock who knows something of the matter. I am constantly asked if I have any objection to these men remaining, and I always say, "Certainly not; if they do not interfere with my patients, let them remain." I know that any objection on my part would have no effect. They are connected with the farm; they are of the nature of a piece of agricultural machinery, and cannot be removed by any violent proceedings on our part. But I may state to you one fact, that since I have had the honour of holding my appointment, and, I may venture to say, since the time there has been a professor at the institution (I believe the brother of our friend Mr. Robinson held the appointment before I did), no student passing out of the Agricultural College is at all likely to employ a cow-doctor or farrier upon his farm. I am constantly asked by the old students, "What are we to do in such a case; can you assist us? There is no veterinary surgeon within so many miles, and we cannot possibly employ a cow-leech." While these students are better acquainted with the anatomy of the animals, with physiology, and the principles of pathology, than the men practising in the country, it is utterly impossible that they can so violate their conscientious feelings as to have recourse to the assistance of those who they must know are inferior in knowledge of the subject to themselves. So far from the appointment, then, interfering with your pursuits, I say let us have such appointments all over the country. The more farmers become enlightened upon the subject, you may depend upon it, the more requisite the veterinary profession will be to them. It is a great satisfaction to know that the principal agricultural societies in England have appointed veterinary inspectors, and thus recognised the importance of the profession. I wish I could say so much of the rest of stock-owners in the country, and of the patrons of the stud in the hunting-field or the stable. I could wish that the stud-groom was replaced by the veterinary surgeon. As far as the agricultural societies are concerned, they have paid us a high compliment, and I trust the result will be that our profession will be considerably advanced. There is one other point I am desirous of bringing before you; that is, in reference to patients at the hospitals. It is utterly impossible that anything like a complete system of cattle pathology can be thoroughly understood and properly brought before the profession, or the pupils of the profession, without a sufficient number of patients being supplied to the public hospitals. I have heard it over and over again remarked at the St. Pancras institution, "We see no cattle practice." The answer has been, "What can you expect? We are away from the agricultural community, in the middle of London, and how shall we obtain those patients?" Gentlemen, we are in an agricultural community—in the centre of one. Some of the principal breeders of short-horns in the country are friends of the institution. We say to them, "Send your animals in, and we will charge you only for the keep." Yet they do not send them in. We then say, "Send them, and we will take them for nothing;" but they still decline. You may answer, "They don't think you can attend to them." Gentlemen, they have no objection to pay me my fee for visits to their own premises, but they will not send the animals to be treated for nothing, in the same way, by the same person. The fact is farmers do not like to send their cattle out of their own sheds, and owners of horses do not like to send their horses away from their stables; and at the risk of extra expense, they prefer having them attended to at home. In the middle of a town like London, removed from everything like a farming district, it is hardly to be expected that patients can be supplied, if in the midst of an agricultural district we cannot obtain them. It is much to be regretted that this should be so, and it is to be hoped in future that agriculturists will further assist us, for they have done a great deal; that they will, at a certain sacrifice of time, furnish patients to the public hospitals for the purpose of being treated. If this were done we should stand much better in the eyes of the public as a profession than we do at present. It is with the greatest satisfaction that I have availed myself of the opportunity of making these remarks, because I assure you your very best friends are the agricultural societies and colleges that employ veterinary surgeons for the purpose of imparting instruction relative to the diseases and general management of stock. (Cheers.)

Mr. Hunt, in proposing the next toast, "The advancement and progress of Veterinary Science," said, it was one that needed no remarks from him to ensure its cordial reception. With such professors as they had to guide them, and such a man as their president, who had at heart the advancement of the profession by the improvement of the *status* of its members in the army, he had no doubt as to its future progress. Their advancement, in fact, was in their own hands. If they followed the examples and the advice of those above them, it was their own fault if they did not make rapid strides in the way of progress, and he hoped that each member of the profession would do the utmost in his power to raise it in the estimation of those with whom they had to do.

Mr. Lepper in responding to the toast, said, there was no one whose position in life depended more upon the continued prosperity of the veterinary profession than his did. It was now more than half a century ago since he served his apprenticeship to a farrier, a veterinary surgeon at that time being known only by name in many parts of the country, especially in the isolated spot in which his lot was cast. Some years afterwards, a gentleman who was well known to many present, Mr. Lushington, located himself in his neighbourhood, and rather encroached on his practice. He naturally became a little jealous, as his employers thought highly of the veterinary profession. At that time the late Professor Coleman possessed a summer residence not many miles off, and he (Mr. Lepper) sought his advice, and acting on the same succeeded, after three or four sessions' attendance at the College, in obtaining his diploma. Thus much for the past. In the present I think we owe to Professor Spooner a debt of gratitude for his exertions in endeavouring, both by counsel and conduct, to advance and maintain the dignity of our profession. He has always pointed out to the young aspirant a line of conduct that, when visiting his patients, would give him a right to enter by the same portal as the surgeon who attends the family. However, much depends on the conduct of the individual. A man usually makes his own position in life, and the public generally take him at his own value. He regretted to find that there were many members of the profession who felt rather indignant on being consulted in regard to cattle, but this he hoped would soon be got over. He well recollected, when he first went to Aylesbury, how difficult it was to form a cattle practice; but he was glad to know that a better educated class of young men were now entering the profession, and he hoped they would be the means of causing the profession to rank still higher in the estimation of the public. Reverting to the toast, "Health and prosperity to the Veterinary Profession," he thought its healthy state could be best proved by contrasting its present state with the past, and its prosperity by the results of to-day's meeting, which has been most gratifying in every sense of the word.

Professor Morton—I had almost said that I am about to ask you to drink your own healths, since I have the pleasure of seeing so many present whose names are on the list I hold in my hand. I refer to the Committee who have done me the honour of being thus associated together. I believe it to be altogether unprecedented in connexion with our profession. I am sure it is to see such a goodly array of names as are here. I have just counted them, and they number forty-five. I have also, with no little pleasure, ascertained, how many of them were my resident pupils, and I find that twelve out of the forty-five were so. From several of these I have received letters, expressing their regret at not being able to be present. Have I not in all this great cause for exultation and gratitude? I am therefore sure that those of you who are not on the committee will join me in drinking their health, and that they as a body will accept my heartfelt thanks. There is, however, one whom I cannot pass cursorily over. It is true that the Committee is headed by two esteemed friends of mine, Mr. Wilkinson and Mr. Burley. I feel it was an honour conferred upon me to place them there, and I thank them sincerely for all that they have done; but I must be permitted to refer particularly to my friend Mr. Cartledge, who has acted as your secretary. (Hear hear). From my heart, sir, I thank you. I know a little of the amount of labour that has been entailed upon you, and you have surprised me much by the ease and tact with which you have performed the duties of your self-imposed office. I believe I am indebted to you for the first suggestion of this testimonial. You took the initiative in the matter, and it has been nobly responded to. I have endeavoured to acknowledge the great liberality shown me; but I did not know, until you yourself told me, how it was that you had succeeded so admirably in carrying out the project. Fond of quotations, and happy in your application of them, you stated in one of your communications to me that—

"The labour we delight in physics pain."

Herein, then, has been, in a great measure, the secret of your success. Loving the labour, I presume, the pain has not been felt by you; and it is extremely satisfactory to me to know that this has been the case. I trust you will now accept my warmest thanks for this proof of your kind feelings towards me; and, in conclusion, I beg to propose your good health and also that of the members of the Committee. (Cheers).

Mr. Cartledge, in replying, said—Mr. Chairman and gentlemen, my acknowledgments are due to you for the very kind manner in which you have received this toast. I hardly know how, adequately, to return thanks for the honour you have thus done me, but what I do say will be said in all sincerity. I undertook the duties of this office because I thought that honour was due to our worthy friend, and it was, in all senses of the expression, to me "a labour of love." I have been indebted to him for very many personal kindnesses, since I first entered his house as a pupil down to the present time, and I feel that what little services I have rendered in return, but feebly express my good wishes and my feelings towards him. I have always looked up to Professor Morton as a friend and kind adviser, and have never found him wanting when I have had to solicit his aid. You too, gentlemen, must well know the readiness with which he has rendered his assistance in matters professional, and must be aware that his advice was always such as inspired respect, whilst there was in it at all times evidence of a desire to elevate and advance the interests of our common profession. The feeling of regret at his departure from us has been universal. In addressing the members of the Royal College of Veterinary Surgeons, I have had the opportunity of knowing how strong this sentiment is; and, almost without an exception, the subscribers to this testimonial have remarked how sorry they were to learn that Professor Morton was retiring from his position at the College, and how willingly would they have given a much larger sum to have retained his services at that institution. He has been described to me as the "student's friend" by students themselves; and we, who have been students, can fully endorse that feeling; and that he is the "practitioner's friend," is fully proved by the readiness with which this testimonial has been raised, and by the large attendance of gentlemen here to-day from distant parts of the country, who, at the sacrifice of both time and money, have come to pay respect to their *quondam* preceptor, and at all times their friend. Professor Morton has done so much for the advancement of veterinary literature, that on that account, independently of the personal friendship which we enjoy with him, he has claims upon our respect and gratitude, and I may venture to say there is not a member of the veterinary profession who does not entertain such feelings towards him; and his departure from amongst us—if I may be allowed the expression—is felt to be a national loss. Gentlemen in writing to me, even if they could not render me help by sending their guinea, have said, invariably, they regret exceedingly that Professor Morton was to be no longer in our ranks; that to him, over and above all others, our gratitude was most due; and that him, of all men, we could least afford to spare. It has been mentioned that the amount collected has far exceeded any sum subscribed on similar occasions in past times. That circumstance will, to some extent, speak for itself, as showing the estimation in which Professor Morton is held by the profession. You have been told, too, that the purse contains 135 guineas. There is no colouring given to that: there are twenty-one shillings to the guinea, the purse contains £141 15*s*., and I believe there will be a surplus that I shall have to hand over to our friend in the course of a few days, when these accounts are closed. The salver you have all seen, and, I am pleased to know, admired. It is beautiful as a work of art, is of solid silver, weighs one hundred and forty-six ounces, and its value is £85.

I need scarcely tell you, sir (addressing Professor Morton), that being the secretary in connexion with this movement, I am made the bearer of many regrets that we are about to lose you, and also at the inability of a great number of the subscribers to be present on this occasion. They desire me, however, to express their thanks for your uniform kindness to them, and for the services you have rendered to veterinary science, and their best wishes for your future happiness and welfare. The list of subscribers contains names of gentlemen who are not members of the Royal College of Veterinary Surgeons; it includes a number of members of the Scotch schools, and I am bound to add, that their subscriptions have been as freely and as frankly given as any of the others. Many are personally unknown to you, and you are unknown to them, but they have subscribed their guineas to this testimonial with very great pleasure, as the letters I have received from them abundantly testify.

My thanks are due to the gentlemen on the committee, for the ready and very valuable aid they have rendered me. They have done much to further the object for which we have met together to-day, and with them, as with myself, it has, I am sure, been a labour in which they have all delighted. I now resign my office, and I have much pleasure in handing to you, sir (turning to Professor Morton), a list of subscribers to this testimonial. The amount raised but feebly expresses the estimation in which you are held by the members of the Royal College of Veterinary Surgeons; but this list includes nearly two hundred and fifty names, and I feel sure that you will rightly estimate the feeling which has prompted this demonstration, and that you will be pleased to learn how many have joined in it. (Cheers.)

PROFESSOR MORTON—I accept this additional proof of your kindness and labour with very great satisfaction. It is a goodly list, and I assure you it is very pleasing to me to be told by you that those who do not personally know me have, nevertheless, appreciated my humble endeavours, for by this I am led to infer that I have been of some little use to the profession as a whole.

Mr. C. DICKENS, after making a few prefatory observations, proposed "The Ladies," and humourously called upon Professor Morton to return thanks for them, which he did very briefly, observing that we could not do without the dear creatures, and we had great cause to "love and to cherish" them; and he was sure all present would join with him in an expression of thanks to them, more especially when he told them that the elegant salver before him was selected by a lady, in which she had shown excellent taste and much judgment.

The proceedings then terminated.

To the Editors of the 'Veterinarian.'

GENTLEMEN,—Herewith I send you the list of subscribers to the "Morton Testimonial." Please to do me the favour of publishing it in connection with your account of the presentation, and oblige

Yours faithfully,
B. CARTLEDGE,
Honorary Secretary.

SHEFFIELD; *August* 15, 1860.

J. E. Adlard.
Paul Anthony.
W. Appleton.
Thomas Aubrey.
James Austin.
J. B. Bacon.
Edward Bailey.
Frederick Bailey.
William Bailey.
Daniel Baker.
G. T. Baldwin.
T. C. Baldwin.
George Balls.
J. D. Barford.
Robert Barlow.
T. Barrell.
R. Barrow.
William Barrow.
H. J. Batt.
E. J. Batt.
W. Bentley.
R. B. Berens.
John Blunsom.
Alexander Bottle.
Robt. Boulton.
Augustus Bowles.
Robert Bowles.
W. J. Bowman.
E. Braby.
Joseph Bretherton.
J. C. Broad.
T. D. Broad.
J. Broderick.
W. W. Broughton.
Geo. T. Brown.
J. Brown.
Burgess, Willows, & Co.
T. Burrell.
W. Burt.
Walter Burt.
William Butler.
John Carless.
Joseph Carter.
B. Cartledge.
H. J. Cartwright.
F. M. Case.
F. Chamberlain.
John Chambers.
Wm. Cheesman.
Joseph Clayworth

Wm. Cockburn.
Timothy Coleman.
J. H. Collings.
F. Constant.
J. Constant.
Geo. Cook.
William Cooper.
A. C. Cope.
J. Cornelius.
John R. Cox.
William Cox.
Henry Crowe.
J. Crump.
E. B. Dawson.
Charles Dickens.
Edwin Drake.
E. C. Dray.
William Dunn.
R. H. Dyer.
James Edgar.
John Ellis.
William Ellis.
Henry Emms.
Stephen Evershed.
George Farrow.
W. Farrow.
William Ferris.
William Field.
William Field, jun.
Henry Fishwick.
R. Fletcher.
James Freeman.
E. N. Gabriel.
John Gamgee.
J. S. Gamgee.
W. Good.
W. J. Goodwin.
T. W. Gowing.
John Greaves.
Thomas Greaves.
J. B. Gregory.
Thomas Gregory.
D. Greswell.
J. Hall.
John Hammond.
William Harber.
E. Harrison.
Gilbert Hayes.
W. Helmore.
John Henderson.
W. Henderson.
James Howell.
Hubbick and Peel.
R. L. Hunt.
Charles Hunting.
Josiah Hutton.
Robert Hutton.
Henry J. James.
T. Jarvis.
J. Jennings.
Thomas Jex.
Thomas Johnson.
J. B. Jones.
Evan Keddall.
George Kirkham.
Henry King.
Robert Lambert.
Thomas J. Lang.
John Lawson.
Thos. M. Leech.
James Leggatt.
John Legrew.
George Lepper.
Henry Lepper.
William Litt.
W. B. Lines.
Robert Lucas.
J. T. Lupton.
John Mannington.
J. March.
Charles Marshall.
Thos. Marshall.
Charles Marson.
James Martin.
G. J. Mather.
Frederick Mather.
Alexander Mavor.
Frederick Mavor.
Wm. Mavor, jun.
J. McCall.
W. McKenna.
John Midgeley.
W. Megennis.
Thos. J. Merrick.
James Meyrick.
H. Middlehurst.
James Moon.
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D. Quaigle.
Warne Raddall.
Messrs. Richardson.
J. W. Riches.
H. Richmond.
A. Robertson.
William Robinson.
Sudlow Roots.
James Rose.
John Rose.
Alfred Rushall.
John Rushton.
Daniel Sayers.
Charles Secker.
F. G. Shaw.
William Shirley.
A. J. Shorten.
C. T. Shorten.
F. R. Silvester.
J. B. Simonds.
John Simpson.
Rich. Skelton.
Rich. Skelton, jun.
John Smith.
George South.
Stephen Sparrow.
Charles Spooner.
W. C. Spooner.
Edward Stanley.
T. Stanley.

T. Stanley, jun.
W.T. Stanley.
J. H. Stickney, Boston, U.S.
B. Sumner.
H. J. Surmon.
Wm. S. Surmon.
Edwin Taylor.
Henry Taylor.
W. G. Taylor.
William Thacker.
Francis Talbot.
W. P. Toll.
Samuel Tremlett.
H. A. Truman.
R. S. Tucker.
Charles Turner.
S. E. Turner.
George Varnell.
Alfred Walker.
Charles Wallis.
W. S. Wallis.
Richard Walters.
Walker Watson.
J. G. Webb.
Thomas Wells.
Geo. Wentworth.
Richard Whitwell.
Thomas Wilks.
Wilkinson & Westrop.
John Wilkinson.
Thomas Willshire.
A. W. Wilson.
W. Wilson.
S. H. Withers.
E. Woodger.
J. Woodger.
John Yates.
Geo. Yeomans.

Extracts from British and Foreign Journals.

THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

Annual Meeting held at Oxford, June 27th to July 4th.

As all meetings connected with the science of medicine affect us either directly or indirectly, and as we necessarily participate in the progress of the sister science, we avail ourselves of the summary given in the pages of our contemporary the *Lancet*, of those papers which were read at the annual meeting of the British Association for the Advancement of Science, lately held at Oxford, "relating to medical subjects, in which physiology and its allied sciences occupied a prominent place."

"The sub-section of 'Physiology' was opened by a most eloquent address from Dr. Rolleston, the new Linacre Professor of Physiology in the University. It abounded in matter connected with this branch of study, contained many classical quotations from ancient writers, and referred to many of their views.

" Professor Carus, of Leipsic, read a paper on the 'Lepticephalidæ' (a species of fishes), in which their anatomy and systematic position were considered. From the researches he had made, he clearly proved that these animals are merely the larval forms of other fishes, and that they should be erased from the position they have hitherto occupied. They are not destitute of a spleen, although it is difficult to find, being not larger than a small pin's head. They possess no ribs, but merely fibrous filaments; there is not a trace of generative organs to be met with, and the skin is entirely destitute of scales. An animated discussion ensued, in which Professor Huxley and others agreed in the views of the author.

"A paper was then read by Dr. Edward Smith, in which the action of tea and that of alcohol was contrasted, embodying the results of various researches he had made on the subject. He proved that the consumption of tea is increasing in all parts of the world, that it is beneficial and nutritive, and that the consumption of alcohol is decreasing. He gave the effects of each on the system, and showed the difference between the two; also the conditions in which tea was applicable and inapplicable. He showed the essential differences between the effects of coffee and tea on the system, and all the highly interesting experiments referred to were chiefly performed upon himself and another person. An animated discussion took place, in the course of which Mr. W. Milner, surgeon to the Wakefield Prison, detailed a series of experiments, made with permission on the prisoners, concerning the use of tea and other substances. His observations went to prove the correctness of Dr. Smith's statement, that tea does diminish the weight of the body, unless given with solid food. Dr. Smith asserts that the use of tea increases the waste of the tissues.

"A paper by Sir Charles Grey 'On Asiatic Cholera' was read by the secretary, in which the question was submitted whether diluted nitro-muriatic acid applied externally would not be a suitable remedy for the disease, introducing chlorine in this way more readily into the blood, and more speedily exerting its influence upon that fluid than calomel. Sir Charles is not a medical man, although he has seen much cholera abroad.

"Mr. Gardner read a paper 'On Certain Alterations in the Medulla Oblongata in Cases of Paralysis.' The author showed that atrophy of the columns of the medulla oblongata, in cases of continued paralysis, is not rare; and touched upon the probability of an arrangement in the spinal cord by which the separate action of the extensor and flexor muscles in tetanus, &c., is caused. He illustrated the intimate connexion of the olivary bodies with the posterior part of the medulla oblongata by tearing it down longitudinally, when they will always be drawn out backwards with that part. The author connected the olivaries with speech and respiration. The paper also described the varied insertion of the optic and olfactory nerves into various parts of the encephalon, according as they were associated with the intellectual or locomotive functions. He did not believe in any distinct separation of the upper and lower columns in the invertebrata.

"A novel and striking discovery was brought before the Zoological Section by Mr. J. O. Westwood, on the existence of a lepidopterous parasite in the *Fulgora candelaria*. This latter is a luminous insect, well known in Eastern Asia and China. The surface of its body secretes an abundance of white wax, which forms the food of numerous parasites, and in which they change into pupæ, and subsequently a perfect lepidopterous insect. Specimens of both were shown, and much interest was manifested in the discovery. Although the fact is well known that many insects are infested by parasites, yet here would seem to be a wonderful provision of Nature, in one insect secreting a certain substance to form both the food and bed of another.

"Dr. Lewis exhibited a new hydrospirometer, which would answer where extreme accuracy was not required. Its cost would not exceed 15*s*.

"'On the Development of Buccinum,' by Mr. John Lubbock, and 'On the Development of Pyrosoma,' by Professor Huxley, were two papers which elicited a lengthy discussion on what were some interesting discoveries in relation to these genera of animals.

"'Contributions to the Theory of Cardiac Inhibition' formed the subject of a communication from Dr. Michael Foster. A series of experiments were detailed, illustrating the action of various degrees of intensity of the galvanic current upon the contraction of the heart, through the agency of the pneumogastric nerves. These experiments were chiefly confined to the snail, but the crab and other animals were likewise operated upon, with results proving the inhibitory action of the heart.

"'An Experimental Inquiry into the Mode of Death produced by Aconite,' by Dr. E. R. Harvey, was next read. The author's experiments, which were performed on dogs, rabbits, and frogs, went to prove that aconite acts first on the nerves and then on the muscles, killing by its action on the heart; the blood and urine were found normal. Fleming's tincture was the preparation used. Amongst the various speakers was Sir Benjamin Brodie, who referred to his own experiments made many years back, in which he had used the expressed juice of aconite. It acted as a narcotic, and arrested respiration firstly; and he had no doubt that, if artificial respiration had been tried, the animal would have recovered, as in cases of poisoning by woorara. It seemed to him not improbable that different preparations of aconite produce various effects. Dr. Sharpey observed that, in some former experiments he had made with aconite, he obtained the same results as Dr. Harvey—namely, the action of the heart was stopped, and the irritability of the muscles was extinguished; the nerves, also, leading to the affected muscles were deprived of their excitability.

"The subject of chloroform was brought before the Physiological Section, in a paper sent by Dr. Charles Kidd, 'On the Nature of Death by Chloroform.' The author considered death to be the result of reflex action through the lungs, and not from cardiac syncope, as was supposed. He had tabulated 100 deaths from chloroform, and 25 from ether, in which it was shown, in regard to the former, that the fatal result had taken place chiefly from small doses *before* anæsthesia was established, and, curiously enough, when it was given for the most trivial operations, such as the removal of toe-nails, &c. Amongst a number of speakers who took part in the discussion on this paper, none seemed to agree as to the exact cause of death; that, Mr. Busk said, had yet to be determined by further experience. Some accidental circumstance was looked upon as a cause, in which shock had much to do. Dr. Priestly related an instance in which the heart continued to beat for some time after respiration had ceased, thus favoring Dr. Kidd's views. Dr. Rolleston, Mr. Busk, Dr. Graily Hewitt, Professor Corbett, and others, took part in the discussion.

"The subject of 'Deodorization of Sewage' was brought before the Chemical Section by Dr. Bird.

"The value of 'Systematized Exercise on the Expansion of the Chest' was satisfactorily proved by Mr. Archibald M'Laren, in a communication made to the Physiological Section. He has a gymnasium in connection with the university, and by systematised exercise has obtained two inches' increase of expansion of the chest in every freshman three months after his arrival at Oxford.

"The minute structure of the Lepadidæ, a variety of the barnacle tribe, which infests the bottom of ships, was investigated by Mr. Garner, and many new facts about these animals were announced, particularly the discovery of true eyes.

"Dr. Gibb read an interesting paper 'On Saccharine Fermentation within the Female Breast, and its Influence on the Child.' He showed that from various causes of a constitutional nature, in which the nervous system played an important part, the saccharine element of the milk underwent fermentation at the moment of its secretion, and gave rise to the generation of two species of animalcules—namely, vibriones and monads. The milk containing these was usually rich in sugar, but, owing to the fact of its having undergone fermentation within the gland itself, its healthy character was destroyed, and it was not therefore capable of assimilation within the stomach of the infant, as evidenced by the most extreme degree of emaciation—in fact, the child was undergoing starvation. The animalcules were developed within the breasts. The author had proved the correctness of his views in a series of experiments and researches into this question since 1854. In the discussion which ensued, much credit was given to the author for his labours in this novel field of inquiry; and numerous questions were put to him in relation to the condition of the blood and other fluids, in such conditions as he had described.

"Professor Corbett read a paper 'On the Deglutition of Alimentary Fluids,' in which he attempted to prove that the epiglottis did not always fall back upon the glottis during the swallowing of fluids. This was denied by some of the speakers, who thought it always did occur.

"One of the most valuable papers of the Physiological Section was an elaborate one from Mr. Arthur E. Durham, being an experimental inquiry into the nature of sleep. He described the appearances of the brains of animals, as evidenced through openings made in their skulls, and supported by a process of ingenious reasoning his hypothesis upon this most important subject. Mr. Durham stated that during sleep the brain was pale, and comparatively bloodless; that during functional activity the pia mater and brain-substance were highly injected, and full of rapidly moving blood. He suggested that the increased amount of oxigenated blood coursing through the vessels during wakefulness was the cause of the functional activity of the brain, and that the opposite state of the circulation gave rise to the cerebral inactivity of sleep. The state of sleep was accurately distinguishable from that occurring in all varieties of coma. Mr. Durham's views were ably supported by Professor Draper, of New York, but dissented from by Dr. Beale.

"Dr. R. M'Donell considered the subject of 'Sugar and Amyloid Substance in the Animal Economy,' and detailed a number of experiments.

"M. Ollier, of Lyons, exhibited a series of experiments illustrating the 'Artificial Production of Bone and Osseous Grafts.' His observations were wholly in French, and a portion of the discussion was in the same language. In one specimen the radius had been wholly removed, leaving the periosteum entire, and the bone was reproduced. In a similar experiment, with the removal of the periosteum as well, there was no regeneration of bone. He transplanted portions of periosteum round the muscles of the thigh, and they secreted bone. This was done in the form of strips twisted round, and they secreted bone of a spiral shape. In fact, any form of bony secretion can be obtained almost at the fancy of the experimenter. M. Ollier transplanted portions of periosteum from one part of the body to another, beneath the skin of the head and elsewhere, and not in contact with bone, and obtained bony secretions from them. This could also be obtained by transplanting this membrane from one animal to another. He transplanted entire bones and portions of bones with their proper membranes, and they retained their vitality; if the membranes were removed in these experiments, the bones died, and suppuration ensued. All these osseous secretions possessed the true and normal characters of bone. The specimens clearly proved all the author advanced, and it would seem that the periosteum is the true secreting membrane of bone, and that it can be grafted in a manner similar to that of plants, and will, as it were, take root and grow.

"Dr. Radcliffe showed a number of experiments 'On Muscular Action in an Electrical Point of View.' These were on the limbs of frogs, and were made with the aid of an electric battery.

"Dr. Beale demonstrated, by a series of preparations and diagrams, how every elementary fibre of striped muscle was abundantly supplied with nerves. He believes that every single fibre receives one or more nervous fibres, which will be found hereafter to account for complicated muscular movements. Wherever these minute nerves are distributed are found little oval bodies, which are the means of communication between the muscular and nervous fibres. These nerves are found to be more numerous in some muscles than in others—the tongue and diaphragm, for example—and are surrounded by multitudes of these oval bodies. The nervous fibres are constantly undergoing decay and being reproduced. Dr. Beale's discovery is one of considerable value in physiology, and much importance was attached to it by the association.

"Professor Van der Hoevan made some remarks on the anatomy of 'Potto,' a curious species of small monkey from Borneo.

"Dr. B. W. Richardson read a lengthy paper 'On the Influence of Oxygen on Animal Bodies.' He enumerated a series of laborious experiments on the inhalation of oxygen. By these he established two major propositions:—1. That the influence of pure oxygen on animals varies according to the animal, being most marked in those of quick respiration and high temperature, and less marked in those of feeble respiration and lower temperature. 2. That oxygen gas, breathed over and over again, and freed entirely from any substances which we as yet know as products of respiration, loses the power of supporting life, the vital process ceasing, not from the introduction of a poison, but as by a negation, or withdrawal of the vivifying principle.

"'The Physiological Relations of the Colouring Matter of the Bile' was the subject of the next paper, by Dr. Thudichum. He had subjected various specimens of chlorochrome (as he proposed to term the substance) to chemical analysis, and found that it was an amido-acid, and nearly related to the other acids of the bile. Its precipitation from solution in bile, when it occurred already in the gall-ducts, by a process closely resembling that of putrefaction of bile in a bottle, was an ascertained cause of so-called idiopathic jaundice. He described various products of decomposition of chlorochrome; amongst them, chlorochromic acid, a substance which, microscopically, closely resembled hæmatoidine."

IS THE REMEDY WORSE THAN THE DISEASE?

It has been proposed to purify the water of the River Thames, which during the two past years has been in the summer months very offensive, and consequently fears have been awakened of its being productive of disease, by means of the perchloride of iron, which effectually precipitates organic matters. Dr. Letheby, however, in his report to the Commissioners of Sewers of the City of London, states that there is an uncertainty in this proposed plan for deodorizing the river, and although, "happily for us, there is evidently some condition wanted to make 'this filthy river capable of generating cholera, or of forming a soil fit for the germination of the seeds of that disorder when introduced into it,' yet this is no argument for the neglect of sanitary precautions, or for disregarding every means for abating the noisome condition of the river. Nor is it a reason for temporising with the mischief, by resorting to any doubtful expedient that may merely serve as a disguise for the nuisance." Already, he adds, "I have reported on this matter, and have directed your attention to the uncertainty of the proposed plan for deodorizing the river by means of perchloride of iron. But since then I have ascertained that the perchloride is highly charged with a compound of arsenic, which is exceedingly poisonous. A sample of the liquid furnished to me by the patentee, Mr. Dales, and described by him as the same as that used in the experimental inquiries for the Board of Works, has yielded from 296 to 297 grains of chloride of arsenic per gallon. If, therefore, the sewage of London were deodorized in the way proposed, there would be discharged daily into the Thames as much as 227 pounds of chloride of arsenic. I cannot tell you what would be the consequence of this, but it would be equivalent to the casting into the river about one hundred weight and a half of powdered arsenic daily. It is true that the poison would be diluted with a large quantity of water and with many millions of gallons of sewage, but a knowledge of this fact would afford no relief to our apprehension of danger, or to the anxiety that must be felt lest the accumulated effects of the poison might not, in the course of a very short time, be dangerous in the extreme."

En passant, it might be here observed, that in investigating suspected matters for arsenic by Marsh's process, great care should be taken to ascertain that the sulphuric acid employed is not contaminated with that mineral substance, as much of this acid in the market is made from pyrites, in which arsenic exists often largely. Hence the advantage of effecting the decomposition of the suspected solution by means of electricity.

INVESTIGATIONS CONCERNING HYDROPHOBIA.

From a series of returns made upon this subject, from different departments in France, during several years, and epitomised by Dr. Tardien, in the 'Annales d'Hygiène Publique,' we glean some interesting information upon the following points :—

I. *The species of animal by which the hydrophobia was communicated.*—Out of a total of 228 cases in which reference was made to this point, 188 were stated to have been produced by the bite of a dog, 13 by that of a cat, 26 of a wolf, and 1 by the bite of a fox. In two cases in which the bite of a cat produced the disease, one animal is reported to have become rabid in consequence of an extensive burn, another owing to its having been robbed of its young. These cases are of considerable interest, as they tend to resolve the still doubtful question of the spontaneous development of hydrophobia in other species of animals than the canine.

II. *The season of the year at which this disorder is most frequently developed.*—This circumstance was noted in 181 cases, 110 of which occurred during the hot seasons of the year, 71 only during the cold. There is, doubtless, a marked difference in favour of the months in which the temperature is most elevated, but it does not remain a less constant fact that no season is really opposed to the development of hydrophobia, or can render its effects less formidable.

III. *The average number of persons who escaped the malady after being bitten.*—On this point we have the records of 198 cases of persons who were bitten, in many instances by the same animal; of these, 112 were subsequently seized with hydrophobia, whilst the remaining 86 experienced no ill-effects. We need scarcely remark that numerous adventitious circumstances, such as the interposition of an article of clothing to which the saliva of the rabid animal might adhere, the state of the patient's mind or health after the injury, &c., would considerably influence the results in this particular.

IV. *The length of the stage of incubation.*—In a large majority of cases this was not more than a few weeks. Out of 147 cases referred to, the period of incubation was under a month in 26, more than a month but under three months in 93 cases, whilst in the remainder the length of time occupied was from six to twelve months. The incubatory period appeared shorter in very young persons than at any other age.

V. *The length of time between the development of the disease and its fatal termination.*—On this point the statistics collected corroborate too fully the preconceived ideas, as to the rapid progress of the disorder. Out of 161 cases, death put an end, within a week, to the horrible sufferings of the patients in 158, more than one half of that number dying within four days, even, from the time at which the malady first manifested itself.

VI. *The relative efficacy of the means employed to prevent the development of hydrophobia.*—Upon this all-important portion of the subject Dr. Tardien observes that the fact cannot be too strongly insisted upon, that the only hopes of security from the fatal effects of this dreadful disease consist in immediate cauterization with the red-hot iron, and that every other method only compromises the future safety of the patient by the irreparable loss of the only moments during which the preventive treatment is applicable.

VII. *Curative treatment of hydrophobia when it has become developed.*—Dr. Tardien makes the disheartening statement, that of all the remedies which have as yet been suggested, chloroform included, for the treatment of hydrophobia when fully developed, he has found none to have been attended with sufficiently promising results to enable him definitely to say that it will effect a cure.—*The London Medical Review.*

NOTE ON THE COLORATION OF THE BONES OF THE FŒTUS, BY THE ACTION OF MADDER MIXED IN THE FOOD OF THE MOTHER.

By M. Flourens.

It is near twenty years since I presented to the Academy (3d February, 1840) two or three skeletons of pigeons, reddened by the action of madder, which had been mixed for a certain time with the food of those animals. The last experiments of this kind, made in France, were by Duhamel in 1739, just a century before mine. The experiments of Duhamel being almost forgotten, mine were received with curiosity by physiologists.

At the meeting of the Academy on February 24th, 1840, passing from my observations on birds to those of mammals, I presented to the Academy the skeletons of two or three puny pigs whose bones and teeth were completely reddened by the action of madder mixed with the food.

To-day I present to the Academy a fact much more curious, and, as I believe, quite new. Not merely are the bones of the animal itself nourished with madder, but those of the fœtus also are reddened, and of much deeper colour, by the single circumstance that the mother has been submitted to a diet mixed with madder during the last forty-five days of gestation.

And not only have all the bones become red, but the teeth also, and what is remarkable, in a manner much more complete and uniform than when the fœtus, being born, is itself submitted, so soon as it can eat, to the madder régime. So much greater permeability does the tissue of the embryo afford to the circulation of the blood of the mother. But it is only the bones and the teeth which become thus affected. Neither the periosteum, nor the cartilages, nor the tendons, nor the muscles, nor the stomach, nor the intestines—nothing, in a word, which is not bone—is thus coloured.

I can show to the Academy three pieces, which are three parts of the same skeleton.

The first is the right tibia. All the bone is red, but neither the periosteum nor the cartilage is at all so.

The second piece is the left tibia. A shred of periosteum has been detached at one point, and it is seen to preserve its ordinary white colour.

The third piece is the rest of the skeleton. One may remark above all the teeth, which are perfectly coloured.

The sow which gave me this fœtus produced five at the birth. Two were dead, and both were found equally coloured. Three others live, and we may judge by the colour of the teeth, that of the rest of the skeleton.

The mother does not communicate directly or immediately with the interior of the fœtus except through the blood. Now, the connexion of the blood of the mother with that of the fœtus, in whatever mode that may be, which I shall examine in another note, is a fact full of consequences.

How does the fœtus respire? How is it nourished? Evidently through the blood of the mother. All physiologists have also thought and said so. But does the blood of the mother communicate with that of the fœtus? Here is the whole question, and by the specimens which I bring before the Academy, one may see that it is solved.

The blood of the mother communicates so fully with that of the fœtus, that the colouring principle of madder, the same principle which colours the bones of the mother, colours also the bones of the fœtus.—*Comptes Rendus.*

CHEMISTRY IN ITS APPLICATION TO AGRICULTURE AND PHYSIOLOGY.

By A. S. Copeman, V.S., Utica, N.Y.

(*Continued from page* 487.)

Life presupposes the constant correlation of two indispensable elements, an *organism* and a medium, understanding by *medium* the whole of the surrounding circumstances necessary to the existence of the organism. From the reciprocal action of these two elements result all the phenomena of life.

Seeing that the first transformation of inorganic into organic substances takes place in vegetable assimilation, and that all subsequent transformations into higher tissues are but modifications of that one process, it is clear that the elementary laws of assimilation may more easily be detected in the vegetable than in the animal world.

Confining ourselves, as we have done hitherto, to the teachings of observations and induction, we have to ask this question: What is the form which, being universal, may be supposed indispensable to organic life? Half the prosperity of philosophy lies in being able to put a definite question. Interrogate nature, and she will answer. She answers in this case emphatically, a *Cell.* The cell, or sphere, is not only the typical form of an organic being, that with which every organic being from the lowest to the highest commences; it is the indispensable condition of the being's existence. A cell is the whole of one of the simplest plants, such as the *Proto coccus,* and then there are large plants which are nothing more than the association of myriads of such cells. The lowest type is thus a cell; the second stage in advance is an association of cells; the third, a transformation of these cells into a tissue, but in one and every case the starting-point of organic life is the assumption of cellular or *spherical form,* and in consequence of these forms peculiar properties manifest themselves.

The novelty of this statement may startle, but what is it more than the mineralogist's explanation of crystallization? Just as the solution of a salt becomes a crystal *only* when its molecules arrange themselves in a determinate form, so does the blastema become vital *only* when its molecules arrange themselves in a determinate form. Not only is this assumption of a *spherical form* the last step in the process, but by the loss of that form the cell loses its peculiar vital characteristic reproductive powers.

The basis of the substance of all vegetables, when examined by the microscope, is found to consist of cells; even in the most highly developed plants all the organs are in the youngest condition composed of cells alone, and the vessels only appear during the subsequent development. If a row of cells arranged in a line become combined during the course of their development into a tube, with an uninterrupted cavity, through the absorption of their cross-walks, a compound elementary organ is produced—*the vessel.* The basis of the membrane of vegetable cells consists of cellulose, a colourless substance, which is insoluble in cold and boiling water, alcohol, ether, and dilute acids. It is converted into dextrin by dilute sulphuric acid at boiling heat. When imbued with iodine, it becomes coloured indigo-blue. The credit is due to Payen of having demonstrated that the substance of all cells, from the highest plants down to the fungi, when purified from foreign deposits, exhibits the same composition, and assumes the blue colours of cellulose on treatment with iodine and sulphuric acid.

Cellulose probably does not occur in a pure condition in any cell-membrane, since a series of both organic and inorganic compounds are deposited within it; in which fact is to be sought the explanation of the manifold physical and chemical differences which are exhibited by the membranes of the same cell at different periods of their age, as well as by the cells of different plants.

In all plants a skeleton (the ash) corresponding to the form of the membrane, and composed of the alkalies, earths, and metallic oxides which had been deposited in it, remains behind after the cells have been burnt.

Since the corners and edges of cells are generally rounded off so that their flat faces meet at sharp angles in comparatively few cases, it follows necessarily from this condition that the cells are not coherent together by their whole surfaces, but leave empty spaces between them, which run along the edge of the cells in the form of triangular canals, opening into each other at the corners of the cells, and forming a network of tubes branching throughout the whole plant, to which the name of *intercellular passages* has been applied. In living plants, they are, with few exceptions, filled with air.

If a tissue composed of young cells be left some time in alcohol, a very thin membrane becomes detached from the inside walls of the cells in the form of a closed vesicle which becomes more or less contracted, and consequently removes all the contents of the cell which is inclosed in this vesicle from the walls of the cells. This inner wall is called the *primordial vesicle;* according to Mulder, *proteine* may be always detected in it, but no cellulose. In the centre of the young cell, with rare exceptions, lies the so-called *nucleus*. The remainder of the cell is filled with a viscid fluid containing an abundance of *albumen*.

No plants except the fungi are without *Starch*. Whether or not starch occurs in an amorphous condition is still doubtful. It is likewise doubtful if it occurs in a state of solution. The form in which starch occurs universally is that of small colourless transparent granules, which are accumulated in the cells without definite arrangement and in variable numbers, sometimes swimming freely in the sap, sometimes slightly adherent to the walls. Their size varies from an immeasurably small diameter to a magnitude visible even to the naked eye, but the maximum size of the granules of each plant is tolerably definite. Like the size, the form of the granules varies extremely in different plants, and is sometimes so characteristic that, in many instances, we can determine by the microscope the source whence a starch has been obtained. In all vegetable cells starch is a transitory product, and applied to various purposes of nutrition. Thus the starch disappears from the albumen of the seeds of palms about the period of maturation, and in its place appears a fixed oil, for which it undoubtedly furnishes the materials; it also disappears during the germination of seed and bulbs, serving for the nutriment of the young plant, &c.

Certain compounds, most closely allied to starch, escape from microscopic observation, because they are dissolved in the cell-sap; these are gum and sugar.

Sugar is very widely distributed, since it not only replaces starch, as in the sugar-cane, the beet, &c., but still more frequently precedes the deposition of starch in an organ, and is also formed at the solution of starch, as in trees, in the spring, in the germinating seeds, &c.

The *essential oils*, when produced in large quantity, usually completely fill isolated cells and cavities which lie between cells.

All plants prepare a more or less abundant quantity of organic acids, oxalic, malic, citric, tartaric, &c.

In plants the fluid nutriment is taken up by absorption through cells. As the cell's membrane has no orifices, only such matters as are actually dissolved can be absorbed into the cells, with the water which penetrate the cell's membrane. It has long been decided that solid substances, insoluble in water, cannot pass into plants, but this may be doubtful of the colouring-matter of phytolacca, of decoction of logwood, of infusion of saffron, &c., since many observers, *e. g.* De Candolle, have seen such colouring-matters pass into living plants. But all accurate observations indicate that this does not happen in uninjured roots, but only occurs when the coloured fluid comes in contact with wounds of the plant.

Since the discovery of *endosmose* most vegetable physiologists have assumed it as an axiom that the absorption of cells depends wholly and solely upon the laws of endosmose, none of the peculiar forces of the living cell co-operating. All the conditions to bring about good strong endosmose do really exist in the living vegetable cells, namely, a membrane freely penetratable by watery fluids; on the one side of this the cell-sap, which contains proteine substances, dextrine, sugar, &c., in solution; on the other side, the water occurring in nature, in the state of an extremely diluted saline solution.

Since the leaves have a large surface with a comparatively small mass, they are fitted to evaporate a great quantity of water; thus, for example, in Hales' experiment, a sun-flower, three and a half feet high, lost on an average a pound and fourteen ounces of water daily on warm and dry days. So considerable a loss of water cannot remain without reaction upon the absorption of the root-cell. For since the sap in the cells of the leaves becomes so much more concentrated, through the loss of water, their power of inducing endosmosis will increase in proportion; they replace the water taken from them from the cells of the stem, and so this action is continued through the whole tissues of the plant, down to the roots, which strive to absorb water from without in the same proportion as it is evaporated from the leaves. A proof that the evaporation of the leaf actually increases the absorption is again furnished by the experiments of Hales, according to which the quantity of water that a shoot absorbs is in direct proportion to the number of its leaves; and the quantity of water absorbed sinks to one half, when half the leaves are cut off the shoot.

The question, what nutrient matters serve for the food of the plants, includes a twofold one. First, what elementary materials are made use of by the plant, in the formation of its substances? and, second, what are the combinations in which these elementary materials are taken up by plants?

The number of elementary substances which occur in plants constantly, and therefore must be looked upon as natural constituents, is very inconsiderable, viz.:—1 oxygen, 2 carbon, 3 hydrogen, 4 nitrogen, 5 sulphur, 6 phosphorus, 7 chlorine, 8 potassium, 9 sodium, 10 magnesium, 11 silicium, 12 iron.

Eight of these elementary substances must be present *in the soil* if plants are to flourish luxuriantly; these eight substances are like eight links of a chain round a wheel. If one is weak, the chain is soon broken, and the missing link is always the most important, without which the machine cannot be put in motion by the wheels; the strength of the chain depends upon the weakest of the links.

The principal mass of all vegetable substances is composed of oxygen, carbon, and hydrogen; these furnish the materials for the formation of the cell-membrane, and nitrogen is an essential constituent of the *proteine* substances, as albumen, &c. Sulphur and phosphorus, although contained in inconsiderable quantities in plants, play an important part, being necessary constituents for the formation of the proteine compound. And here it may be well to state more fully the important fact, that plants are formed from these materials, only when the *atmosphere and soil* supply them at the same time in suitable quantity and in proper proportions; the four "atmospheric elements," oxygen, carbon, hydrogen, and nitrogen, do not nourish without the simultaneous action of the elements of the soil, and the latter are equally valueless without the former. It hence follows, as a matter of course, that no single element of plants named above possesses superiority over another.

Of all the elementary substances which enter into plants oxygen is the only one that is taken up in a pure condition; plants can only appropriate the others out of chemical compounds, which for the most part they decompose. Here at once arises the question, whether the elementary substances, when they are to serve as food for plants, must be already combined with organic compounds, or whether plants possess the power of feeding upon inorganic compounds? In no question of vegetable physiology has so active a strife existed as on this, especially since Liebig appeared as a defender of one of the extreme answers to it.

Although no universally valid answer can be given to this question, it is beyond any doubt that plants, if not as a whole, yet in an overwhelming majority, possess the power of forming organic out of inorganic substances, and that inorganic substances mostly play the principal part in nutrition. This is evident both from observations made on a large scale in free nature, and in small artificial experiments.

The bowels of the earth rumble and heave; Vesuvius opens her fiery mouth, and vomits forth a sea of vapours and molten lava; the fumes of her sulphurous breath slowly descends like a mist, which is absorbed by the sand and ashes around her cooling feet. Time rolls on, the lava is bleached and becomes porous fossile, and honeycombed, till at length it crumbles into powder, the type of a fertile soil.

This soil, being derived from the disinegration of lava, cannot possibly, owing to its origin, contain the smallest trace of *vegetable matter;* yet every one knows that when lava or volcanic ashes have been exposed for a time to the influence of air and moisture, all kinds of plants grow on them with the utmost luxuriance.

It is perfectly universal experience, that when the vegetation is left to itself upon a particular soil, and its products are not removed from the ground, organic substances are formed, in consequence of the death of plants accumulating from year to year, which can of course only be the case through each generation of plants producing a greater quantity of organic substances than it consumes. It is not requisite to demonstrate more minutely how these circumstances show the *total error* of the view, supported, indeed, less by vegetable physiologists than by "popular" writers on agricultural chemistry, that plants subsist solely on the mouldering remains of former plants or animals.

The inorganic compounds which are taken up by plants as food, and which furnish them with the four principal elementary bodies which they require for their formation, are water, carbonic acid, ammonia. As the absorption of watery fluids has already been discussed, we now turn to the consideration of carbonic acid. This, it is well known, exists universally diffused in atmospheric air and in water; experiments prove that plants do not absorb the carbonic acid dissolved in water with the latter by means of its roots, but that their leaves possess in a high degree the faculty of absorbing carbonic acid, and of liberating oxygen.

We owe the more accurate knowledge of this process to the admirable experiments of Saussure, Grischow, and Boulsingault. When a leaf-shoot, with its lower end dipping in water containing carbonic acid, is enclosed in a glass globe, its leaves exhale more oxygen than when its lower end is dipped in common water. A leafy shoot still connected with the tree, enclosed in a glass globe, increases the oxygen in the globe. Pieces of torn leaves possess this function, as well as the entire leaves.

The phenomena may, in fact, be summed up in the following statements. When plants are exposed to the influence of *sunlight* in atmospheric air, they remove the carbonic acid and exhale oxygen in its place.

We know scarcely anything of the chemical processesi n the interior of plants, on which depends the assimilation of the nutrient matter taken up, and the gradual conversion of this into the various compounds which the plant contains.

One of the most general phenomena, since it occurs in all green-coloured plants, is, as we have seen, the absorption of carbonic acid, and the exhalation of oxygen gas. The experiments of Saussure demonstrate that this process stands in most intimate connexion with the function of organic substances; nothing seemed easier than to explain this process. The neutral compounds of the plant, dextrin, gum, sugar, and starch, are composed of carbon and the elements of water; it was only requisite to assume that the carbonic acid was decomposed in the leaves, its oxygen given out as gas, its carbon combined with water, which is never wanting in the plant, and the entire process was elucidated in the simplest way. The theory consequently met with universal acceptation. The compounds containing nitrogen stand in opposition to those devoid of it. Though in quantity they may stand far behind the latter, their importance in the vital phenomena of plants is not less; nitrogenous (proteine) substances, as we have seen, line the cells, as the *primordial vesicle*, and, consequently, the contents of the cells are ordered under their immediate influence; they originate the development of new cells, and set in action the decomposition of carbonic acid. It is now as good as certain that ammonia furnishes the nitrogen requisite for the formation of the proteine substances. Of the formation of the other nitrogenous compounds, such as the vegetable alkaloids, essential oils, &c., and of their import to the plant, we know little or nothing.

A portion of these substances, as the essential oils, the milky juices, the alkaloids, are in the highest degree poisonous, both to the plants which prepare them and to others, when they are caused to absorb them. These secretions are commonly separated from the other matters within the plant, being either enclosed in special cells, or contained in canals which run between the cells: this is universally the case with the milky juices.

Having thus considered the vegetable cells with reference to its mysterious *form* and wonderful *properties*, let us pause to reflect for a moment on the *minuteness* of their organs, by which the smallest fern and the largest tree in the forest is fed and sustained. Microscopic mouths in the leaf suck in gaseous food from the air; the extremities of microscopic *hairs* suck a liquid food from the soil.

We are accustomed to admire, with natural and just astonishment, how huge rocky reefs, hundreds of miles in length, can be built up by the conjoined labours of myriads of minute insects labouring together on the surface of a coral rock; but it is not less wonderful that, by the ceaseless working of similar microscopic agencies in leaf and root, the substance of vast forests should be built up and made to grow before our eyes. It is more wonderful, in fact; for, where in the one case "dead matter" extracted from the sea is transformed only into dead rock, in the other the lifeless matter of the earth and air is converted by these minute "plant-builders" into living forms, lifting their heads aloft to the sky, waving with every wind that blows, and beautifying whole continents with the varying verdure of ever-changing leaves.

POISONOUS METALS IN CHEESE.

At the late meeting of the British Association for the Advancement of Science, Professor Voelcker stated that he had detected both copper and zinc in cheese; in some specimens copper, in others zinc, and in some both copper and zinc. The descriptions of cheese in which these poisonous metals were found were double Gloucester and Stilton. Skimmed-milk cheese, which was likewise examined for copper and zinc, did not contain any metallic impurity. Inquiry led to the discovery that in many dairies sulphate of copper, and sometimes sulphate of zinc, are employed in the making of cheese. The reasons for which these prejudicial salts are added to the cheese are variously stated. Some persons added sulphate of zinc, with a view of giving new cheese the taste of old! Others employed sulphate of copper for the purpose of preventing the *heaving* of cheese. Dr. Voelcker also stated that he had found alum in Gloucester cheese, and mentioned that he had learnt that in some dairies alum was employed to effect a more complete separation of the caseine from the whey. In the course of his experiments the Doctor said he had found that copper and zinc cannot be detected in an ash when much carbon is present.

ANTIDOTE TO STRYCHNIA.

The active principle of tobacco—*nicotine*—has been proposed by Mr. S. Haughton as an antidote to strychnia. He was led to try the effects of nicotine as an antidote from the opposite physiological properties of that substance when compared with those of strychnine, (the former producing relaxation and the latter contraction of the muscles); and he conceived that it was possible, from their opposite effects, that they might mutually neutralize, as it were, each other's action. To determine this important question he instituted several interesting experiments on frogs, which he placed in different solutions of strychnine and of nicotine, and the results clearly show the correctness of his inference as to nicotine being more or less an antidote to strychnine.

An infusion of tobacco, it appears, has been thus used with success in the United States.—*Chemical News.*

TWO ACTIVE PRINCIPLES IN THE SQUILL.

M. Mandet has separated two active principles from the *Scilla maritima*—one an irritating poisonous body, to which he has given the name *skuleine;* the other, *scillitine*, possessing in a high degree all the diuretic and expectorant properties of the squill, but incapable of producing the accidents which have followed the administration of some of its preparations. We hope we shall soon be told how the latter useful and harmless body is separated from its dangerous relative.—*Ibid.*

DETECTION OF ERGOT IN RYE FLOUR.

Pure and white rye flour keeps its colour when mixed with water in a mortar; but Elsner points out that if only two per cent. of ergot be added, the flour, when wetted, changes from white to a chamois-leather colour. With but one per cent. the change is apparent. Wittstein gives a process founded on the disengagement of trimethylamine when ergot is treated with potash. The suspected flour is moistened with water, and then introduced into a tube and covered with a solution of caustic potash. In a short time the fishy smell is very apparent, but it is developed much more quickly when the mixture is heated. It is best, the author thinks, to operate in the cold, and cork the mixture up in the tube. The flour then becomes yellow, and at the same time manifests the odour in question.—*Ibid.*

Translations and Reviews of Continental Veterinary Journals.

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

Annales de Médecine Vétérinaire, July, 1860.

RÉSUMÉ OF THE GOVERNMENTAL VETERINARY REPORTS ON THE HEALTH OF ANIMALS IN THE PROVINCE OF BRABANT, 1859.

From this report we find that glanders has diminished in frequency, and also pleuro-pneumonia, in some cantons, while in others the number of cases has been even greater than usual. Inoculation for the latter is not mentioned by any practitioner in his report. Of apoplexy of the spinal cord, which was so frequent, in 1858, in East Flanders and the province of Antwerp, only two cases in each have been observed by MM. Dubois and André, and these were complicated with paraplegia: neither of them, however, terminated fatally.

In one case M. Dubois observed that the urine was bloody and contained oil. This peculiarity has been unnoticed by most in acute affections of the spinal marrow. It may be added that it also loses its characteristic odour. It is the more necessary to notice this alteration of the urine in affections of the spinal cord, so as not to confound them with rheumatism of the lumbar region.

M. Lecouturier observes that traumatic pericarditis is more frequent than is generally believed. Every year from ten to twelve cases occur, which in twenty years gives an average of 200 beasts which have either died or been killed on account of it.

TUBERCULOUS DISEASE IN A COW.

Under this head M. Fabry reports a case which is important, inasmuch as the symptoms resembled, more or less, those of pleuro-pneumonia. A young cow, which was fattening in a meadow, presented the following symptoms: the head extended; respiration quick, difficult, and oppressed; the expirations being short and grunting. Auscultation gave the vesicular murmur somewhat more increased than ordinary; the percussion, without being dull, was nevertheless not sonorous; the appetite was lost; the evacuations were scanty, soft, and fetid. There was also an uneasy shifting of the fore legs at times, indicative of entero-peritonitis.

Those who saw the animal were of opinion that it was a case of pleuro-pneumonia. M. Fabry was likewise uncertain as to the nature of the malady, but at the end of three days he was convinced of the non-existence of that disease, which would have been discovered by the absence of the respiratory murmur and the increased tubular respiration in one of the lobes of the lungs, consequent on hepatization of the same. The author concluded that there was no serious lesion of the lungs, seeing that the respiration, although somewhat increased, differed not from the normal action. The animal having been sacrificed, M. Fabry, on his arriving, found only the lungs and the liver left behind. The latter organ was of an extraordinary size, of a dark-red colour, and literally studded with tubercles in a crude state, varying in size from that of a walnut to a swan's egg. The gall bladder was three times its natural size, and the bile was thick, of a dirty-green colour, and flocculent. The lungs presented a few tubercles, existing towards the upper border of these organs. M. Fabry also learnt that on opening the abdomen a quantity of bloody serum escaped. His deductions, from what he had seen and been informed, were, that the animal was affected with entero-peritonitis, and the state of the respiratory organs must be attributed to the pressure on the diaphragm, caused by the enormous size of the liver.

DISEASE IN SWINE.

M. Scheler reports that charbonous erysipelas has prevailed in a great number of pigs, but as the authorities had not interfered, he was unable to give any information on the extent of the epizootic.

In the canton of Vilvorde many pigs had died of pleuro-pneumonia. The symptoms given by M. Elson were decubitus on the belly, frequent plaintive grunting, painful and dry cough, loss of appetite, losing flesh rapidly, and death taking place in from twelve to fourteen days.

Journal des Vétérinaires du Midi, May, 1860.

TORSION OF THE VAGINA AND THE NECK OF THE UTERUS.

By M. Mottel, Veterinary Surgeon.

Two opinions have been advanced as to the best means of restoring these parts, when in this state, to their normal condition; one by M. Weber, who gives the preference to turning of the cow, more or less multiplied, in the direction of the torsion, while the practitioner fixes the organ by the introduction of his arm. The other opinion is that of M. Goubaux, who prefers the rotation of the body in a contrary direction, and who has come to this conclusion from some very ingenious experiments made on the dead bodies of animals.

The author of the paper does not intend to enter upon the consideration of the respective merits of these opinions, but simply to contribute two cases which have come under his observation, since it is of great importance that the practitioner should be decided in what manner to operate when called upon.

In the first case, the twist was so complete that it was impossible to introduce the finger. The cow was secured by her legs being tied, and laid on her left side, when three turns in the direction of the twist (that is, from right to left) sufficed to restore the parts to their natural position, and that without fixing the organ by the introduction of the hand, as recommended by M. Weber. This precaution seems to be useless. Parturition was only effected the next day, the cow making no efforts after the operation, and she died soon afterwards.

The second case was a young cow, with her first calf. She had been straining for the previous thirty hours, but without any result. On examination, torsion of the vagina and of the neck of the uterus was found to exist, from left to right. The twist was so complete that the os uteri could not be felt. In this case the author decided on trying the process recommended by M. Goubaux, that is, turning in the contrary direction of the torsion. After having secured the cow and laid her on the left side, six rotations were made from right to left, without any effect. Annoyed at this, the author directed the rotations to be reversed, giving only two and a half, which restored the parts to their normal state; and this too was done without fixing the organs by the introduction of the arm.

But the os uteri, even after the parts were restored to their normal state, was found so completely closed that it was considered desirable to wait a few days, expecting that its contraction would become less. Meanwhile, the proprietor, fearing the result, had the animal slaughtered and sold.

This occlusion of the uterus, at the moment of parturition, seems to be caused by the twisting of the vagina and the neck of the uterus, and which allows not of parturition taking place, by preventing the gradual pressure of the fœtus; hence these anomalies must often occur together when the twisting has taken place a long time before parturition. The author therefore concludes that, in the first of these two cases, the torsion occurred only a short time before the period of parturition, while in the second it must have taken place at a time when gestation was not so far advanced.

Notwithstanding the ingenious means which may be resorted to in order to produce the torsion of these parts, and to restore them afterwards to their normal state in the dead body, it may be doubted if they are identical with what takes place in the living one. Twice the author has successfully restored the parts by turning the body in the direction of the twist, which proves that this method may be used in preference to that of turning the animal in an inverse direction to the torsion.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL.

At the quarterly meeting of the Council, held July 18, 1860,

Present:—The President, Messrs. Barrow, Broderick, Braby, Ellis, Harpley, Hunter, Jex, Lawson, Moon, Robinson, Secker, Withers, Professor Simonds, and the Secretary,

J. Wilkinson, Esq., the President, in the chair,

The minutes of the preceding meeting having been read and signed,

The Registrar's report was read and adopted. It stated that thirty-seven candidates have been admitted members of the Royal College of Veterinary Surgeons during the past quarter—twenty-six from the Royal Veterinary College, London, nine from the Edinburgh Veterinary College, and two from the New Veterinary College, Edinburgh. The number of members at present on the list is 1487.

The quarterly balance-sheet was read, showing a balance in hand of £585 18*s.* 7*d.*; and on the motion of *Mr. Secker,* seconded by *Mr. Moon,* it was declared duly accepted.

The election for the committees for the year was then proceeded with.

The Finance Committee—Messrs. Braby, Ernes, Jex, Simonds and Wilkinson.

The House Committee—Messrs. Field, Spooner, Broderick, and Ernes.

The General-purpose Committee—Messrs. Spooner, Robinson, Silvester, Field, Ernes, and Withers.

The Registration Committee—Messrs. Simonds, Varnell, and Wilkinson.

On the ballot being taken for the election of a Registrar, *Mr. Gabriel* was declared unanimously re-elected.

Mr. Lawson's motion, seconded by *Mr. Ellis,* "That the allowance of one hundred pounds be placed at the disposal of the Secretary for the ensuing year," was carried unanimously.

The motion of *Mr. Withers,* of which notice had been given at the previous meeting, seconded by *Mr. Lawson,* "That the custom which existed previous to the time when the veterinary members of the Examining Board relinquished their fees be reverted to," was carried *nem. con.*

Mr. Pritchard's notice of motion, given at the last meeting, "That the present investment of the funds of the College be taken into consideration, in accordance with the wishes of the Treasurer," having been discussed, it was unanimously decided, on the motion of *Mr. Pritchard,* seconded by *Professor Simonds*—

"That the funds of the College be transferred from the name of the Treasurer to that of the body corporate. And that in future all cheques be signed by the President, Treasurer, and Secretary."

The following notice of motion was given by *Mr. Gabriel:* "That the Scotch portion of the Board of Examiners be re-organized."

E. N. Gabriel,
Secretary.

Veterinary Jurisprudence.

A curious dog case has just been concluded at Limoges. The unfortunate deceased—for, alas! poor Turk's death was the cause of the action in question—was a magnificent specimen of the Newfoundland breed, three feet high, and endowed with the happiest disposition and most amiable character: so ran the description of the defunct in the pleadings. He belonged to Dr. Guizard, formerly member of the Constituent Assembly, and commissary under the Republic in the department of La Creuse, and who lived in the little town of Guéret, where he practised the healing art. Turk was his companion by day and night, and his guardian on many a lonesome walk; no wonder, then, that the doctor had a deep affection for his four-footed friend. On May-day of last year the latter went out to a patient at Bonnat, and in the hurry, for the patient's case was desperate, Turk was left behind, lost his way, and wandered into the village of Croze: it had rained, and the dog was covered with mud and much excited, and attacked another that was engaged in watching a flock of sheep. The shepherd, terrified at the sight of the Grand Turk—who, besides his terrible size, foamed at the mouth, and had a good deal the appearance of being mad—uttered a cry and flew towards the village, the dog following at his heels. The son of the maire of Saint Fiel, a lad, and another person, named Baraige, fired at and killed poor Turk as dead as Goliah. Dr. Guizard was sorely grieved when he found what had occurred, and believing that the dog had been slain maliciously, he determined to revenge him; he brought an action against Baraige and the maire of St. Fiel, and laid his damages at 2000 francs. The people of the place took up the matter with much interest, and the partisans of Turk and of his murderers argued the matter at every wine-shop in the place. On the 15th of June the Court of Guéret was thronged by a dense mass of people eager to hear the judgment pronounced. The result was that the defendants were condemned to pay 250 francs damages and all the expenses. On the very morning after the decision Dr. Guizard died. His opponents appealed to the Superior Court of Limoges, on the ground that the dog was apparently in a rabid state, and that he had been killed to prevent a public catastrophe. Sixteen witnesses were called for the appellants; amongst them was Père Cacard, the *adjoint* of the maire, who declared he knew all about mad dogs, that Turk was mad, that his blood was not red, but yellow, approaching to green; and when told that the animal belonged to the doctor, he said, "So much the worse for him; but had it been the Emperor's, I would have had him killed." The widow Guizard called thirty-six witnesses, who gave poor Turk such a character as any Christian might be proud of; but one, a chevalier of the Legion of Honour, took a different line; he declared the dog to have been an absolute poltroon, and said, "If I had not feared to hurt the feelings of Dr. Guizard, who was attached to the animal, I should have said as much to him." A professor of the College of Guéret spoke in eloquent terms of Turk, and, as the reporter of the *Droit* put it, "strewed, as it were, some flowers on his tomb." Two printed statements, one of which ran to the extent of thirty pages, were circulated in connection with the affair. The Court of Limoges reversed the decision of the inferior tribunal, but left the appellants to pay one third of the expenses of the suit, which are declared to amount to 1500 francs. Madame Guizard will pay rather dear for the misfortune which befell poor Turk.

ARMY APPOINTMENTS.

ROYAL ARTILLERY.

G. Evans, Gent., to be Veterinary Surgeon.
J. Meyrick, Gent., to be Veterinary Surgeon.

OBITUARY.

In the monthly military obituary, we find the death of Veterinary Surgeon Joseph Ball, Royal Artillery, announced. His diploma bears date May 5th, 1852, Edinburgh.

We have also been informed of the death of Mr. J. T. Cockrane, of the Royal Artillery. He died at Dum Dum, near Calcutta, of dysentery. His diploma bears date London, April 27th, 1848. Likewise of Mr. T. Overton, of Merthyr Tydvil, who obtained the diploma of the same school in 1845.

THE

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Communications and Cases.

A PECULIAR AND UNUSUAL DISEASE OF THE OSSEOUS TISSUE IN THE HORSE; RESEMBLING IN MANY OF ITS CHARACTERISTICS MOLLITIES OSSIUM, RHACHITIS, OSTEOPOROSIS, AND FATTY DEGENERATION OF BONE.

By G. VARNELL, M.R.C.V.S.,
Assistant-Professor, Royal Veterinary College, London.

(*Continued from p.* 501.)

In the concluding part of my account of the singular disease of the osseous tissue, published in your last number, I gave a general description of the lesions which were observed *post mortem* in these interesting cases, and having done this, I now proceed with my narrative. The Christmas examination of the pupils, which was being held at the time of the occurrence of the cases, afforded me the opportunity of mentioning them to Dr. Sharpey, who was so much interested in the matter that he expressed a wish to make a microscopical examination of a portion of the bone, with a view to elucidate the pathology of the affection.

Accordingly I sent to University College portions of the lower jaw, and also of one of the ribs. The specimens were accompanied by a letter, informing Dr. Sharpey that *all* the bones of the two horses were still in our possession, and that we thought it might interest him to see them in their then present state. The day succeeding this, Dr. G. Harley came to the College, and stated that Dr. Sharpey had mentioned the subject to him, and had also shown him the portions of bone which I had sent; and as the disease presented many peculiarities of an unusual character, they were both very desirous of investigating its pathology more fully, and for this purpose he expressed a wish to be furnished with other specimens. As pathological anatomy is more especially within the province of Dr. Harley, this, no doubt, was the reason of Dr. Sharpey placing the matter chiefly in his hands.

On the 9th of January I received from Dr. Harley the following letter:

77, HARLEY STREET;
9th Jan., 1860.

MY DEAR SIR,—Professor Sharpey and I have examined the bones, and find that their microscopic structure is peculiar; so much so, indeed, that we think the subject worth bringing under the notice of the Pathological Society, if you do not object to such a course, and would kindly furnish me with the history of the cases.

One thing we should like particularly to know, viz., if the animals are all the offspring of the same parents; if the *mares* are likewise affected, and if they were stall-kept, or at large.

Very truly yours,
GEORGE HARLEY.

I not only readily consented to the matter being laid before the Pathological Society, but was pleased to find that it had excited so much attention; and therefore I wrote an affirmative to this request, and, at the same time, gave Dr. Harley a brief history of the horses that had been the subjects of the disease, as well as of those now affected.

On the 13th of January I received the following letter:

77, HARLEY STREET;
13th Jan., 1860.

MY DEAR SIR,—I have perused with much pleasure your interesting letter and answers; but there are still two or three points which I should like to have definite information on.

1st. Was the disease accompanied by any signs of pain, and in what time did it appear to run its course?

2d. Did the horses get the same amount of exercise as the mares, and are there other horses on the same farm that are still free from the disease?

3d. In what county are the farms; how far are they apart; and are there any factories or chemical works in the neighbourhood?

Would you also, at the same time, send me a small fragment of *healthy* bone from the outside of the ramus of a horse's jaw, in order that I may compare its structure with that of the diseased bone from the same locality?

Very truly yours,
GEORGE HARLEY.

Before replying to this letter I wrote to Mr. Champion, and received the following reply:

Calcot, Reading;
16*th Jan*., 1860.

Dear Sir,—I will answer your questions as correctly as my memory serves me.

1st. Some of the horses died after the disease had shown itself for about two months, but generally they were ill for six months, and in some cases more than this.

2d. The horses have had quite as much exercise as the mares.

3d. The two farms are about two miles apart.

4th. There are *no* factories or chemical works in the neighbourhood.

I remain, dear sir, yours truly,

W. W. Champion.

G. Varnell, Esq.

With a view, however, of obtaining still further information on this interesting subject, I wrote again to Mr. Champion, to the following effect:—

Royal Veterinary College;
Jan. 18*th*, 1860.

Dear Sir,—Being desirous of investigating the disease under which your cart-horses have laboured, and also the causes which gave rise to it, I have taken the liberty of drawing up a few questions for your consideration; and if you will kindly furnish me with answers to them, however brief they may be, I shall esteem it a very great favour.

I am, dear sir, &c.

George Varnell.

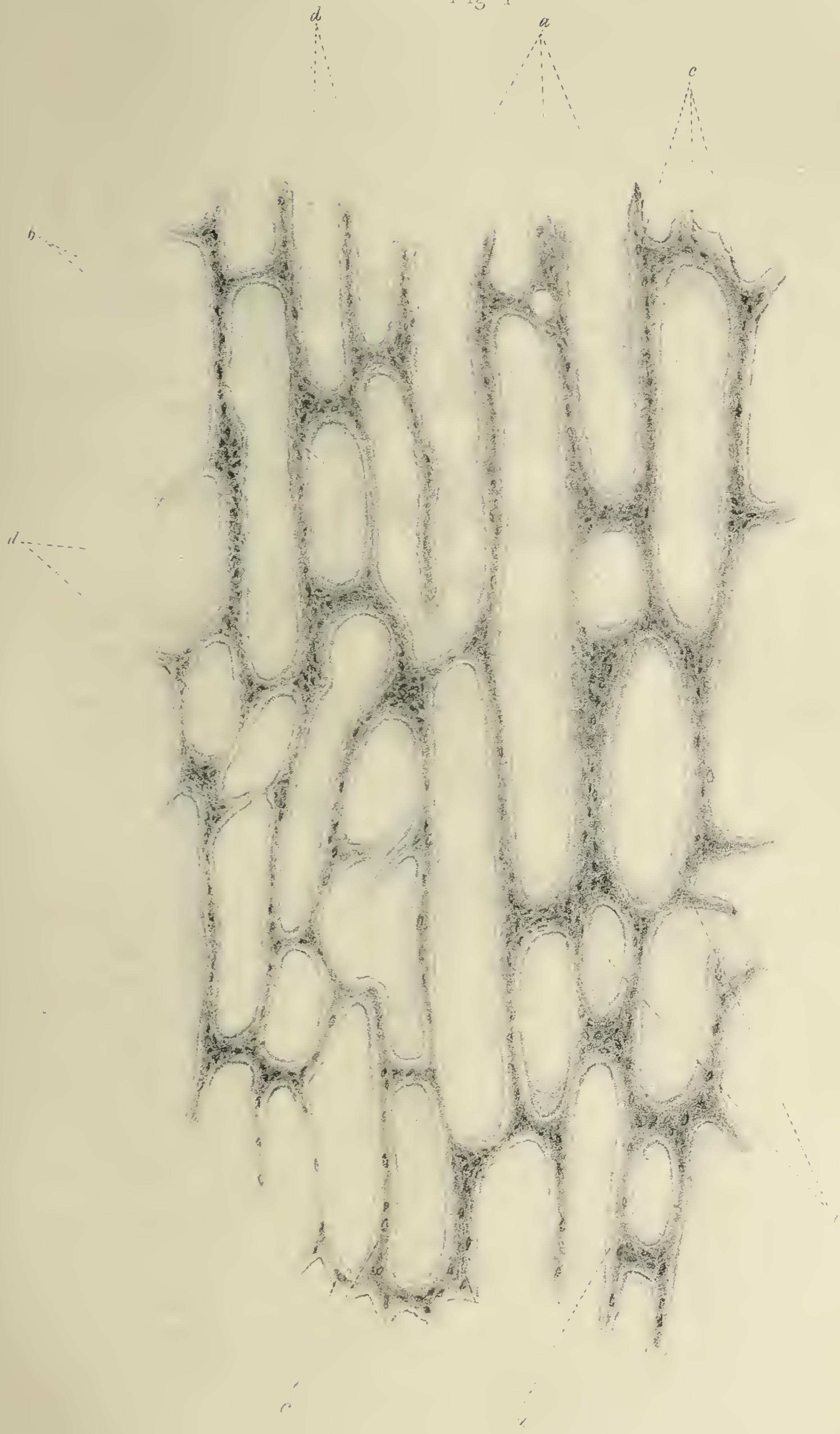
W. W. Champion, Esq.

Questions.	Answers.
No. 1. What was the age of each horse affected with this singular disease at the time he came into your possession?	No. 1. The brown horse you have at the College was bought at two years old; all the others were bred by me.
No. 2. Are you aware whether either the dam or sire of any of the horses had been subject to any special disease?	No. 2. None whatever, that I am aware of. The horses were by three different sires, out of four mares, three of which were not related to each other in any way.
No. 3. How had the horses been fed, from the time they were weaned up to the period of their being taken ill?	No. 3. With grass, hay, pollard, and a little oatmeal at first, and when the grass was finished, with roots of different kinds. The second year the animals were turned out to grass, and wintered as before. The third year they were taken into the stable, and fed on hay, pollard, and a few roots. In the succeeding summer they had green food, such as rye-grass, vetches, &c.
No. 4. Was the food the mares ate of the same kind as that given	No. 4. Although the mares were in foal, they were worked and kept

Questions.	Answers.
to the horses? or were they, in consequence of being bred from, kept longer upon pasture, thereby getting less bran?	the same as the horses, with the exception of the supply of roots, up to Christmas, when they ceased to work. After this, if they were in low condition, they had pollard, but, as a rule, only hay until they foaled, when they had hay, pollard, and a few roots, and as soon as the grass was ready they were turned out until September.
No. 5. Are there any indications at the present time of the disease existing in the mares?	No. 5. No signs whatever of the disease.
No. 6. Were there any horses at the other farm of the same age as those that died? if so, were they fed *precisely* the same?	No. 6. Yes; and they were fed exactly the same as those that died.
No. 7. What is the nature of the soil—surface as well as the substratum—upon which they were reared?	No. 7. Partly a wet gravel, and the other part clay.
No. 8. Did the horses drink rain-water entirely, or of water which proceeded from springs?	No. 8. Wholly from a pond, which is supplied with water both from surface drains and the slated roofs of the farm-buildings.
No. 9. Is limestone abundant, or altogether absent in your immediate locality?	No. 9. As a rule, limestone is found at a great depth, but in a few fields it crops out on the surface.
No. 10. Are you in the habit of using artificial manures, and if so, of what kind, and to what extent?	No. 10. Not any.
No. 11. Do you give your horses, as a rule, much salt?	No. 11. They have the choice of licking rock salt in the winter, but I think they do not take much.
No. 12. What was the age of each horse at the time he was taken ill, and had he suffered from any peculiar disease previously? if so, what was its nature?	No. 12. Two were taken ill at four years old, one at five, one at six, and the others at three. Some of the horses had been ill; some from influenza, and others from injuries to their feet. If, from these or any other causes, they had to be laid by, such seemed to develop the disease. From the inquiries I have made, I find that pollard has been used, even more freely than at CALCOT, by many breeders of horses in this neighbourhood, for more than forty years, and without any injurious effects. My father has bought many colts, and kept them for years, and never had a case of the kind.

To continue. According to arrangement, Dr. Harley

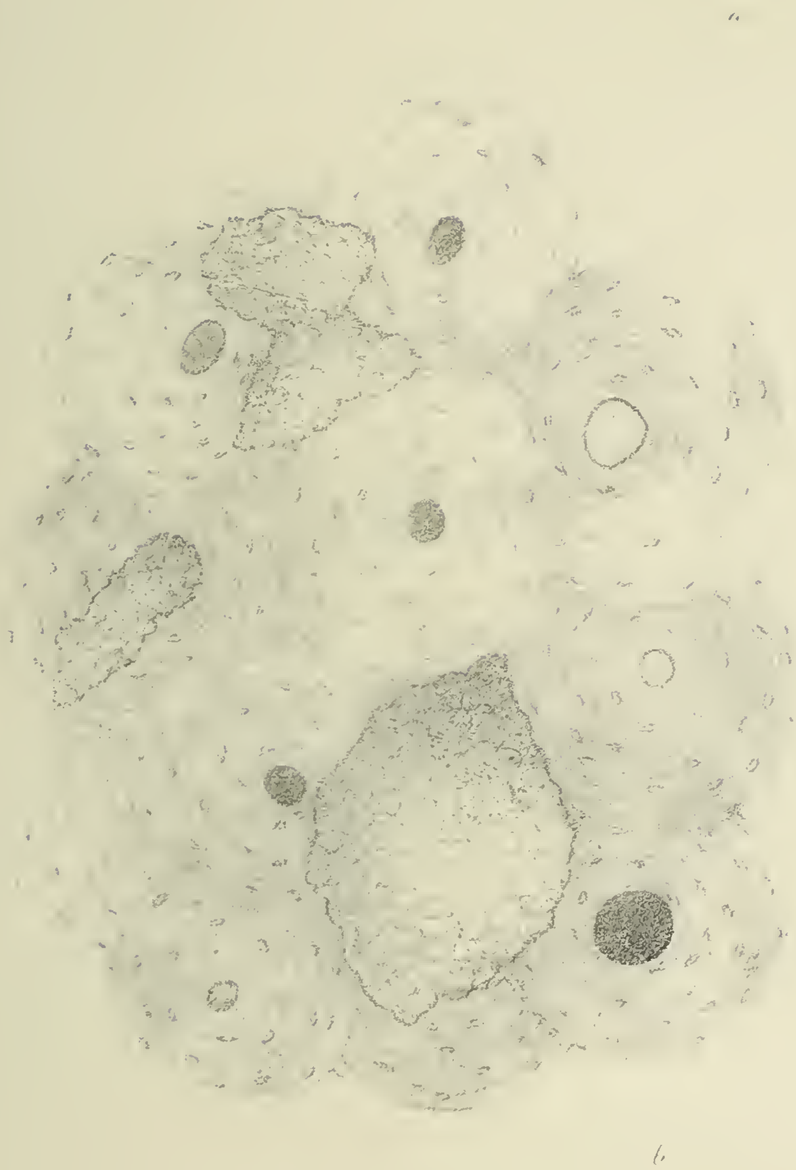
Fig 1



Lens Aldous, lith

Printed by Hullmandel & Walton

Fig. II



Walker

FIG. II.

Fig. IV

brought the subject before the Pathological Society, and, at the same time, exhibited some microscopic specimens of the disease, and also drawings illustrative of the morbid changes the bony tissue had undergone. An animated discussion took place, but nothing was elicited to throw any light upon the cause which had given rise to the disease, and which, apparently, was one that none of the members present was familiar with.

As Dr. Harley has kindly allowed me the use both of the drawings and description of the microscopical examination of a portion of the ramus of the lower jaw, and of the head of the femur, I have availed myself of the opportunity thus afforded me, of giving them a place here; and as the drawings were made immediately under his superintendence, their correctness is thus vouched for. The descriptive matter, also, which he has kindly supplied me with, will prove a great acquisition in elucidating the pathology of this singular affection. (*See annexed plates.*)

FIG. 1 represents a longitudinal section of a portion of the lower jaw; highly magnified.
- *a.* Osseous tissue reduced to a fibrous network.
- *b.* Haversian canals greatly dilated.
- *c.* Indistinct lacuna.
- *d.* Gelatinous substance in the Haversian canals.

FIG. II, represents a similar magnified view of the tissue of a portion of the end of the long bones—transverse section.
- *a.* Haversian canals.
- *b.* Diseased cavities filled with fat-corpuscles and granular matter.

The following letter will fully explain, in Dr. Harley's own terms, the pathological condition of the specimens.

77, HARLEY STREET, W.;
21*st March*, 1860.

DEAR SIR,—The horse's bones which I examined for you presented two well-marked varieties of morbid change; one of which was most characteristically seen in the bones of the head, the other in the long bones of the extremities.

1st, As regards those of the head.—The disease, although it affected all the bones, was most advanced in the lower jaw; I shall therefore limit my remarks to a description of it. The bone was considerably hypertrophied in its transverse diameter, the periosteum was readily detached, the osseous tissue was of a pink colour, and, on pressure, a quantity of blood oozed from its surface, as if from a sponge. The osseous tissue was elastic to the touch, and so soft that it could, with facility, be cut with a knife. The surface of the section had a somewhat fleshy appearance, but, to the nail, it conveyed rather the impression of cartilage.

When a thin section was examined with the microscope, it presented the appearance delineated at Fig. I (section taken from the outer surface, and middle portion, of the left jaw-bone).

The osseous tissue is seen to be expanded into a network of fine fibres (Fig. I, *a*). The Haversian canals(Fig. I, *b*), on the other hand, have become so enlarged that, at first sight, they might be mistaken for the bony tissue, and the bony tissue mistaken for the Harversian canals. On examination with a higher power, not only is the osseous tissne seen to be rarified, but the canaliculi proceeding from the lacunæ, or bone-corpuscles, as they were formerly called, are, in many cases, obliterated. The lacunæ (Fig. I, *c*) themselves are also not so distinct as in healthy bone. The enlarged Haversian spaces are filled with a gelatinous matter (Fig. I, *d*), mingled with a small portion of fat, and here and there pervaded with fine, scarcely visible fibres.

2d, Long bones of the extremities.—The periosteum, although readily detached, does not come away with so much facility as from the bones of the head, except towards the ends of the bones, where, strange to say, the ligament had become detached by the mere movements of the animal during life. The outer surface of the shaft of the bone is firm enough, but on section it is found to be greatly thinned, in consequence of an enlargement of the medullary canal having taken place at the expense of the osseous tissue.

The dilatation of the medullary cavity is most marked towards the extremities of the bone, and there the marrow is deeply tinged with blood. The osseous tissue which, in some parts, is reduced to one half, or even one third of its normal thickness, does not present the spongy characters of the cranial bones; but, on the contrary, is dense, and so hard that it cannot be cut with a knife.

After the calcareons matter is removed by acid, the section of the animal matter has a somewhat glistening, cartilaginous appearance, here and there dotted with opaque, white spots. Under the microscope, a thin section reveals a curious condition of things. The Haversian canals, as well as the concentric bony lamellæ surrounding them, appear perfectly normal (Fig. II, *a*). The lacunæ and canaliculi, as far as can be ascertained in the decalcified bone, are equally healthy. But, on close inspection, the opaque, white spots, observed by the naked eye, are seen to be irregular-shaped cavities in the osseous tissue, filled with fat-cells (Fig. II, *b*). These cavities vary in size, from that of a pin's point up to a millet seed. They are not limited to any particular portion of the osseous structure, although they seem to have commenced, for the most part, in the lacunæ. Some however may, with equal truth, be said to have originated in the Haversian canals, the walls of which have been gradually broken down, and eaten away, as the morbid condition advanced; the place of the earthy and animal matter being gradually taken up by fat-corpuscles. Fig. II shows this state of bone very clearly. The condition of the cartilages and other tissues I need not allude to, as you are familiar with them.

Any additional information I shall be happy to furnish you with, if such be in my power.

Please return to me the sketches, when you have done with them.

I remain very faithfully yours,

George Harley, M.D.

To G. Varnell, Esq.

The bones, after being macerated and dried, exhibited many peculiarities which were not apparent in their fresh state; for instance, the ulceration of the articular surfaces, which seemed to be altogether confined to the cartilages of incrustation, was found on their removal to affect the bone beneath; and the loss of structure, however small it might be in the cartilage, extended more or less deeply into the bone; the size of the cavity increasing with its depth. This fact, I think, proves beyond disputation, that the loss of the cartilage depended primarily upon the diseased condition of the bone, and that the general thinning of the articular cartilages arose from the same cause. Scarcely an articulation of the whole body was free from this "worm-eaten" condition of both the bone and cartilage. This state of things is well shown by Fig. 3, which represents the inferior extremity of the femur, *a*, and also the patella, *b*, the ulcerations being in both bones marked *c*.

It was found likewise, in cleaning the bones after maceration, that, from their extreme softness, great care was necessary to prevent the different processes from being detached, and the application of the slightest force to a portion of ligament or tendon, that was not sufficiently separated by decomposition, would be certain to effect their removal.

The external surfaces also of the bones, as contrasted with those in a normal condition, had a very singular aspect, especially in the flat and irregular-shaped bones. The ends of the long bones were similarly affected, but the shafts of most of them deviated but little in external appearance from a healthy state. A transverse section, however, of the middle of the shaft showed very distinctly that the osseous laminæ surrounding the Haversian canals were very much thinner than natural, thus necessarily leading to a considerable enlargement of the latter. In the first-named, however, and particularly in the flat bones, instead of the surface being smooth and dense, it had a character not very unlike that of fine sponge. The foramina for the passage of the blood-vessels, and more especially those belonging to the periosteal membrane, were much dilated, thus giving the bone a kind of honeycomb appearance. This condition, with its accompanying increase of size of the bone, is well depicted in Fig. 4, which represents two lower jaws, the one diseased, *a*, the other healthy, *b*. For the sake of greater contrast, both of the jaws from which the drawings were taken were selected from animals of the same age.

The vertebræ and ribs had undergone the same structural change, but in a less degree. The spinous processes of the former, and the inferior extremities of the latter, were, from their extreme softness, lost by maceration. The coffin bones, also, of all the feet, had the same spongy character.

The weight of the bones was very much diminished, as well as their density. In many instances they were so soft, that they could easily be cut with a knife. The ribs also would break by the application of the slightest force.

I have not yet compared the specific gravity of the diseased with that of normal bone, for the difference in weight is so marked. Taking the diseased lower jaw in one hand, and a healthy one of the same original dimensions in the other, the difference in weight is so evident that no one would think it necessary to submit them to the test of weighing to ascertain it. Nevertheless, I must confess, that if the relative difference was exactly ascertained, it would be more satisfactory, and particularly to those who have not the opportunity of examining the specimens. An idea of their density may be obtained by referring to Fig. 4.

As has been before stated, both maxillary bones belonged to animals of the same age, and would be of the same size as near as possible, were it not for the diseased condition of one of them. Now, although the diseased jaw, from the widening of the Haversian canals, is so very much larger than the other, it nevertheless is only about two thirds its weight. It may be satisfactory to add, that the drawings of the two jaws were made by the aid of the camera lucida at exactly the same distances, so that their relative proportions are perfectly accurate.

In the heading of this article I have alluded to the softening of the bones; this, however, constitutes but one of the peculiar changes they had undergone, and would not assist in obtaining a knowledge of the other structural alterations. Thus it has been explained that in some of the long bones, for instance, the femur which I have spoken of, the articular cartilage at one of its ends, and the bone likewise upon which it rested, had undergone quite a different change from that which had taken place at its other extremity. For example, the cartilage which encrusts the condyles was much thinner than natural, and of a dark, slate colour in some places, but altogether lost in others, the bone beneath it being very soft, and almost black from congestion of its vessels and effusion of blood into its lamellæ. The head of the femur, on the other hand, presented quite another pathological condition. The articular cartilage was here pale in colour, and in some places approaching a yellowish hue, and when pressed upon it felt soft and velvety. Examined more minutely, it was found to contain a small quantity of fat. Beneath the cartilage the bone was, as in other places, soft, and the lamellæ very thin; but the interspaces were filled with a greasy and white-looking substance—fat. Compared with the opposite extremity, it was non-vascular, and, as would be inferred from this, it was likewise very pale in colour. This description, however, does not apply to this bone alone, the other long bones being similarly affected.

A very peculiar change was also going on at the head of the humerus, irregular-shaped cavities existing in the bony tissue, which were filled with a deposit of fat-cells. These, it will be remembered, are described by Dr. Harley, and are shown in Fig. 2, *b*.

(*To be continued.*)

ON THERAPEUTICS.

By Professor Brown, M.R.C.V.S.,
Royal Agricultural College, Cirencester.

There is something curious in the fact that organized bodies, apparently self-sustaining, possessing the power of assimilating the elements of food, and thereby repairing their wasted structures, should be subject to disease. We cannot at first comprehend their liability to disturbance, and even decay, until we ascertain that nutrition, or the power of supplying the loss of tissue, does not constitute the perfection of organization, nor afford an immunity from those disturbing causes which are capable of producing modifications that the nutritive functions are powerless to rectify.

The phenomena of organization are complex: waste of tissue, inevitable where motion occurs, necessitates a digestive system; circulation is indispensable to convey new matter to distant parts; respiration, secretion, exhalation, are processes of purification; while the nervous system conveys impressions and excites actions in all the animal structures.

Disturbance of any of these suffices to destroy the natural balance, and constitutes disease. This lost balance the science of therapeutics proposes to restore, by the use of means more or less complicated, according to the dictates of reason or experience, only legitimate when based on a knowledge of the nature of the diseased condition, the causes combining to produce them, and an acquaintance with the properties of the agents employed. It may be as healthy for the heart to beat at the rate of one hundred in the minute as at the rate of fifty, assuming that in one case the animal is at rest, and in the other it has just undergone exertion. It may be perfectly healthy for the respiration to be violently excited; for the skin to show distended vessels, and for the mucous membranes to be florid in colour, if the circumstances under which the animal is placed are sufficient to produce these symptoms. Even in reference to structure, this reasoning is true. Muscles may be at one time much more bulky than at another; but if we understand that the animal has been submitted to exertion that has called the muscles into active play, we see no indication of disease in this increase of structure. Should the effects, however, occur independent of external circumstances, our conclusions are different. If an animal that has not undergone exertion presents the symptoms of quick pulse and respiration, with florid membranes, or if without previous action muscles become bulky, we at once recognise the presence of an unhealthy condition.

A definition sufficiently comprehensive will explain disease to consist in the disturbance of the balance or proportion between the structures and functions, and the circumstances under which they are acting. Thus, we consider all modifications of structure or function to amount to disease, when they are either not consequent upon external agencies, or are disproportioned to those agencies, or continue after the operation of those agencies has or ought to have ceased.

Disease, in whatever shape it presents itself, will be found to include two principal deviations from health, "excess" and "defect:" emphatically, there will be excited or diminished action; enlargement or lessening of structure. Combined with these there may be alteration of character. A secretion may be too acid or too alkaline, as well as excessive or defective in quantity; a structure may have undergone some positive transformation during its enlargement or decrease, as evidenced in numerous cases of degeneration; but these changes are mostly subservient to the two first, and in a measure depend upon them.

Therapeutics suggest the means of curing disease, otherwise the methods of restoring the balance by remedying the three abnormal conditions of excited and diminished action and alteration of property. To rectify these three conditions of disturbance is the object proposed by every medical system.

It would be interesting to trace, if possible, the rise of medicine from its first struggle into existence to its present growth; but, in the absence of record, we can only imagine how gradual must have been the conviction that certain agents possess the power of acting in a certain manner upon the organism, producing sometimes symptoms allied to, and sometimes differing from, the indications of disease.

In the early attempts to restore the healthy condition of the system, we can imagine the most natural course to have been the employment of those agents whose effects were known to be opposite to those of the disease to be treated. Whatever refinements may have resulted from observation and experiment, we can only conclude this system to have been the one suggested by reason, unprejudiced by experience.

The complex character of disease depends upon the variety and complexity of the organic functions and structures. Were the organism simple, the mere excess or defect of an action or a part would be rectified immediately by an agent possessing the power of inducing an opposite condition; but at the outset it is difficult, even impossible at times, to determine where the altered action is, or upon what it depends—questions upon the answer to which the cure frequently hangs. The difficulty of deciding exactly what is to be attempted will explain the unfortunate diversity of opinion upon the curative means employed; a diversity of opinion not only upon minor points of dose, or frequency, or method of administration, but on the graver question of medicinal action; some employing stimulants for a disease which others treat by sedatives, and with an apparently equal success. To reconcile, or even to discuss, these diverse proceedings forms no part of our intention. We are to inquire into the nature of the process by which health is restored, to decide upon what system the cure shall be attempted, and to arrange and classify the agents that are found to possess the requisite properties.

In reasoning upon the effects of certain agents applied to the cure of disease, we seem mostly to lose sight of the vitality of the organism, acting, as we should, in the repair of an artificial mechanism, supplying what we deem requisite, and modifying what we consider imperfect in action, apparently in ignorance of the restorative powers inherent in the animal structures.

Our first duty is to inquire into the process by which recovery is effected, either by the aid of medicine or independent of it.

Disease we have found to exist in three forms, viz. excited, diminished, and altered action of a part or organ; and excess, defect, or change of structure. That these modifications are, many of them, temporary, and almost all remediable, we are aware. The method of removal requires discussion.

STRUCTURE OR FUNCTION IN EXCESS.

Every portion of the animal economy is liable to this condition, under the action of courses which need not be reverted to here. From the ordinary influence of external circumstances, the functions of the body are constantly excited, but return to their quiescent condition under rest: their continued activity will be inevitably due to the continuance of an exciting cause. Respiration and circulation are excited by exertion, and continue so excited until the body has remained quiet for some time. The exertion is the cause of the excited functions, but its cessation is not immediately attended with their subsidence, for the reason that the impression made upon the nervous system keeps up the stimulus.

Where the resistant power of the system is sufficient, the excited nervous functions are soon calmed; but should this resistant power be wanting, or the impression be so strong as to overcome it, the stimulus continues its action, and the excited functions remain. This retention by the nervous system of an impression made upon it, we desire stringently to insist upon, as without it we should in vain strive to explain the continuance of an effect after the original cause had ceased. The notion that excited respiration necessarily influences the heart's action is not consonant with fact. The action of the chest may be increased at pleasure, and continued without materially exciting the pulse; and in the hot air bath, both in our own case and also in animals, the heart's action has been increased to twice or thrice the normal rate, without in any degree affecting the movements of the lungs; while a few minutes' exercise would have equally, or at least proportionately, excited both functions at once. The primary stimulus originating in the act of volition is communicated, not merely to the muscles of locomotion, but, by nervous agency, to various other parts; thus the voluntary movements and the reflex functions of circulation and respiration are excited at the same time—not from the mere motion of the animal's body, but from the diffusion of the nervous excitement on which that motion depends. The excitement will continue in proportion to the intensity of the impression and the healthy condition of the organism; it may subside a few minutes after exertion has ceased, or it may continue for an hour before the system shall become perfectly tranquil.

The duration of excited action for an indefinite period will amount to disease, as it can only occur when some organ or part has suffered derangement of its circulation. While the heart's action is increased it must be remembered that blood is sent over the body at an unusual rate, but so long as all the vessels possess a sufficient tonicity no obstruction occurs; but in the event of weakness in a part, vascular distension will result from the inability of the vessels to carry on the blood at the rate of its supply. Local determination may therefore be the consequence of local debility, associated with general excitement of the circulation; but local determination cannot occur merely from excited action of the heart unconnected with local causes.

The decrease of excited function presupposes diminution of nervous action, and free circulation through the vessels of the part. These changes are to be effected by the aid of therapeutics, or occur as consequences of the inherent properties of the animal textures; the subsidence of nervous action being the natural result of rest or inaction, which at the same time restores the impaired elasticity and contractility of the vessels, and renders facile the equalization of the circulation.

The method of cure here is simple enough; but complications are possible. There may be certain products of diseased action which can only be removed by absorption—a process by means of which the deposits are taken again into the system, or by various methods of expulsion—by sloughing, by abscess, or by admixture with the excretions. These complications do not affect the first steps in the cure, nor upon investigation will they be found to be more than the consequences of the ordinary and natural functions of the body.

Excess of structure is a disease of the nutritive function, and depends upon local vascular excitement. The excess may be constituted of healthy structure, or of texture in a changed condition, according to the state of the blood, or of the vessels of the part. Our remarks upon the products of diseased action apply to all these conditions of structure.

Their existence requires, primarily, subsidence of nervous and vascular excitement, before any restoration of healthy proportion can be permanently established.

STRUCTURE OR FUNCTION IN DEFECT.

This second element in disease is, by necessity, the consequence of a condition of the system the reverse of the first, if the argument up to the present has conducted us to the proper conclusion. Diminished vascular action will result from defective nervous influence, and from various local derangements connected with debility of vessels or mechanical obstruction. The nervous system is much less intimately concerned with defective structure or function than with excess. Nervous depression may be the cause of defective vascular action, but not of necessity; while in the case of excited vascular action, nervous excitement is absolutely a required condition of the disease.

Defect of structure and function is restored by establishing a proper circulation through the affected part, by the removal of any obstruction, or by the restoration of impaired nervous action. The system is not so equally capable of self-restoration here as it is in the opposite condition. It is much easier to conceive the subsidence of an excitement than the removal of a depression, without the interference of some new influence in the shape of a stimulus.

The first only requires inaction; the second supposes a new activity, which must be originated externally and by artificial means, in the form of a medicine or a new article of diet.

The development of our inquiry has now reached a point which permits a retrospect. With the view of ascertaining the precise object of the science of therapeutics, we have sought to define diseased action, and also the processes by which health is restored, independent of artificial aid. The results of our investigation may be concisely expressed.

Disease we have found to consist in a disproportion between the structure and functions, and the circumstances under which they exist; so that, in relation to each other, or to those circumstances, they are excessive or defective, as well as sometimes altered in constitution or property. *Excess* we found to be the result of an impression retained by the nervous system, acting as a stimulus and exciting circulation. *Defect* we have traced to local debility or obstruction, as well as to nervous depression. The various changes of property or structure we ascribed to mal-nutrition.

The restoration of the lost balance we have assumed to be effected by the natural subsidence of excitement after rest; by the origination of a new stimulus in cases of depression; and by absorption, or sloughing, or excretion, in cases of changed structure or constitution.

Where the disease is beyond the natural capabilities of the system to remove, artificial aid is necessary for the purpose of establishing a new action, by the agency of a medicinal agent.

All medicinal action is provocative of excessive, defective, or altered structure or function, and, consequently, produces disease of an intensity and duration proportional to the potency of the agent and the susceptibility of the system. The science of therapeutics includes two principal systems—"homœopathy" and "allopathy."

The homœopathic system is founded upon the axiom that every disease can be simulated by medicinal agency; and that the natural disease is cured by the agent or agents which produce symptoms similar to those marking the original affection. Hence the motto, "Similia similibus curantur." In reasoning upon the theory advanced, we are not concerned with the question of probability; we are not called upon to consider whether it is at all reasonable or natural that disease should be cured by agents which produce similar conditions in the healthy animal: we are concerned only with the facts as they are brought before our notice; and first, with the point on which the system rests—the "characteristic actions" of medicines. It either is or is not true that the various agents possess the property of producing in the healthy body symptoms of special and known diseases; if true, we are justified in experimentally applying those agents to cure such diseases; if false, the homœopathic system obviously exists upon an error, and, whatever success may attend the means it applies, that success must be attributed to other causes than the specific action of the drugs employed.

The question can be decided by the best of all tests, *namely*, experiment. Not by an appeal to Hahnemann's 'Materia Medica,' nor by the adduction of comparisons between the success of the two systems of treatment, but by the simple exhibition of any of the drugs to a healthy or ordinarily healthy animal; not in homœopathic doses, as they form no part necessarily of the original experiments, but in quantities sufficient to define their effects. With all our desire to treat homœopathy fairly, we cannot but remark how constantly this inquiry is evaded; absolute results obtained by the experimenter being constantly met by the remark, that the agents used were not prepared by the homœopathic chemist—a circumstance which we presume would have equally affected the original experiments, which, nevertheless, did not prevent the development of the "characteristic indications." To wade through the whole collection of medicines would be an endless and a useless task. We have tried the most important, as ordinarily prepared, and, upon the plan of the homœopathist, we have experimented upon ourselves and upon the lower animals; and with a prejudice in favour of the system that has exposed us to some little banter, we have been forced to the conclusion that the agents do not produce the effects on the healthy animal that have been and are ascribed to them. This result we cannot escape from: no laudations of the practice, or exaltation of the successes obtained, can cover the error on which the whole system is built. We do not assert the entire homœopathic practice may not be superior to the entire allopathic practice; but we are driven to the conviction that its superiority is not due to the action of the medicinal agents used. Whether or no it is a law that "like is cured by like," we deem it impossible to show, until we definitely prove the similarity of medicinal indication and symptom of disease.

The allopathic system rests on no assumptions, nor does it generally claim for its agents actions which are difficult to demonstrate, without discussing the more subtle phases of medicinal action. We may fairly assert that the system is founded on the simple law that diseases are cured by agents capable of producing an opposite condition of the system. Whatever may be the defects of the science—however unsatisfactory its practice—its application is productive of positive effects; and in the absence of a system absolutely infallible, we are justified in accepting it.

(*To be continued.*)

CASE OF ATROPHY OF THE MUSCLES OF THE HIND QUARTERS.—TETANUS.—DEATH.

By J. Bretherton, M.R.C.V.S., Calcutta.

On the 10th July, 1859, a brown stud-bred mare, the property of a merchant of this city, was admitted into my hospital, to be treated for lameness of the near hind leg. On a careful examination of the affected limb, I discovered a slight depression of the muscles of the thigh; but no unusual heat of the part was to be detected. My diagnosis was a lesion of some of the muscles in the vicinity of the acetabulum-joint. The treatment was preceded by the exhibition of a dose of physic, and the almost constant application of hot water, from the hip downwards. The fomentations were continued for four or five days, after which I inserted two setons over the apparently affected muscles, and blistered repeatedly.

At the expiration of one month the mare trotted nearly free from lameness, but there still remained a visible depression of the muscles. I withdrew the setons and allowed her full liberty in a loose box, and on August 25th I discharged her as fit to resume her work. She continued to do her ordinary labour, but had a slight difficulty in bringing the leg forward. She was again admitted on the 14th January, 1860, being now very lame. The atrophy of the muscles was more conspicuous, and it was with very great difficulty that she could progress.

My former treatment being so successful, I again had recourse to similar remedies. On February 25th, she gave indications of tetanus ; and immediately on my observing this, I withdrew the setons, placed her in a dark box, and administered Aloes Barb., ʒvi, which purged her freely the second day. The mare's appetite continued pretty good, with but little increase of her general symptoms, until March 2d, when she hourly grew worse. On the following day, the mare being in extreme agony, and having lost all hopes of her recovery, I had her destroyed, as it is but seldom that an animal recovers from traumatic tetanus in India, notwithstanding the frequent use of cannabis Indica, strychnine, opium, and other boasted remedies.

Post-mortem Appearances.—The muscles surrounding the acetabulum were converted into a fibrous mass, intersected with turgid vessels and spiculi of bone detached from the ischiatic portion of the os pubis. The conversion of the muscular tissue into a fibrous material was, in my opinion, owing, in all probability, to a previous injury of the os pubis. The tetanic attack most likely was the result of the insertion of the setons, or pressure on some of the nerves.

DISEASED MESENTERIC VESSELS IN A FOAL.

By J. Cornelius, M.R.C.V.S., Shefford.

On July 23d, I was requested to attend a three-months-old filly, the property of James Long, Esq., of Oldfield. She was much valued by her owner, on account of her breed, her sire being the Duke of Bedford's "Hesperus," and her dam a thorough-bred mare.

When I arrived, I found the following symptoms to be present. Pulse 100 in the minute; breathing laborious; visible mucous membranes highly injected; perspiration bedewing the whole body; fore legs abducted, and the hind ones placed somewhat forward under the body. If made to move, she would do so in a semicircular direction, using the hind legs as a pivot. She was also suffering great pain, so much so, that I could not satisfactorily ascertain the number of the pulse at the sub-maxillary artery, on account of the continual motion of her head. The general symptoms showed that the cause of her suffering was located in the lumbar region; but I did not think that they were indicative of diseased kidneys, and particularly in so young an animal, and hence rightly or wrongly I came to the conclusion that it was a case of acute rheumatism. Blood was extracted to the extent of a quart, and a draught composed of Ol. Ricini, Oss, with Tinct. Opii, ʒss, administered. Fomentations were likewise applied to the loins.

On my visit in the evening, I found that the symptoms were unabated in severity. She had urinated freely, and the bowels had been well acted upon. Gave Tinct. Opii, ʒss.

24th, 9 a.m.—This morning she is much weaker, and shows a great disposition to assume a recumbent position, although the pain appears to be somewhat abated. Urine has been voided, but the bowels are a little confined. The hocks and fetlocks are considerably swollen, hot, and tender; thus verifying my original opinion respecting the rheumatismal nature of the disease. Gave Ol. Ricini, Oss; et Tinct. Opii, ℥ss; and left a draught composed of Sp. Eth. Nit. et Tinct. Opii, āā ʒss, to be given in the evening. Hot bran poultices were also ordered to be kept on the loins.

25th.—I found my patient much easier, but weaker. She could not rise without assistance, but when up she would approach her dam in order to suck.

The hocks are more swollen.

Gave Amm. Carb., ʒss, and ordered linseed gruel, with the juice of a lemon, to be administered. Bandages saturated with Sol. Plumb. Acet. were applied to the hocks, and bran poultices continued to the loins.

26th, 10 a.m.—A slight improvement has taken place; the pulse is more natural, and the pain less. She is, however, unable to rise without assistance. Sits on her haunches and makes frequent attempts to get up, but soon falls down again. Gave carbonate of potash, and continued the linseed gruel, &c.

27th.—Better this morning. Ordered for her to be well nursed. To have the poultice removed from her loins, and her hocks freed from the pressure of the bandages.

29th.—Considerable improvement. Gets up without help. Takes her milk freely and with an appetite. A serous discharge is oozing from the skin of each hock. Repeated the carbonate of potash.

31st, 10 a.m.—Much to my surprise and disappointment, about half an hour before I arrived, and a few minutes after the man had given her the gruel, death suddenly took place. I concluded that some of the gruel had gone into the trachea and thus suffocated the little patient, and therefore I was very anxious to make a post-mortem examination without loss of time. On doing this I found that my supposition was correct, and that some of the gruel had passed down the trachea, but still not in a sufficient quantity to cause immediate death.

On opening the abdomen, the cause of death was at once seen to be a ruptured blood-vessel, as there was a large quantity of blood in the cavity. In taking out the intestines, I felt a hardened mass just anterior to the kidneys, which proved to be an indurated tumour, involving the anterior mesenteric artery and its branches, and also a portion of the mesentery. On cutting into it, I found a number of strongyles, but could scarcely find any form of an artery.

The other internal viscera were perfectly healthy, but, on laying open the hock-joints, a considerable quantity of fetid and grumous matter was given exit to.

[The morbid parts consisted of a mass of mesenteric vessels and hæmorrhagic tumours attached thereto, which had been removed from the vicinity of the aorta. The specimen did not come to hand in a favorable condition for us to ascertain whether the tumours were or were not immediately connected with the interior of the vessels; for although filled with blood they had not the usual appearance of simple aneurismal sacs.

Many of the veins were found to be plugged with lymph, which was undergoing degeneration, thus affording evidence that a diseased state of the vessels had existed for some time; indeed, collections of pus were here and there to be met with.

The *proximate* cause of the disease could not be satisfactorily ascertained by the dissection. It is not improbable that it depended on the presence of strongyles within the mesenteric vessels, as some of those entozoa were present, but not in sufficient numbers to lead us to a positive conclusion that they had produced so much mischief as was met with. The *immediate* cause of death was the giving way of the walls of one of the hæmorrhagic tumours.]

Facts and Observations.

THE BEST PREVENTIVE OF HYDROPHOBIA.

M. Sanson, of the Veterinary School of Alfort, near Paris, lately sent a valuable paper to the Academy of Medicine, with the above title. The author gives a very striking and accurate description of all the symptoms of rabies, especially of the initiatory ones (taking advantage of the work of our own countryman, Youatt), and concludes by giving it as his opinion, that the best preventive of rabies is the exact knowledge of the generally little known and insidious phenomena which characterise the *onset* of that terrible affection.

SUPPOSED DISCOVERY OF THE ORIGIN OF THE VACCINE MATTER.

The French medical papers have, for the last few days, been repeating that M. Lafosse, Professor at the Veterinary School of Toulouse, has *discovered* the origin of the vaccine matter. The sober truth is, that M. Lafosse has inoculated the pus taken from the sores of horses suffering from grease, upon a cow two years old, and obtained fine vaccine vesicles, three children being subsequently vaccinated successfully with the lymph contained in the latter. Now, every one knows that Jenner considered the cow-pox as originating from the grease. He had inoculated the pus of old greasy ulcers, and not the lymph contained in the vesicles which appear at the outset of the disease, and failed. The lymph has now been tried by M. Lafosse, with the results stated above; but it should be recollected that others have failed in the same experiment. It is extremely probable, as very justly observed by the editor of *La France Médicale,* that the success and the failures depend on certain peculiarities which have not as yet been ascertained.—*Lancet.*

FOREIGN MATTER IN THE LUNGS.

"If you examine," says M. Pouchet, "the bodies of animals who live in our towns and in our houses, you will be astonished at the enormous quantity of starch contained in their respiratory organs. In birds you will find it even in the middle of their bones. Particles of soot, filaments of the different kinds of textures of which our clothes are made, are also found there in great abundance. But the further the animal lives from a town, the more scarce become these bodies. In animals and birds living in the midst of forests, you will scarcely find any at all of them; in their case the respiratory apparatus is, on the contrary, filled with a large quantity of vegetable *débris,* chlorophylle, &c. I have found in the lungs of man the same atmospheric corpuscles as in animals. I found in two persons who died in one of our hospitals—a man and a woman—and whose lungs I injected, a notable quantity of fecula, normal or after panification, particles of silica, and fragments of glass; fragments of painted wood of a beautiful red colour; *débris* of clothes, and a larva of a microscopic arachnis still alive."—*Chemical News.*

COMPARATIVE SAFETY OF ETHER AND CHLOROFORM.

The Society of Medicine of Lyons has, after long discussion, come to the conclusion,—That ether as an anæsthetic is more dangerous than chloroform; that anæsthesia is obtained as well and as certainly by ether as by chloroform; and therefore that ether ought always to be preferred to chloroform, the inconvenience of it being slight.

OXYGEN AN ANTIDOTE FOR ETHER AND CHLOROFORM.

Though not coming strictly under the denomination of organic chemistry, we may as well notice here the experiments of M. Ozanam, on the use of oxygen as an antidote to ether and chloroform. In all the experiments, M. Ozanam found that the animals awoke in half the time after inhaling oxygen than they did with simple atmospheric air. The result was just the same whether ether or chloroform had been used. Several animals were placed under the influence of chloroform until the beating of the heart was imperceptible, and death imminent; but on inhaling oxygen they quickly awoke. In one experiment the animal respired at the same time the vapour of ether and pure oxygen. It was twelve minutes before the animal slept, and then the sleep was so light that it awoke in a minute and a half, without the continuation of the oxygen. When chloroform and oxygen were breathed together, the animal became drowsy after eight minutes, but did not sleep, and after the inhalations were stopped perfectly recovered in a few seconds. M. Ozanam believes that so long as respiration has not entirely ceased, the revivifying effects of oxygen will be produced, and recommends that the surgeon should always have at his command a supply of oxygen, to reanimate his patient, in case of accident.—*Chemical News.*

PRUSSIC ACID IN TOBACCO.

According to Vogel and Reischaner, prussic acid and sulphuretted hydrogen are generally to be found in tobacco-smoke. Except in one instance, they discovered prussic acid in all the samples of tobacco they experimented upon. To detect it, they passed the smoke into a strong solution of potash, and then made use of the ordinary iron test. The sulphuretted hydrogen they discovered by exposing to the action of the smoke paper moistened with acetate of lead, or nitro-prusside of sodium and ammonia, on which they obtained the characteristic reactions.

THE VETERINARIAN, OCTOBER 1, 1860.

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

IMPORTANCE OF A KNOWLEDGE OF THERAPEUTICS.

WITH much gratification we insert in the present number the first of a series of papers on THERAPEUTICS, by Professor Brown, M.R.C.V.S., of the Royal Agricultural College, Cirencester. The time had doubtlessly arrived when this important division of medicine should be brought thus prominently forward; and we are glad it has fallen into such hands, for both theoretically and practically Mr. Brown is able to cope with the subject.

We are of opinion that therapeutics, or that part of medicine which treats of the composition, application, and modes of operation of the remedies for diseases, has been too long neglected by us as a profession. We think we see in this the cause of the indifference manifested by too many as to the *modus operandi* of agents on the organism, and the adherence to the routine of treatment as laid down by those of the old school, as well as the scepticism attendant on the introduction of a new remedy, not to say opposition often made to a trial of its powers. It is true, we have divested ourselves of very many, if not of most, of the absurdities of our forefathers; yet too many of them still remain, clogging the wheels of science. The day, unquestionably, has gone by for the employment of the useless "compound powders" of the farrier, with his farrago of trashy and unchemical combinations; more simple and more decisive agents being now resorted to. This, doubtless, is the result of the spirit of inquiry and investigation that now pervades every section of science, and which, whilst it robs medicine of its seeming mysteries, nevertheless enables us with greater certainty to relieve the sufferings of animals. No one will gainsay the position that this is a noble field to cultivate, and we are bound to bring into it all the sources of knowledge, and by labour to develop fruit from it. Of Veterinary Medicine, like its sister division, it may be said that "ample room is afforded for the exertion of all kinds of taste and all varieties of intellect, and the most opposite minds may contribute to assist each other and promote a common benefit. There is not a branch of natural science which does not bear more or less directly upon the study of medicine. The most ordinary powers may here find a field in which they may be exerted with the greatest benefit to mankind, and the most exalted intellect may find subjects for contemplation and study, which yield in importance to none, whether viewed in a purely abstract and philosophical sense, or considered in their practical bearing upon the social condition and the progressive improvement of the human race. It is our duty, therefore, not only to become acquainted with those branches of information which concern us in the practice of our profession, but also to endeavour to advance and extend our knowledge of those subjects which bear upon the study of medicine in every possible direction, feeling that we ought to ascertain new truths, if not for our own, at least for the benefit of the generation which succeeds us, just as our predecessors have transmitted to us discoveries upon which many of our present views are founded, although, perhaps, in their own time they were considered unimportant, and of no practical utility."

We do not know if it be Mr. Brown's intention to extend his remarks to *hygiene* and *dietetics;* which, although perhaps, strictly speaking, are non-medical, yet they are, more frequently than is thought, the means by which the recovery of health is ensured as well as preserved; but this we do know, we impose no restrictions, for the more extended and the more general his observations are, the more we are sure will the profession be benefited.

Extracts from British and Foreign Journals.

ON THE COMPOSITION OF TWO VARIETIES OF KOHL-RABI, AND OF CATTLE-CABBAGE.

By Dr. Augustus Voelcker.

There are two crops which deserve to be more extensively cultivated than they are at present—the one is Kohl-rabi, the other Cattle-cabbage. Both crops have this in common, that they are not injured by frost, provided that the young plants are not planted out too early in the spring, in which case they get over-ripe before the winters sets in, and in a rainy and warm autumn or mild winter are certain to be spoiled. If Kohl-rabi or cabbages, therefore, are intended as winter food for cows or sheep, they should not be planted out too soon, nor should the whole crop be put out at one time. When the seed has been sown and the young plants set out at proper intervals of time, a regular succession of cabbages or Kohl-rabi may be kept up as easily in the field as it is in a vegetable garden, and a supply of very nutritious and wholesome food be secured at periods of the year when other food is scarce.

Kohl-rabi especially stands the frost remarkably well. In Germany, where a small variety is grown in gardens for the table, it is not considered good until it has stood at least a week's hard frost. As food for lambs it far surpasses white turnips, and is equal to any kind of green food with which I am acquainted. With proper management it may be grown so as to come in at the lambing season; and even should the bulbs sprout abundantly and become themselves deteriorated or unfit for food, still I believe that sheep-breeders will not regret having reserved a Kohl-rabi field for the lambing season, instead of one of white turnips, because the tops and sprouts of Kohl-rabi, unlike those of the white turnip, are very nutritious. The Kohl-rabi is a plant which belongs, as most readers of this journal are aware, to the cabbage tribe. Its leaves consequently resemble in taste, composition, and nutritive properties, those of the cabbage much more than those of the turnip, which latter are more watery and far less nutritious.

I much regret that I had no opportunity last season of obtaining the leaves of Kohl-rabi plants for analysis; but as it is my intention to examine this season a large number of bulbs of Kohl-rabi, I shall at the same time direct my attention to the composition of the leaves.

In the mean time the subjoined analysis of two varieties of Kohl-rabi may be of some interest to those who intend to grow this crop. The bulbs were kindly supplied to me by Mr. Innes, steward to Colonel North, who was a successful grower of Kohl-rabi last year, and has formed a decidedly favorable opinion of its practical feeding value. The varieties analysed by me are known to seedsmen as the Green-top and Purple-top Kohl-rabi.

Composition of Green-top and Purple-top Kohl-rabi.

a. *General Composition.*

	Green-top.		*Purple-top.*	
Water . . .	86·020		89·002	
Substances soluble in water	9·260	*Dry Matter.* 13·98	7·588	*Dry Matter.* 10·998
Substances insoluble in water	4·720		3·410	
	100·000		100·000	

b. *Detailed Composition.*

	Green-top.	*Purple-top.*
Water	86·020	89·002
Oil	·227	·177
*Soluble protein compounds . .	2·056	2·006
Sugar, gum, and pectin . . .	6·007	4·486
Salts soluble in water. . .	·970	·919
†Insoluble protein compound . .	·300	·269
Digestible fibre and insoluble pectinous compounds	2·993	1·896
Woody fibre (cellulose) . . .	1·230	1·106
Insoluble mineral matters . .	·197	·139
	100·000	100·000
*Containing nitrogen . .	·329	·321
†Containing nitrogen . . .	·048	·043
Total nitrogen . . .	·377	·364
Per-centage of ash . . .	1·167	1·058

It must not be inferred from the preceding analytical results that purple-top Kohl-rabi is necessarily more watery than the green-top variety. My observations only apply to those bulbs which I had an opportunity of examining. A series of determinations of water in a larger number of bulbs of each kind probably would have proved that the apparent superiority of the green-top variety is not real, but due entirely to the accidental occurrence of a smaller proportion of water in the root which was submitted to me for analysis.

It is well known that the proportion of water in roots drawn from the same field and growing in close proxity to each other varies much. All that can be said, therefore, is, that the particular specimen of the green-top variety which I analysed was less watery and no doubt also more nutritious than that of the purple-top.

The following table gives the composition of these two varieties of Kohl-rabi in a perfectly dry state :

Composition of Kohl-rabi, dried at 212° Fah.

	Green-top.	*Purple-top.*
Oil	1·623	1·609
*Soluble protein compounds	14·706	18·239
Sugar, gum, and pectin	42·968	40·789
Salts soluble in water	6·938	8·356
†Insoluble protein compounds	2·145	2·445
Digestible fibre and insoluble pectinous compounds	21·409	17·239
Woody fibre (cellulose)	8·798	10·056
Insoluble mineral matters	1·409	1·263
	99·996	99·996
*Containing nitrogen	2·353	2·918
†Containing nitrogen	·343	·390
Total nitrogen	2·696	3·309
Per-centage of ash	8·347	9·619

A comparison of the preceding results with the analyses of swedes, mangolds, and turnips, shows that, theoretically, Kohl-rabi is much more nutritious than white turnips, and fully equal, if not superior, to swedes and mangolds. These remarks, however, I would remind the reader, apply only to the specimens which I had an opportunity of examining. Future examinations, and, above all, practical feeding expements, are required to establish fully the comparative feeding value of Kohl-rabi.

I may remark with respect to the Kohl-rabi, that it is an excellent food for milch-cows, inasmuch as it produces much and good milk. The butter made of such milk has a pleasant taste, altogether unlike the disagreeable flavour that characterises butter made from the milk of cows fed upon turnips.

Composition of Cattle-cabbage.

As yet not many complete analyses of field-cabbage have been published. I do not recollect having seen any one that could be relied on, with the exception of that by Dr. Anderson, published a few years ago in the 'Highland Society's Transactions.' It appeared to me, therefore, desirable to make a full analysis of this useful crop. The specimen examined in my laboratory was grown on the farm attached to the Royal Agricultural College, Cirencester. A preliminary trial showed that the outside leaves contained much less water than the inner, for which reason both were examined separately. The whole cabbage was divided into two parts—the one consisting of the outer green leaves, the other of the heart, with the paler inner leaves attached to it.

The following tabular results represent the general composition of both parts of the cabbage:

Composition of Cabbage-leaves (outside green leaves).

Water	83·72
Dry matter	16·28
	100·00

The dry matter consisted of—

		Dry Matter per cent.
*Protein compounds	1·65	10·19
Non-nitrogenous matter	13·38	82·10
Mineral matter	1·25	7·71
	16·28	100·00
*Containing nitrogen	·26	1·63

General Composition of Heart and Inner Leaves.

	In Nat. State.	Dry.
Water	89·42	...
Soluble organic matter	6·20	18·60
Soluble mineral matter	·73	6·89
Insoluble organic matter	3·53	33·36
Insoluble mineral matter	·12	1·15
	100·00	100·00

It will be observed that the outer green leaves contain nearly six per cent. less water than the heart and inner leaves.

In the next table the detailed composition of the heart and inner leaves together is stated, both in the natural state and when dried at 212° Fah.

Detailed Composition of Heart and Inner Leaves of Cabbage.

	In Nat. State.	*Dry.*
Water	89·43	...
Oil	·08	·75
*Soluble protein compounds	1·19	11·24
Sugar, digestible fibre, &c.	7·01	66·25
Soluble mineral matter	·73	6·89
†Insoluble protein compounds	·31	2·93
Woody fibre	1·14	10·77
Insoluble mineral matter	·12	1·17
	100·00	100·00
*Containing nitrogen	·19	1·79
†Containing nitrogen	·05	·47

Cabbages contain about the same proportions of water, sugar, and protein compound, as are found in good swedes. On the whole, I am inclined to think, weight for weight, cabbages and swedes possess nearly the same nutritive value.

In ordinary seasons the average produce of swedes on our poorer fields is about fifteen tons per acre. On weighing the produce of an acre of cabbage, grown under similar circumstances, I found that it amounted to seventeen tons and a half per acre in round numbers. On good, well-manured fields, however, we have had a much larger produce.—*Journal of the Royal Agricultural Society of England.*

MEANS OF DETERMINING THE QUALITY OF MILK.

By Dr. H. Minchin.

To determine with accuracy the quantities of the proper constituents of a given specimen of milk will, of course, require that it be submitted to a chemical analysis, for which purpose an expensive apparatus is necessary, while the process is of necessity both tedious and laborious, and not at all adapted to the requirements of ordinary cases, in which a daily examination must be made. It therefore became necessary that some more simple method should be devised of estimating approximatively the qualities of this fluid. The several modes of milk-testing which have been suggested are well known, the principal being—1st, the lactometer, or cream-test of Sir Joseph Banks; 2d, the hydrometer, or specific-gravity test; 3d, the lactoscope of M. Donné; and 4th, the microscope. It may be necessary to make a few remarks on the use of these several instruments, and first, of the lactometer. A glass tube, of about eleven inches long, and half an inch in diameter, is filled with milk to within a short distance of the top, the surface of the fluid being made to coincide with a transverse line drawn on the tube, and marked zero; the capacity of the tube from this line downwards is divided into one hundred equal parts or degrees. When the tube thus filled has been suffered to remain undisturbed for a definite time, say twelve hours, or twenty-four hours, the quantity of cream which shall have separated spontaneously during that time is ascertained by an inspection of the instrument held in a proper light, as the inferior limit of the stratum of cream is generally defined with sufficient clearness to enable one to read off accurately the per-centage of this ingredient which has become separated from the milk within the time specified. In using this instrument, it is necessary to observe certain precautions: the milk should be quite fresh, but the tube should not be filled till the milk has cooled down to the temperature of the place where it is destined to remain while at rest; the entire mass of milk should always be well stirred up immediately before the sample to be tested is taken out; the lactometer, when filled, should be left undisturbed for about twelve hours if the weather be warm, for twenty-four hours if it be cold. Milk which has been thus tested is said to show a certain per-centage of cream, and the higher the number of degrees indicated by the lower edge of the cream-stratum, the more of this ingredient is the milk supposed to possess. As far as this goes, nothing can be more simple and satisfactory, if it were only true; but it can be shown that the indications of the instrument in question are fallacious, and calculated to lead to the most erroneous conclusions, especially in the case of those milks in regard to which it is most important that the information supplied by this test should be as accurate as possible—for example, in those cases in which milk is supplied by contract in large quantities to public institutions. The fact is unquestionable that contractors are in the habit of supplying a liquor which they call milk, at a price so excessively low that they must either add a large proportion of water, or sustain a serious loss; and the managers of large institutions are often satisfied to accept this so-called milk at the price agreed upon, provided the lactometer shows a certain per-centage of cream. In reference to the effect which the addition of water to milk exercises on the indications of the lactometer, Dr. Hassall, who has made the analysis of very numerous specimens of milk, makes the following remarks:

"It is stated," he says, "that the addition of a small quantity of warm water to milk increases the amount of cream; the belief in the accuracy of this statement is entirely erroneous; the addition of water to milk does not increase the quantity of cream; it merely facilitates and hastens, in a most remarkable manner, its formation and separation, as is shown by what follows:—Six lactometers were filled, one with pure milk, the remainder with the same milk diluted respectively with 10, 20, 30, 40, and 50 per-centages of water. In twenty minutes the lactometer containing pure milk showed but half a degree of cream, in forty minutes it showed 4°, and at the end of twelve hours it showed 9°. The instrument containing 50 per cent. of water showed in twenty minutes 6° of cream, in forty minutes 6½°, and at the end of twelve of hours 5°. The rapidity with which the cream was thrown up on the other four tubes—viz., those containing 10, 20, 30, and 40 per-centage of water was proportionally great; the two extreme cases have been quoted merely in order to exhibit more prominently the results which were obtained." It thus appears, continues Dr. Hassall, "that the addition of a large quantity of water to milk occasions an almost immediate formation of cream, but does not augment the amount; of this fact, in some cases it would be an advantage to dairymen to avail themselves. The addition of water to milk of course lessens its specific gravity, and so facilitates the ascension of the cream."

Now, it would appear from this experiment that we are warranted in deriving a conclusion quite opposed to that just quoted. Here we have 100 parts of pure milk exhibiting 9° of cream, while 50 parts of the same milk mixed with 50 of water are found to yield 6½° of cream. But the relative proportion of cream existing in the pure and diluted milk is as 2 to 1, while the proportion separable from the two fluids respectively are shown by the lactometer to be as 1·385 to 1 (9 to 6½). It is plain, therefore, that the per-centage announced by this instrument is not a true index of the richness of the fluid examined. With regard to the hydrometer, or specific-gravity instrument, it is almost unnecessary to say that experience has long since shown it to be quite inapplicable as a means of ascertaining the purity of milk. The normal density of milk has been variously stated by writers, some placing the average density at about 1029, others at 1038, others, again, at some intermediate number. But, whatever may have been the original density of a given sample of the fluid, it is capable of being lowered by the fraudulent admixture of warm water, and raised again to the former figure by the abstraction of a portion of the cream; for the latter will separate rapidly, owing to the previous addition of warm water, and thus the double deception is capable of being carried into effect within a very short period after the milk has been first drawn, and will of course fail to be detected by the hydrometer. It has, therefore, been suggested that the lactometer should always be used in combination with the hydrometer, one being supposed to serve as a check upon the indications of the other.

A very ingenious mode of determining the richness of milk was devised some years since by M. Donné. The instrument which he employed, called a lactoscope, is constructed on a different principle altogether from either of the foregoing, and professes to enable one to judge of the richness of a sample of milk, by measuring the thickness of a film of this fluid through which a voluminous body, placed at a certain distance, can be discovered; the more dilute the milk, the thicker will be the film through which the light will be transmitted, and the measure of the thickness is provided for by a scale attached to the instrument. The chief objections to the employment of the lactoscope, at least for ordinary everyday use, would appear to be not only its high price, but the difficulty of keeping it in good working order, owing to the delicacy of its construction. It requires to be taken asunder every time it is used, and if not thoroughly cleansed and dried in every part, the screw become clogged and its action embarrassed; in fact, if it gets into careless or unskilful hands, it will not fail to become, in a short time, unserviceable. Lastly, of the microscope. With the aid of this valuable instrument, the number, size, and shape of the oil, or cream-particles, can be easily recognised by any one who has become expert in its manipulation, and in this way may be formed a tolerably fair estimate of the quality of any given sample of milk; it must be admitted, however, that few, comparatively speaking, have attained to the requisite degree of skill and experience to enable them to pronounce at once a decisive opinion from the use of this instrument without some collateral aid. The expense of a good microscope is also a serious impediment to its general adoption as a lactoscopic instrument. It will appear, therefore, from what has been stated in the foregoing remarks, that an instrument which, in the hands of ordinary observers, will supply the means of determining approximately, or in a rough way, without much trouble, and in a short time, the comparative richness of milk, is still a desideratum. The practical difficulty which has attended the employment of the several methods of milk-testing hitherto in use, is to be attributed in some measure to the fact that upon any scale that can be devised, on any principle whatever, there is not one point to which we can refer as a standard of purity. The nearest approach we can make to the establishment of such a standard is to ascertain, by experimenting on several specimens of average quality and known purity, whether we can seize upon some physical property which admits of sufficiently accurate measurement for the purpose. It has been ascertained that an inferior quality is indicated when the specific gravity is below a certain range—but this can be raised artificially by the abstraction of some of the cream; an inferior quality is also indicated when the per-centage of cream is less than a certain number; but the instrument employed for exhibiting this per-centage is found to be fallacious, inasmuch as it only shows how much cream has floated to the surface in a given time, and experiment has proved that the richer the milk the less is the cream disposed to float. Many persons are able to judge pretty accurately as to the quality of milk, by carefully observing the transparency which the fluid exhibits when poured in a thin film from one vessel to another; and it would appear that this property, which has already suggested the instrument of M. Donné, might be again turned to account in the construction of a more simple instrument, which would indicate definitely, and thus enable us to register numerically, the degree of transparency possessed by a given sample; and we should be then in possession of a very efficient means of estimating the degree to which the milk has been diluted, or how far it fell short of the average quality.

Such an instrument has lately been invented; the principle of its construction is extremely simple, and the experiments instituted with a view of testing its performance, several series of which have been repeated, appear to have been attended with the most satisfactory and encouraging results. The instrument is made of brass, in the form of a shallow-oblong vessel, capable of containing about an ounce of fluid: the depth of the vessel is made to increase gradually, by means of a slab of white enamel fixed in a gentle slope from one end to the other: this slab is graduated throughout its entire length. Upon this the milk is poured till the vessel is filled, and a cover of plate glass is then put on—this should be done by giving it a sliding motion to exclude air-bubbles.

When the vessel full of milk is thus covered, the degree of dilution possessed by the sample under examination is estimated by the number of degrees on the enamel which can be read through the glass cover; for the glass being in contact with the edge of the enamel plate at one end, and separated from it by a gradually increasing interval towards the other, the intervening stratum of milk is made to assume the form of a thin wedge. If the fluid under examination be of a rich quality, abounding in oily and caseous particles, it will possess such an amount of opacity that only a few degrees can be discovered on the subjacent enamel when the instrument is held opposite to the light. If, on the contrary, the specimen be of inferior quality, whether from innate poverty or the admixture of water, the diminution of opacity thence resulting will be evinced by the enamel scale becoming visible through a deeper part of the fluid, or at a greater distance from the commencement of the scale; the degree of translucency, therefore, can be measured by the number of lines visible through the fluid.—*Dublin Medical Press and Chemical News.*

REMARKS ON THE COMPOSITION OF THE BLOOD, AND PRINCIPALLY WITH REFERENCE TO THOSE DISEASES OF CATTLE AND SHEEP IN WHICH THE FLUID UNDERGOES IMPORTANT PATHOLOGICAL CHANGES.

By James Beart Simonds.

In a lecture on the structure and diseases of the organs of respiration and circulation, published in the Society's Journal, vol. x, page 570, *et seq.*, some observations were made by me on the component parts of the blood, several of which it will be necessary to repeat here, with a few additions, for the sake of unity and completeness. In the present paper, however, it will be my aim to avoid as much as possible entering on disputed points of the physiology of the fluid and of the several assigned causes of the changes it undergoes under ordinary circumstances both within and without the vessels. To attempt this would draw me from the practical object I have in view, and perhaps render the paper less attractive to the majority of the readers of the journal.

The slightest reflection on the organization of an animal body will suffice to show that it is composed of solid and fluid parts. It is not, however, so well known that the circulating fluids compose no less than a third part of the weight of the individual animal, and that all the so-called solid parts of the frame were at one time in a state of fluidity. The fluids met with are various, consisting chiefly of the blood, the lymph, the chyle, and the different secretions. The latter named, as well as the lymph, depend immediately on the blood itself for their existence, while this, in its turn, has its chief source in the chyle—the fluid which is produced in the animal organism by the processes of digestion and assimilation of the food on which the creature subsists. The several changes which the food undergoes before it becomes converted into chyle have been fully set forth in the lecture before referred to, and this being the case it will be only necessary to direct the reader's attention to the explanations therein given.

In comparing the quantity of blood with the entire weight of an animal, it will be found difficult to arrive at the exact proportion they relatively hold to each other, but it is sufficient for our present purpose to state that the amount is usually estimated at from one fourth to one fifth of the entire weight of the body.

If we were to attempt to give a popular definition of the blood, it might be described as a fluid which circulates through the heart, arteries, and veins, carrying with it the materials which are indispensably necessary for the maintenance of life, heat, nutrition, renovation, and secretion, building up the organism of the young animal and supporting that of the adult and aged. To effect the passage of the blood from one part of the system to another, various organs are employed and several forces brought into operation. The chief organ for this purpose is the heart, which may be regarded as a central pump, having in connection with it two sets of vessels—the arteries and veins—the former of these being transmitting, and the latter returning conduits. Besides these vessels there are intermediately placed between them, as it were, another set, called, from their small size, capillaries, to which we shall have occasion, hereafter, more particularly to allude.

It is well known that in all the higher orders of vertebrate animals, the blood, as it appears to the unassisted vision, when drawn from its vessels, is red in colour. This redness, however, does not depend on any inherent colour in the fluid itself, but is due to an innumerable number of red corpuscles or cells which are floating within it. If, then, these bodies are removed from the blood, the true *liquor sanguinis* which remains behind will be found to be of a pale straw colour, resembling in this respect the blood of the invertebrate class of animals.

It can be readily imagined that a fluid, which nature employs for such multitudinous purposes in the animal economy, is likely to be very complex in its elements, and such, indeed, is the case. To analyze these, even imperfectly, it is necessary, as a general rule, that the blood be first removed from its vessels. On this being done, it will be found that shortly afterwards a remarkable change takes place in it, and that it is now no longer fluid, but has assumed a solid form. This phenomenon is among the most interesting which belong to the blood, and clearly indicates that the fluid possesses an inherent capability of assimilating organic structure. From the time of Hunter down to the present period, the correct explanation of the phenomenon of coagulation—clotting—has occupied the attention of our ablest chemists and physiologists; and perhaps it is not too much to say that, notwithstanding all the light which has been shed upon it, some darkness still enshrouds the solution of the problem.

The time which elapses before the blood becomes solid will vary considerably, depending on many adventitious circumstances. The coagulation is usually effected in ten or fifteen minutes, but in some instances many hours and even days will pass before it is completed. Before, however, alluding more particularly to either the clotting of the blood or the variations in the time required for its accomplishment, it will be necessary to describe the principal component parts of the fluid.

On setting aside the coagulated mass and keeping it at rest for a short period, a transparent fluid is found to exude from it, which can easily be decanted off. This is the serum, or so-called watery part of the blood.

The Serum.—Under all ordinary circumstances this constituent of the blood remains in a fluid condition, while the quantity which is exuded will be in proportion to the time the coagulum remains at rest, until the expiration of about thirty hours; after which, however, but little more will be expelled naturally, although a still greater amount can be obtained by drying the clot. It is, therefore, evident that by the act of coagulation the serum is mechanically enclosed in the solidified mass, and that subsequently, by this undergoing a certain degree of condensation, the greater part of it is squeezed out as water is expelled from a sponge by the application of pressure.

Thus obtained, the serum is found to be a viscid fluid of a yellowish colour and having an alkaline reaction. Its specific gravity varies from about 1·025 to 1·050. It is a very important element of the blood, containing not only the water and saline materials of that fluid, but also the albuminous matters in a state of free solution. In short, it may be said to include the principal portion of all the constituents of the blood with the exception of the fibrine, the hæmatine, the globuline, and the cells. The proportion which its several parts bear to each other will materially depend on certain conditional circumstances, such as the kind of food on which an animal is fed, the state of its health, the uses to which it is put, the temperature to which it is exposed, &c. Notwithstanding these disturbing causes, if the vital forces are still active, the balance is fairly maintained. Thus, speaking in general terms, every 1000 parts of serum contain about 780 of water; and although this proportion, even in health, is subject to variation, and may sometimes rise to 790 or sink to 700, the first-named quantity is nevertheless present as a rule. Any diminution in the amount of water is quickly compensated for by the thirst which it creates, while any excess will be as rapidly removed by the skin and kidneys,—in the one case as a chief constituent of the perspiration, and in the other as that of the urine.

Albumen exists in the serum at about the rate of 7 per cent.; it may rise a little above this, or sink as low as 6 per cent., consistent with health. In a plethoric habit of body there is a relative increase of the albumen; and on the contrary, in a debilitated condition, a diminished amount. The chief use of the albumen is to form fibrine by a higher degree of vitalization. Besides this, albumen is consumed in the production of the gelatine of the simple fibrous tissues, and in several of the secretions, as well as in the formation of those structures which are either eperdermoid or horny. The source of the albumen is from the protein compounds of the food, and its proper proportion in the serum is regulated by its constant consumption for the above-named purposes. The presence of this material is easily demonstrated. Thus the addition of any mineral acid to the serum will throw down the albumen in the form of a dense white precipitate; or if the serum be exposed to heat, the coagulation of its albumen will take place. A temperature of about 165° of Fahrenheit will generally be required for this purpose, unless an unusually large amount is present, when a lower temperature will suffice. If, however, the albumen exists in a less than usual quantity, a much higher temperature will be required to effect its coagulation. A qualitative, but not a quantitative analysis of the serum, in so far as albumen is concerned, is thus obtained. A microscopic examination of solidified albumen does not, however, show that in acquiring this condition it has assumed any definite or structural form. It is at most granular.

It has already been stated that we possess no other means of obtaining serum except from coagulated blood. Nature, however, can readily separate it in large quantities from the other constituents of the *liquor sanguinis.* We observe this under many circumstances, and frequently when an animal is in a weak and debilitated condition from disease. It is then that the serous part of the blood exudes through the capillary vessels and accumulates in the areolar tissue or in some of the great cavities of the body. The diseases which commonly pass under the term dropsy are especially referable to a cause of this kind. These effusions may differ, and even considerably so, from pure serum in the proportions of albumen and saline matters which they contain ; but nevertheless they are essentially of a serous nature, as is shown by their analyzation ; and as such they afford a proof that the serum is capable of being expelled from the living vessels apart from the other constituents of the blood.

Salts of the Blood.—The saline matters of the blood are various, and are met with in the serum. They consist chiefly of the phosphate of lime and magnesia, the tribasic phosphate of soda, with the chlorides of sodium and potassium. Besides these, there are some other salts, which, although important in a physiological point of view, need not be especially mentioned in a paper of this kind. The phosphate of lime exists in considerable proportion, for when separated from the blood it is required to give strength and solidity to the bones, that they may be enabled to support the weight of the animal and resist the force of the muscles in the various movements of the frame.

The Fibrine.—This constituent of the circulating fluid may be considered as the basis of nearly all the solids of the body. It exists in the blood in a state of perfect solution, but possesses the remarkable property of becoming solid either within or without the vessels, and whether separated or not from the other component parts of the blood, provided this fluid becomes stagnant. The coagulation of the blood is entirely due to the presence of the fibrine. The power of the fibrine to become solid led at one time to its being designated "self-coagulable lymph," a name by which it is described by John Hunter, in his great work on 'The Blood and Inflammation.' The term fibrine is, however, the more appropriate one, as expressing the fact that the material in solidifying arranges itself in the form of threads or fibres.

The means which are usually adopted to obtain fibrine consist of whipping the blood with a small bundle of twigs, immediately on its being drawn from the vessels. The fibrine under these circumstances adheres to the twigs particle by particle, until the whole of it is separated from the other component parts of the blood. On washing the mass thus obtained to free it from the small quantity of red colouring matter which it had enclosed, the fibrine is found to consist of white, tough, and elastic fibres interwoven together, and crossing each other in every possible direction. A microscopic examination of the smallest portion of one of these filaments reveals the further fact, that it also is made up of minute threads arranged in a similar manner to that of the whole mass.

The quantity of fibrine existing in the blood rarely exceeds three parts in every thousand in health; but, like the albumen, it also is liable to variation, being both increased and diminished, according to different conditions of the organism. In a full habit of body, and especially if inflammatory action should supervene on this state of the system, the proportion of fibrine quickly increases until, according to Andral, in cases of active inflammation of the viscera it may amount to ten parts in a thousand. All pathologists admit a great increase under these circumstances; but there are few who place it quite so high as Andral. Among the advantages consequently which are derivable from blood-letting in inflammatory affections, we must name that which arises from the withdrawal by the operation of a portion of this excess of fibrine. The benefit, however, is frequently not so great as might at first sight appear, arising from the circumstance that so long as inflammation persists, there is a suspension of the vital functions of the *affected* organ, and consequently a continuous cause for the accumulation of fibrine, none of that substance being consumed for the nutrition of the diseased structure.

In diseases of the opposite character to those just alluded to, this important element of the *liquor sanguinis* is diminished in quantity, often sinking below even one part in a thousand. Hence a deficiency of fibrine is asociated with typhoid fevers, as likewise with many other diseases of an asthenic nature; which are not found to yield until an increase of the fibrine begins again to take place.—*Journal of the Royal Agricultural Society.*

(*To be continued.*)

Translations and Reviews of Continental Veterinary Journals.

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

Annales de Médecine Vétérinaire, August, 1860.

ON PARASITES IN THE HORSE.

By Mons. Cambron.

The malady showed itself in the stable of a farmer in the province of Namur. Two horses and a colt died in the space of two days, and all the rest, to the number of ten, were taken ill. The following were the symptoms exhibited. Emaciation; dulness; extreme debility; staring coat; skin dry, and adhering to the subjacent tissues; pulse small and quick; respiration slow; mucous membranes pale; appetite irregular; alvine evacuations soft, and badly elaborated; urine white, clear, and sedimentous; dull abdominal pains; switching of the tail; pawing; and frequently turning the nose to the left flank. The animals, when once down, were unable to rise without help, and died within twenty-four hours.

On a post-mortem examination the thoracic organs were found normal, as were also those of the abdomen *externally*, with the exception of some partial redness, but not more than is generally found after death. The stomach contained a great number of the larvæ of the Œstrus, implanted principally on the superior parietes of the left portion. There were no perforations of this organ, and only a slight redness of the membrane. The small intestines contained a large number of the *Ascarides lumbricoïdes*, and their mucous membrane presented some partial injections. The remainder of the intestinal tube was healthy, as were also the other organs of the body.

These horses had been badly fed—principally on straw, bran, and some rye—on account of the scarcity of forage in that district. The three which had died had been bled at the commencement of the malady, and dieted, and other antiphlogistic means resorted to. This treatment was too absurd, and only contributed to aggravate the malady.

Sulphuric ether and empyreumatic oil, with spirit of turpentine, were given internally. The sulphuric ether was given on an empty stomach, so as to stupify the larvæ and cause them to loose their hold, and render them unable to resist the other medicaments. The empyreumatic oil and the turpentine were given in doses of from one to three ounces. One dose generally sufficed; but if a second was required, it was found advisable to wait three or four days, in order to obviate the inflammation which may be produced by too often repeated small doses, which are also ineffectual in destroying the parasites.

Many other cases have occurred in the same way; some of which died, and others, after similar treatment, recovered.

In another *commune* four horses died almost simultaneously. One of them, according to the information of the proprietor, was a mare in foal, seven years old. She suddenly started back from the manger, and was unable to stand on her legs. Those present, thinking it a determination of blood to the head (*coup de sang*), bled her copiously. In a few hours after she expired. The second, a mare five years old, in foal, was harnessed to draw the carcase out, when she stumbled, and was unable to rise. She was also bled, and died a short time after. The third, an entire horse, two years old, after having been bled, lay down and died. On the autopsy being made by M. Guilmot, veterinary surgeon of the Government, who unfortunately arrived too late to render any assistance during life, nothing abnormal was found, except a large quantity of the larvæ of the Œstri. As many as 162 were found in the left portion of the stomach, which had nearly perforated its coats. The duodenum contained a great number of *Ascarides lumbricoïdes*. All the other horses, eleven in number, were more or less affected by the same malady; but, by the above-mentioned treatment, they recovered.

In another village three horses died from the same cause. A farmer, who had two horses, found them dead in the morning. He had only perceived that they were ill the evening before. The post-mortem showed the same results as in the before-mentioned cases.

A FIBROUS TUMOUR IN THE RECTUM OF A HORSE, EXTRACTED AND CURED.

By M. Houba, Veterinary Surgeon of the Government, Rochfort, Province of Namur.

This was a four-year-old gelding; the rectum protruded at every evacuation, but its health was not otherwise affected. It was at first considered by M. Houba as a prolapsus ani.

Acting on this opinion, astringent injections were ordered, and continued for some time, without any effect. On casting the horse, and making a careful examination, a tumour of considerable size was discovered to be situated between the mucous and muscular coats of the intestine. The mucous membrane was thickened and injected. The tumour extended in an elongated form towards the colon; its colour was of a yellowish blue. M. Houba confesses that he was at a loss how to proceed, but decided on cutting into the tumour; and on doing which much blood escaped. The parts were ordered to be sprinkled with powdered alum. For about two days the prolapsus of the intestine ceased, but afterwards returned as before. It was therefore decided to extract the tumour by an operation. The animal being cast and fixed in a proper position, the operator's hand was introduced into the rectum, and the tumour was brought outside. It was found to be less injected, but of the same size. It was considered dangerous to use the knife for fear of cutting the intestine. M. Houba detached the superior part by the finger and thumb of the left hand, and then grasped it firmly, while, with the thumb and nail of the other hand, he detached it from the muscular coat. This plan was continued until two thirds of it had been separated, when two small arteries were met with, which were secured by ligature; and after this the remainder was detached, and the whole of the tumour removed. Its weight was 800 grammes; it measured 45 centimetres in circumference and 10 centimetres in thickness. In about three weeks after the horse was perfectly recovered. The cause of the formation of the tumour was attributed to injuries received by the administration of enemata, which was rendered more probable by the old-fashioned mode of the bladder and tube of wood being used.

Journal des Vétérinaires du Midi, for June 1860.

INVAGINATION OF THE INTESTINES IN THE DOG.

Par M. Serres, Chef du Service, Clinique de l'Ecole, Toulouse.

This malady, which is of frequent occurrence in the canine species, has shown itself in two cases, with symptoms diagnostic of the disease. In the first case it was considered as a simple prolapsus of the rectum (which is very common in the dog, and easily cured), but the autopsy showed the error of this opinion.

In the second case, the salient feature was the occurrence of a round tumour, of a reddish colour, on the external part of the rectum, at the extremity of which was an orifice, into which the probe easily penetrated. This tumour was readily reduced by elevating the posterior part of the animal, and using slight pressure on the parts, when it would return to its natural position. The fæces were soft, but voided with difficulty. The animal evinced some slight abdominal pain; was dull, but, nevertheless, took what was given him in the way of food. The mucous membranes were ingested; the pulse quick and small. The reduction of the parts was made, and mucilaginous drinks and injections were ordered, which seemed to produce some amelioration, lasting, however, but twelve days, during which time the intestine did not protrude. After this period, the prolapsus returned, all the symptoms were aggravated, and the defæcation was continual, painful, and in small quantities. The next day there was loss of appetite; the mouth was hot; the flank was tucked up; the protrusion of the intestine was increased, and had assumed a purple colour, and fæcal matters of a sero-mucous nature and a fetid odour escaped in small quantity from the intestines. These symptoms increased in intensity, with but slight interruption, for about a week, when the animal died. On opening the abdominal cavity, the following abnormal features were brought to view. The large intestine was turned back, and presented a number of large folds; the rectum was distended, as if by a cylindric, resisting body. On incision it was found that this cylindric body was formed by a portion of the small intestine, of about twenty-five centimetres in length. Upon introducing a probe, it penetrated without any great difficulty into the large intestine; there was, nevertheless, some resistance to overcome at the commencement of the part of the intussusception, at the point which corresponds to the adherence externally of the two tunics of the large and small intestines. The coats of the large and small intestines, anterior to the invagination, strongly adhered to each other, to the extent of eight to ten centimetres. This adhesion was formed by a sort of semi-membranous substance, of a whitish-red colour; but separation having been effected, the intestines were easily replaced in their normal position. The invaginated intestine had traversed the whole of the larger intestines, which must have exerted an anti-peristaltic contraction; the fæces could pass through the whole length of the tube, meeting only with a slight obstacle at the point of adherence above mentioned. If the subject of this case had lived longer, there is little doubt but the continued pressure would have caused a complete obstruction.

AGE OF THE HORSE AND MESMERISM.

In these times of table-turning, spirit-rapping, and mesmerism, we may be excused for the following extract from the *Giornale di Medicina Veterinaria*, Torino, 1859.

To know the age of the horse without inspecting the teeth, pull a hair out of the mane of the animal of which you wish to ascertain the age, pass it through a plain gold ring, of a certain substance, hold the two ends of the hair between the thumb and forefinger, suspend it in this manner in the centre of a tumbler, taking care that the latter is perfectly level, and that the hair is long enough to allow the ring to reach the side of the glass. Holding it very steady in this position, in a few minutes, or even seconds, a slight oscillation of the ring is perceived, which soon increases, and the ring strikes the side of the glass as many times as the horse is years old. (?)

Another account.—Il Signor Piazza, veterinary surgeon, was in company with a rich proprietor, who assured him that he always used this method to know the age of horses, and, to prove it, went into the stable, and pulled a hair out of the mane of a seven-year-old horse, and one from a colt, thirty months old; then going into the drawing-room, he asked for a glass half full of water, and also procured his wife's plain gold ring. Then passing one of the hairs through the ring, he held the two ends between his forefinger and thumb, dipped the ring in the water, then suspended it in the middle of the glass, just below the rim; in less than half a minute, the ring struck the glass seven times. The same was done with the other hair, and the glass was struck twice for the colt. He afterwards asked for a hair of his wife, and proceeded in the same manner, when thirty-five strokes were heard, and the register proved that her age was thirty-five years. "All this," the writer says, "I saw with my own eyes, and whoever likes, can try the experiment, which may be repeated as often as you like, but always taking a fresh hair from the mane, as the one that has been once used will have no further effect." This phenomenon is ascribed to mesmerism, or, perhaps, may depend on the physiology of the hair, based on the microscopic anatomy of the same. (?)

Veterinary Jurisprudence.

ROT IN SHEEP.

Salisbury County Court.—E. EVERETT, ESQ., *Judge.*

STRONG *v.* PHILLIPS.

This was an action to recover the sum of £33 4s. 6d., for a breach of warranty on the sale of some sheep by the defendant to the plaintiff. The case was originally tried in this court in January last, when a verdict was given for the defendant. At a subsequent court, an application was made for a new trial, on the ground that the verdict found by the jury was contrary to evidence. His honour granted the application on condition that the costs of the first hearing should be paid by the plaintiff. The case accordingly came on for re-hearing on Wednesday last, before a jury, and the court was crowded throughout the trial, which lasted from twelve until after seven o'clock. Mr. Edlin, of the Western Circuit, instructed by Mr. Balch, of Bruton, and Messrs. Squarey and Whatman, of Salisbury, was counsel for the plaintiff; and Mr. T. W. Saunders, of the Western Circuit, instructed by Messrs. Hoddings, Townsend, and Lee, was counsel for the defendant.

Mr. Edlin, in opening the case, said that Mr. John Strong, the plaintiff, was a farmer living at Evercreech, in the county of Somerset, and Mr. Charles Phillips was also a farmer living at Burford St. Martin, in the county of Wilts; and the action was brought for a breach of warranty respecting the sale by the defendant to the plaintiff of fifty-two ewe sheep at Wilton fair, on the 12th of September, 1859, which the defendant warranted sound. His case was, that this was a false warranty, that the sheep were unsound, and that his client was entitled to recover damages for the loss which he had sustained by reason of such unsoundness.

John Strong deposed—I live at Small Down Farm, in the parish of Evercreech, Somerset. On the 12th of September last I was at Wilton fair, when I agreed to purchase fifty-two sheep of Mr. Phillips, at £1 13s. 6d. per head. I asked him how it was they were so poor, when he replied, "If you had seen the downs on which they have been feeding, you would not wonder at that, as they have run on the poorest down in Wiltshire." I asked him whether the sheep were sound, and he said, "Hear! I'll warrant them sound." Upon that warranty I bought the sheep and paid for them. Mr. Coles, a farmer, was present at the time. I paid the defendant in a refreshment booth £87 2s. for the sheep. They got home to my house on the 14th of September. I put them on a piece of ley. On the 18th of September—four days after the arrival of the sheep—one of them died. Another died on the 26th, a third on the 30th, and a fourth on the 7th of October. On the 4th of November one died, and another on the 6th. Mr. Ashford examined that one. I lost another also on the 17th of November. On the 26th of that month I sent for Mr. Hoddinott to kill one of the sheep. I examined the liver. I also examined the livers of the sheep which were shown to Mr Ashford. They were all in a similar state, and there were flukes in the livers of all the three sheep. About a fortnight after Wilton fair I bought twenty sheep of Mr. Green, at Shepton Mallet market, and they were depastured with the other sheep. Nothing happened to them, and they are all now doing well. My land is dry and healthy, and sheep have been depastured there in consequence of its healthiness. In my father's time twenty years ago, I remember 200 ewes, belonging to Mr. Whittaker, of Bratton, wintering there. These sheep were tested in going in and coming out. Two of them were killed, and they were in a sound condition. I sent for Mr. Hoddinott, who came and killed a sheep. Afterwards I instructed my solicitor to apply to the defendant, and in consequence of his not meeting my views, I ordered the remainder of the sheep to be sold by auction. They fetched altogether £57 1s. 6d. I have known the defendant for many years, but never had any dealings with him before.

After hearing other evidence in support of the case, Mr. Saunders addressed the jury for the defence. He contended that no warranty was given; and secondly, that the sheep were not unsound when they were sold, but became so after they were in the possession of the plaintiff. He should show that these fifty-two sheep were only a portion of a larger flock which had fed upon the defendant's farm; that he had sold seventy of this flock to a person named Noyce, two to a butcher at Barford, and others to a person named Millard, at Salisbury, all of which were sound. Mr. Phillips would swear that he had never had an unsound sheep upon his farm since he had lived there, and if these statements were true, they went to show that the sheep were sound when they were sold, and they must have got diseased after they were out of his possession. He suggested that the sheep were driven an unreasonable distance for one day, and that they had taken the disease either on the road from Hindon to Batcombe, or when at the latter place, which had a bad reputation for bane sheep.

Mr. Charles Phillips, the defendant, deposed—I live at Barford Farm, about three miles from Wilton. Before Wilton fair I had a flock of about 600 sheep. I sold seventy of these to Noyce. They all fed on the same land—sometimes on the arable, and sometimes on the down. Three days before the fair I sold two sheep to Mr. Lever, and on the 7th of November I sold ten of the same flock to butcher Millard, of Salisbury. They were all fed on the same place. I never had any baned sheep on my farm. I will swear that most positively. On the 12th of September, at Wilton fair, I sold Mr. Strong fifty-two sheep, at £1 13*s.* 6*d.* a head. I never warranted these sheep. I believe the sheep were sound when I sold them. I am quite sure that I said nothing about a warranty. Several other witnesses, including two veterinary surgeons, were also examined,

His Honour then summed up to the jury. He observed that there was no denial that the sheep were diseased; the only question was when they became so diseased. There were two points in the case. First, was there a warranty or not? If there was no warranty given at the time of the sale, then the defendant was not liable, and the plaintiff must put up with a bad bargain. But secondly, the question was, had these sheep the seeds of disease in them at the time of sale at Wilton fair? Had they those seeds which became more developed afterwards? The great point for the jury to determine was, whether or not the sheep were in an incipient state of disease when they were sold at Wilton fair.—The jury immediately found a verdict for £33 4*s.* 6*d.*, the amount claimed. His Honour said that if it was any satisfaction to the jury, he perfectly agreed with the verdict.

GLAMORGANSHIRE SUMMER ASSIZES.

Before the Hon. Sir George William Wilshire Bramwell, *Knight.*

ACTION: ALLEGED DAMAGE TO CROPS, CATTLE, ETC., FROM COPPER SMOKE.

Houghton v. *Bankart.*

This was an action brought by Mr. Dugdale Houghton, a gentleman holding several farms in this country, and an extensive breeder of cattle, against Mr. Frederick Bankart, for £5545 from the proprietors of the Red Jacket Copper Works, which is situated between Neath, Britonferry, and Swansea, for damages alleged to be done to plaintiff's crops, stock, cattle, &c , in consequence of the deleterious effect produced by the smoke from the said copper works. The trial excited great interest in this country as affecting copper masters and landed proprietors, the question at issue having only been raised within the last few years. The interest felt in the trial was further enhanced from its being so long pending, it having been postponed from several previous assizes.

Mr. Grove, Q.C., Mr. Giffard, and Mr. Hughes appeared for the plaintiff; Mr. Montague Chambers, Q.C., who was specially retained, Mr. Henry Allen, and Mr. Bowen appeared for the defendant.

Mr. Hughes opened the pleadings, claiming upwards of £6000 compensation, the following being the particulars of the alleged damage sustained:

For loss and damage sustained in respect of the farm called Coedyrallt-uchaf:

		£	*s.*	*d.*
1857.	Loss by death of sheep	3	0	0
1858.	,, ,, ...	6	0	0
1857.	,, 17 horses	412	0	0
1858.	,, 11 ,, ...	183	0	0
1859.	,, 8 ,, ...	103	0	0
1856 to 1859	,, injury to cattle	25	0	0
1856 to 1859	,, destruction and injury to rabbits ..	45	0	0
1857.	,, barley injured or destroyed	25	0	0
1856.	,, oats ,, ,, ...	20	0	0
1857.	,, oats ,, ,, ...	30	0	0
1856.	,, wheat ,, ,, ...	35	0	0
1857.	,, hay ,, ,, ...	240	0	0
1857.	,, turnips ,, ,, ...	10	0	0
1858.	,, turnips ,, ,, ...	10	0	0
1858.	,, clover ,, ,, ...	22	0	0
1856.	,, grass ,, ,, ...	125	0	0
1857.	,, grass ,, ,, ...	375	0	0
1858.	,, grass ,, ,, ...	600	0	0

1856 to 1859.	Loss by damage done to fences	250	0	0
1856.	,, fences injured or destroyed	25	0	0
1857.	,, fences injured or destroyed	50	0	0
1858.	,, fences injured or destroyed	50	0	0
1856 to 1856.	To two years and three quarters of rent, taxes, tithes, wages, and other sums paid by the plaintiff in respect of the said farms destroyed or injured by the defendant	825 737	0 0	0 0
1859.	For damage sustained by the plaintiff in loss of beneficial and healthful use and enjoyment of the dwelling-house as a place of residence	550	0	0
	For loss of outlay upon the house, gardens, and cottages rendered useless	250	0	0
	For the purchase of grass and other food for cattle and horses in the place of that destroyed	330	0	0
	For depreciation in the value of the plaintiff's horses	345	0	0
	For loss and damage sustained in respect of the farm called Court-y-Bettws, by reason of depreciation in value of horses, sheep, cattle, and other live-stock, crops, and produce	500	0	0

There was also another item for depreciation in value of horses, cattle, and other live-stock, crops and produce of the Court-y-Bettws, but this was not prepared. In order to avoid a third action, it was arranged that this action should be for injuries that had been sustained up to the present date. The defendant having purchased the lease of the farm-house, the plaintiff's land, and the items particularized here as follows:

Since March last, death of 3 horses	£51	0	0
In 1859, ,, 14 ditto	305	0	0
,, loss of sheep	600	0	0
,, ,, ...	160	0	0
,, loss of rabbits	15	0	0
,, ,, ...	6	0	0
Rent, taxes, &c.	260	0	0
Loss of ferns	60	0	0
Extra keep	150	0	0
Loss on sale of stock	550	0	0
The total amount amounting to ..	£5554	0	0

Mr. Groves, in opening the case, addressed the jury at considerable length. He stated that the plaintiff had formerly resided at Birmingham, but, some years since, he was induced to come to the neighbourhood of Swansea, where he rented the farms, which were then free from any noxious influences. The spot was, moreover, considered a very desirable one, in which a man possessed of agricultural tastes might enjoy himself. Some years since, the defendant, who was by profession a solicitor, took the Red Jacket Copper Works, which are located very near the plaintiff's farm, and there carried on copper-smelting by a new process, which was most destructive to the crops and cattle in the neighbourhood. The new process was ultimately abandoned for the old one. The grass and crops on plaintiff's farm were actually burnt up, and consequently became useless. It appeared that the defendant's pleas were, that he was not guilty, and further, that what he had done was by the leave and license of the plaintiff himself. The following evidence was then taken.

Mr. David Hughes was the first witness called. He produced a plan which as an engineer and surveyor he had prepared of the land.

Mr. Dugdale Houghton, the plaintiff, was then examined. He deposed to having, in 1853, become tenant of the farm in question. At that time the pasturage was luxuriant, and the cattle upon the farm thrived well. He had 300 brood mares upon the farm. He also grew upon the farm crops of fern, which were usefully employed in feeding horses. He had also 800 to 1000 sheep. Some time after he had taken possession of the farm the defendant took the Red Jacket Works, where he smelted copper. Soon after the works were in full operation, plaintiff observed that the grass dried up and withered so that it was rendered useless. It appeared to have been affected as if blasted by lightning, and there were spots of a peculiar description upon it in different places. A number of the horses, cattle, &c., upon the farm died. Witness traced this to the effects of the copper smoke, and, to satisfy himself on this point, sent portions of the carcase of some of the horses to be analysed by Mr. Herapath, of Bristol, and from that gentleman's report he was further confirmed in his opinion that the death of the horses and cattle resulted from the deleterious effects of the copper smoke. The witness described at length the effects produced upon the turnips. The leaves became green, and yellow, and shrivelled. The total loss he computed he had sustained amounted, according to his calculation, to upwards of £600, from the year 1857 to 1860.

The plaintiff was then cross-examined at great length by *Mr. Chambers*, who evinced his usual facetiousness in the mode in which he bantered the witness.

Cross-examined.—If one of plaintiff's men had proven at a previous quarter sessions, that witness was in the habit of sending a large number of rabbits to Bristol for sale, he said what was not true. He was in the habit of sending some to Birmingham, where they were sold at from 1s. 6d. to 1s. 9d. per couple. Had brood mares that were broken-kneed and one-eyed, but they answered his purpose well, as they had heavy weighted cobs not race horses. Had £7 for some of them. In Smithfield a good brood mare might be purchased for 50s. Considered that the claim he made for loss of horses was too expensive, and that the sum of £425 was reasonable. Was a director and shareholder in the South Wales Mineral Scheme, the shipping port of which was Briton-Ferry. Was connected with that scheme before he took the farm. Did not complain of the Briton-Ferry Copper Works. Some portions of the farm was very cold, and some of the horses became hide-bound, lean, and thin. Some persons might have said that he starved his horses; but it was not true. Out of seventy horses that died, some fifty died from the effects of the copper smoke. Did not call any learned veterinary or other scientific assistance to examine the carcases of the horses that died for the purpose of ascertaining whether they had died from the effects of copper smoke or from other causes. Had suddenly become learned enough to know which of the horses had died from the smoke, and which had not. In 1857, after the action had been brought, he called one of the Messrs. Bankart to see horses and crops that had been injured. Valued the injury done to the crops and horses himself, as he considered that he was a competent farmer. Did not make a memoranda of all the claims for damage which he intended claiming. Trusted much to his memory, which was an excellent one.

Had about 200 horses on the farm in 1858. Had about 1000 acres of grass. There was about sixty to sixty-five acres of grass on Coed-yr-allt-uchaf, including fern. There were ten to fifteen acres in crop. On Coed-yr-allt-issa and the Burrows there might have been five or six acres more. Charged £125 in 1856 for the loss of grass taken from the mouths of the cattle. In 1857 charged £240 for the loss of hay on thirty-six acres, which were on the two farms. I do not know that seven farms claim a right to the Burrows. They had never exercised such a right during his time. Calculated that he had lost 10s. a ton by the farm. An acre would grow about three or four times. Made a good bargain with the Welsh people. Did not consider that he took them in. The land was worth much more to him than three or four pounds an acre. He improved the lands by his capital and experience. In 1858 proceeded in Chancery against the Briton-Ferry Copper Works. Obtained damages to the amount of £1350 from them. The Red Jacket Works are divided from the Briton-Ferry Works by a pill only. Paid £60 a year for Court-y-Bettws farm. They had now permission to erect as many furnaces and chimneys as they liked on paying him £120 a-year compensation. This was not more profitable than breeding brood mares. Claimed £550 for horses. In 1859 charged £600 for grass. In 1858 the Briton-Ferry Copper Works started. The Red Jacket Works had destroyed the grass before the Briton-Ferry Works started. Charged £15 compensation for rabbits destroyed. Horses would eat the short grass that had recently grown, but when it became sour, after about a fortnight, they walked away. There are a great many furnaces and chimneys in the Crown Copper Works, and in the Mines Royal. Some of them are a mile and a-half from the Boroughs. Cannot say how far the Crown and Mines Royal Copper smoke would travel to the injury of his crops. It depended upon the altitude of the chimneys and the state of the atmosphere. The south-west wet wind does not bring much smoke from Lambert's Copper Works. Noticed that the fern beds had been blighted on the side next to Lambert's Copper Works. Had noticed the largest copper works in the world near Swansea. Did not know how high their chimneys were. Had known the Mines Royal and Crown Copper Works about seven years. Had another farm about two miles and a half from the Cwmavon Copper Works. Had possession of that farm since 1835. Did not observe that the copper smoke did damage. The rabbits increased after he took the place. That was not one of the extraordinary heads of cultivation to which he alluded. Could not say the copper works affected cultivation, but the rabbits were nearly all gone.

Mr. Chambers.—Were they gone to Birmingham, or where were they gone? (laughter).

Witness.—The horses became thin and hide-bound both in summer and winter. Noticed in 1854 or 1855 that the horses were injured by copper smoke. The first time he noticed the deleterious effects of the smoke was in 1854. In 1853 he had several horses there. Noticed that the sheep were damaged in 1854, not a great many. Had a bailiff named Williams. Took the Court-y Bedwas farm after the loss of the sheep. About six months after he took the farm he spoke to Mr. Howard Bankart about the injury sustained. He spoke to him the first time about June, 1856. Did not offer to put the value of the sheep destroyed by the copper smoke as a set off against the money that witness owed Mr. Bankart for coal. They had a dispute as to some money. Witness thought Mr. Bankart owed him money, and the latter thought that witness owed him money. Had sustained loss in regard to horses and sheep before 1856, but did not know the cause. The Red Jacket Copper Works became most unsafe in 1854, as the chimneys increased. In 1855 he first saw the effect of the copper smoke on the hill. Had mowed fern on the hill about six feet in height. Fed some animals on the fern. Had thirty or forty cows on the land. Had a flock of 500 or 600 sheep. Some of them lived, some died, and some were killed. Some of them were now alive. Sold about 160 or 200. In the summer of 1853 the remaining eighty were breeding mares. Had about 1200 sheep at present. Ceased keeping sheep upon the farm about the end of 1858. Was convinced in 1856 by Mr. Herapath, analytical chemist of Bristol, that it was dangerous to keep sheep on the farm. In 1859, he dropped them down to fifteen. About the end of July he ceased keeping sheep there. In July, 1857, four sheep died. In 1853, he had only eleven sheep there. In November, 1858, had 200 sheep there. Before going to the mountain four of them died. They did not wander over the salt marsh. 200 were only kept there a fortnight. Kept no books showing depreciation in value, and the original price paid. In 1857, sustained a loss of £917 by the death of seventeen horses. Had 210 horses on the farm after Mr. Herapath had expressed his opinion as to the injurious effects of the smoke.

This concluded the plaintiff's cross-examination, and the Court, which was crowded, adjourned until Thursday, his lordship requesting the jury to be punctual in their attendance at 9 o'clock.

July 19th.

The case was proceeded with this morning shortly after 9 o'clock.

Mr. Grove proceeded with the cross-examination of the plaintiff, Mr. Houghton.

His Lordship remarked that it appeared to him to be a very foolish way of putting the claim. The value of anything was what could be got for it. He seemed to make the same claim twice over in different forms.

The plaintiff said that this was the manner in which he had put it before, and he admitted that it was perhaps a foolish way of putting it.

By Mr. Grove, examination of the plaintiff continued: The land near the Cwmavon Copper Works is not affected. The herbage grows there well, and also the flowers. Had specimens of both in court.

Mr. Herapath examined by Mr. Grove: I am a professor of analytical chemistry, which I have studied most part of my life. In the end of June, 1856, I received the remains of two horses. I received some in May and some in June. Analysed these remains. Had the head and part of the leg of the first, and the viscera of the second. Found mineral substances in the head and viscera. In one of the horses I found minute particles of copper. There was a tumour on the jaw and inflammation in the viscera. The lungs were in an irritated state. These were all the symptoms of an irritant poison. I depend more on the analytical than the physiological observation. Found a small quantity of arsenic, but not sufficient to account for death. Also found some portions of lead, which are generally found in copper. Also examined a box containing fern leaves and cabbage leaves. I also visited Coed-yr-allt Farm, and noticed the herbage and grass affected, evidently by the copper smoke. The tops of the leaves of a field of oats had been burnt brown, and there was new herbage observable beneath it, showing that the vegetation must have been affected some time before by a blast passing over it. The most elevated parts of the ground seemed to be most affected, as is usually the case when a gas passes over it. The process of copper-smelting would diffuse sulphurous acid and chloride of copper around. I have specimens with me of the leaves which I took from Coed-yr-allt. There are spots on it, which were caused by the sulphurous acid. The portions that are not acted upon still retain a green tint, whilst those which are acted upon are yellow and faded. I also produce specimens of grass which are affected by the sulphurous acid and chloride of copper dissolved and precipitated. I produce the sulphate of copper which I have extracted from four ounces and a half of the grass which was sent me, and represented to have been picked from the farm. In my judgment a copper was deposited which I presume is chloride of copper. Being volatile, it could be diffused in the process of copper smelting, and stop vegetation. Any other acid, whether chloride or sulphuric, would produce similar results when passing through the atmosphere. The particles would be diffused more during showers of rain, or wet, or sea fogs. When sulphurous acid is deposited some time it becomes sulphuric acid, and when deposited on grass would make it sour to the animal's taste. I now speak as a toxicologist, as well as anatomist and chemist. It would certainly act as an irritant poison on man and beast on being absorbed into the system. I do not know whether the poison would make the joints large, except from the result of my observation. I have been shown some horses hide-bound and large-jointed at Court-y-Bettws. I produce various specimens of copper which I have extracted from the vegetation. I had two specimens of grass taken from the farm near a limekiln. The grass growing on the side of the limekiln facing the works was far more strongly impregnated with copper than the grass taken from the side furthest from the copper works, which was but very slightly impregnated. The plaintiff did not appear to be aware of the cause of the death of the horses, until I drew his attention to the fact after examining their remains. Numerous specimens of the vegetation in the Court-y-Bettws Farm were produced. Did not bring with him to-day specimens of herbage from Court-yr-Allt Farm, as he did not anticipate that they would be wanted this time.

Cross-examined by Mr. Chambers.—Before visiting the farms in question, I had not paid special attention to the effect of copper works on a district. I have studied the effect of copper, as well as other metals generally, such as tin, lead, &c. I produce a vial containing a minute portion of copper dissolved in ammonia. It is tinged blue by the nitrate of copper, which I converted by manipulation. A grain of copper would give a blue tint to a gallon of ammonia. With reference to the viscera of the horses, I found inflammation in the intestinal canals. If I search for a volatile poison, I examine the lungs as well as the hebdominal intestines and viscera. On May the 7th I received a head of a horse. I am not a medical man, but toxicology is a branch of medical jurisprudence. I am a recognised lecturer on toxicology. I see more dead bodies than probably any other analytical chemist in the kingdom. I tried the liver of the horse, as being the most likely place to find traces of the poison. I found that the charcoal from the lungs was burnt by acid. Found a button of copper. Could not speak as to the quantities of copper in the animal without having been supplied with the whole animal. No chemist in the world could do so. If he pretended to do so he would deceive himself and others. There are two hundred poisons, and I do not search for each poison if I find enough of one kind to account for death. I have never found copper in vegetable manures. I do not believe that there is any arsenic in vegetable manures. I have analysed more manures and vegetables than any other chemist in the west of England. I know that Dr. Davey is of a different opinion in that respect. I did not find copper in the head of the horse I examined. I had, afterwards, a calf, on the 24th of June. I burnt the blood to carbon; and, on following up the test, I found black sulphurate of copper in the sucking calf. The calf had four teeth. I do not know how old it was. With regard to the herbage and grass, I have merely examined the specimens sent me. In 1856 I saw grass and fern on the farm. They were both burnt. Mr. Houghton directed my attention to the grass. The brown leaves of the fern produced arise from sulphuric acid. It is not probable that you (the learned counsel) could extract a button or spangle of copper from some of the fern produced, but I think I could (laughter). Grass does not die when provided with water. There is no very striking difference between the dead grass of any kind and the grass which may have died from drought or other causes. All dead grass is something alike. Sulphurous gas also escapes in small quantities from some kinds of coal during combustion. Particles of lead are diffused very extensively in lead-smelting works. I have often found lead in all parts of animals that have been poisoned by water.

By Mr. Grove.—The dead grass produced is different in its appearance from grass that died from drought. If from the latter cause, the new herbage would spring out generally, and not partially. The fern is also different from fern that died from other causes.

Mr. Herapath was examined at considerable length as to the cause of the death of the animals, and the grass and herbage submitted to him for analysis. He positively asserted that the destruction of the vegetation and the death of the animals were produced by the subtle poison in shape of sulphate of copper. A minute quantity of sulphurous acid serves as a tonic, while a large quantity is a deadly poison.

The plaintiff was again examined in reference to the specimens produced by Mr. Herapath. He identified them as being the same sent to Mr. Herapath, and produced by him. The specimens were portions of the remains of animals and vegetables. The specimens were fairly selected from the farm. Some portions of the grass produced were taken from the farm the day before yesterday.

His Lordship.—It would not be unfair to take the specimens from the places most affected.

The plaintiff said that the specimens were taken from Coed-yr-allt-Issa, in a walk straight to his house. There were many portions of the farm that presented a much worse appearance than the specimens, and many that were much better.

Mr. Rees Preece, formerly occupier of the farm in question, deposed that it contained a capital grass land when he lived on it. It was one of the best farms in South Wales for breeding horses and sheep. It was completely useless since the copper works had been established.—This witness was a remarkably sharp specimen of a Welsh witness, and the learned counsel could not catch him napping. Mr. Chambers asked him whether he knew the difference between an elephant and a horse, presuming that the Welshman would be overawed. The witness, however, retorted that he also knew the difference between the learned counsel and an elephant.

Jacob Williams, the farm bailiff of the plaintiff, who had lived in the farm since 1848, deposed to the farm having been a capital one until the Red Jacket Copper Works was worked by the defendant. The farm had about fifteen hundred sheep, fifty ponies, and fifty cattle.

By Mr. Chambers.—A great many sheep died in 1854, but he did not know what they died of. Had gone all over England and Wales with his master to buy cattle. Could not keep the cattle on the land more than six weeks, otherwise they would decrease in value.

Mr. Chambers.—When are you going to buy more horses?

His Lordship—Not until this case is finished, and goodness knows when that will be.

William Thomas and *David Williams* were examined to prove the same as the other witnesses. The last-named witness lived near the Red Jacket Works, and often saw the smoke go over the Coed-yr-allt farm. It poisoned all the grass.

Mr. William Henry Michael, surgeon, of Swansea, was then called. He deposed—The warm gas given off in copper-smelting is sulphuric acid. Arsenic is also given off. The smoke is very destructive to animal life, when the animals graze on vegetation affected by the smoke. The Kelvey Hills are entirely denuded of vegetation, but there may be an oasis in the midst of copper smoke, provided the spot is a sheltered one. Copper smoke produces a most peculiar effect upon the bones, causing swelling of the joints, &c. It also causes the animals to be hide-bound. It causes the teeth to become black and loosened, and the animals ultimately died with every appearance of starvation. The smoke also produced ulcers upon the jaw. The witness here gave the result of several experiments which he had conducted upon leaves, ferns, and plants. The peculiar symptoms of the effects of the smoke upon vegetation was to destroy a portion of the leaf completely, leaving another portion in full vigour. The portions destroyed would be those upon which the sulphurous acid became converted into sulphuric acid. The farm in question was particularly exposed to the smoke of the Red Jacket Works. Eddies of wind would bring the smoke down upon the farm with great force; the effects of the copper smoke could be traced along the farm. The higher the chimney, the less injurious would be the smoke, as it would be more diluted with atmospheric air, and it would be carried away a greater distance. Had seen some of the dead horses on the farm. The bones of the cattle, now produced, were affected by the smoke, and assumed the peculiar appearance that is indicative of the disease called the copper disease. The bones of the animal became calcined and brittle, and they grew out of the flesh. Witness also produced leaves of plants grown in his own garden, which had been affected by copper smoke.

Mr. Montague Chambers then addressed the jury for the defence in a long speech, which was interspersed with a great deal of wit and good humour. He commenced by assuring his lordship and the jury, that fortunately, or perhaps unfortunately, it was his lot to have had long experience in numerous compensation cases, and fortunately, or perhaps unfortunately, the plaintiff also appeared well up in similar practice, judging from the enormous and outrageous sum which he modestly claimed as compensation for damage sustained by the copper smoke in the bill which he had cooked up. When he found that £5900 odd had been claimed by the plaintiff, he (the learned counsel) naturally asked what kind of farms they would be which would warrant a man in making such an enormous claim for compensation. On looking at the rent-roll he found that the five different holdings of the plaintiff only produced a yearly rent of £240, whilst £5900 were demanded as compensation for damage done to these holdings, from the last day of December down to the commencement of the action. From February, 1849, to the present time, the plaintiff had the hardihood to claim the enormous amount of £2000. Ought not the jury and others to relinquish their various pursuits, and take to farming? At a time when all the agricultural interests were crying out, "Ruination," here was a gentleman, who paid a total rental of £240 a year, claiming £5900 odd for compensation for the injury done to these farms; and he furthermore actually added £2000 additional in round numbers. Now he believed that Mr. Houghton had mistaken his vocation. Instead of going to live in his rural cottage upon the banks of the Bristol Channel, he should have gone to town, or try to be returned to parliament for Birmingham instead of Mr. Bright, and then perhaps he might be appointed to an office which he appeared to be eminently qualified to fill—namely, that of Chancellor of the Exchequer. He would then have ample opportunities afforded him for evincing his eminent talents in cooking accounts. He had studied effect, by bringing forward the eminent chemist, Mr. Herapath, to excite their admiration and astonishment by the production of his wonderful blue bottle, the liquid in it being coloured a blue tint by the introduction of a minute particle of copper. This blue bottle, when produced in court, caused a louder buz than many blue bottles of another description. He was reminded of the admiration which learned lecturers at the Polytechnic and Royal Institution elicited from elderly ladies, who handed to their charming daughters coloured liquids magically transformed in bottles, at the same time exclaiming in rapture, "My dear, who could have thought it. Well, I do declare!" (laughter). The plaintiff he presumed hoped that they would believe his tale of damage sustained. They might have read nursery tales, but would they believe them? The learned counsel, after indulging in a strain of good humour, proceeded to cite certain cases in which it was held that when a lawful and useful calling was carried on in a convenient situation, even when a nuisance, its proprietors were not responsible for any trifling damage which might be inflicted, as compared with the large commercial benefits which it might be the means of conferring upon the neighbourhood. He argued that this was a reasonable and wise decision. Was it to be supposed that the existence of large industrial undertakings were to be virtually prohibited by the infliction of such enormous penalties when, as he should show, the situation was conveniently situated? Mr. Bankart was stated to have been a London attorney, who came down to Wales to speculate in copper works, as he was in a hurry to get rich. But let them see whether the Birmingham man or the London man appeared to be the most successful. Mr. Houghton was a Birmingham surveyor, and a speculator in a mineral scheme. He was engaged in surveying the place, and was well acquainted with the effects of copper smoke. He had to take flights over the country like a crow. He had taken the farms with his eyes wide open, and was he to come before them and pretend that he was like an ignorant strange farmer, who knew nothing about minerals? Did it not rather appear as if he had bought both the land and the lawsuits at the same time? With regard to the horses which had died on the farm, why did not the plaintiff keep some sort of books, and not trust merely to his memory? He did not supply them with a list of the horses that had been drowned, that had been poisoned, and those which had died from other causes. He was not a humble, ignorant person, but an intelligent man of business, who understood figures, and who had been himself engaged in valuation cases. He had himself overcrowded horses in the winter upon exposed downs that was not adapted for them. The same remark applied to the sheep. Why did not the plaintiff devise means to count the sheep that died from copper smoke, so as to produce a fair account? He did no such thing; but formed an enormous claim without even giving a reasonable account of the loss he had sustained. Could the jury believe that the loss had really been sustained; although a horse, cow, or sheep, might die from copper smoke, there were many witnesses who could prove that the mortality could not have been so bad as stated. He was putting on the screw; he was merely purchasing law-suits. They claimed £2000 for the injury sustained from the spring of last year to the present time. The plaintiff was trying to make gold out of copper in an extraordinary manner. He had received compensation already for the damage he sustained from the Briton-Ferry Works, the smoke of which must be mixed with that of the Red Jacket. The smoke had been united from 1858 to 1860. Did he not receive £126 a year nett profit, and a further enormous sum of £1300 for the damage done by the Briton Ferry Works? How could the plaintiff call upon the jury to divide the particles of smoke which come from the works and apportion to each its due quantum of deleterious smoke? As for the medical gentleman from Swansea, who found charming flowers in sheltered nooks—the blowing wild thyme, violet, foxglove, and daisy, he feared he was rather a biassed witness, and gave a dark picture because he did not see a greater variety of these delightful wild flowers than had made such an impression upon his refined and delicate organization. It was commonly said, that a man could not eat his pudding and have it too, but the plaintiff did it twice over. He wanted to charge the loss of crops, seeds, outlay, &c., and yet he charged for the whole rent of the farm, and the other items to which he had no claim. The learned counsel then proceeded to analyse the exorbitant items claimed. He contended, that the scientific evidence adduced did not and would not show that the injury sustained, if any, might have been produced by other copper works in the neighbourhood as well as by the Red Jacket. The plaintiff had no books to show what he had paid for the lame, blind, and halt horses he purchased, and it was unreasonable to expect a jury to listen to such a claim. In conclusion, he submitted that the plaintiff endeavoured to trade upon his neighbours who by that enterprise and industry developed the industrial resources of the county; and he hoped that the jury would by their verdict discountenance such a proceeding, by awarding, if they awarded anything, mere nominal damages.

The Court, on the conclusion of the above speech, adjourned.

Friday.

The case for the defence was resumed.

Lewis Jones Griffiths, surveyor and land agent, proved the accuracy of the defendant's plan.

Howard Bankhart, son of the defendant, manager to the Red Jacket Copper Works.—Went there in 1859, when the works were converted from spelter to copper smelting works. Used a patent for the latter about seven months, and as it did not answer it was abandoned. In December, 1850, there were six furnaces and six calciners. In 1852 there were ten furnaces and six calciners. In October, 1853, there were twelve furnaces and eight calciners. They went on increasing till June, 1859. Recollected plaintiff taking the farms in 1853. Previously to that the smoke from his works had affected the hill opposite the works, which hill formed part of the plaintiff's farm. The land could not have improved. It was in the same state still, and was not likely to recover itself for some years.

His Lordship.—Then this is an undefended cause.

Mr. Chambers.—Pardon me, my lord. If your lordship waits, you will see.

His Lordship.—I must wait, I suppose; but my opinion must prevail by-and-by.

Examination continued.—About the time plaintiff took the farm, he called and had a conversation respecting the works. Plaintiff asked for an analysis of the smoke, and said he thought by good farming he could make the farms productive, and obviate the effects of the smoke by good manuring. Plaintiff could see the state of the land as well as the seven jurors the other day. Saw plaintiff occasionally for three years, and he never complained till 1856 of any loss of crops or cattle. In June of that year, made a claim on the plaintiff for coal and rent, and the plaintiff said he had a claim against defendant for damage done by copper smoke. Plaintiff did not send to him to see the animals before or after they were dead. On the 25th June, 1856, plaintiff sent a letter, in which he said he did not want to plunder the defendant, but to seek for a remedy, and for that purpose had consulted Mr. Herapath. In the latter part of that year, plaintiff brought an action for damages, which was tried at Carmarthen. Defendant had agreed to take both the Coed-yr-Allt farms. Since learnt that plaintiff had agreed to take the farms on a lease.

His Lordship.—That will enable the defendant to damage with impunity for a longer time.

Mr. Chambers.—I do not admit that he is doing damage.

His Lordship.—Are you not damaging the land at this moment?

Witness.—Yes, my lord.

Mr. Chambers wished his lordship to let him go on with the cause. He would show that the damage was only partial.

Witness handed in a list of the surrounding works and the number of furnaces in each. When the wind was S.S.W., the smoke would come from Lambert's works upon plaintiff's farms; and also from the Swansea works with a S.W. wind. The smoke from our works did very little damage to plaintiff's farm excepting immediately opposite, and that was caused by the configuration of the ground and the vicinity of the sea.

Cross-examined.—On the 30th of June, 1857, received a letter from plaintiff, asking him to send some one to examine the crops, and calling his attention to the fact that the works were being extended, and would seriously damage his property. Went on plaintiff's land, but did not see animals particularly. They were to be seen if he had had his eyes open. Since 1850 the rateable value of the works had greatly increased; believed it had risen from £10 to £240.

Re-examined.—Plaintiff did not, in his opinion, farm properly. His hay crops were of small value indeed.

By the Judge.—The damage which had been done was increasing as the works increased, but he denied damage to the extent imputed by the plaintiff.

A number of other witnesses were examined for the defendant.

The learned counsel, Mr. Chambers, summed up to the jury, addressing them on the social advantages of commerce, and the propriety of selecting a fit and proper place for this work.

Mr. Grove then replied, arguing that the defendant's case was no answer to the plaintiff's on the subject of damage to the stock and crops, but that in fact Mr. Howard Bankhart, who was the real defendant, had proved the damage of which the plaintiff complained.

The learned judge summed up the case in a lucid manner, without reading the evidence, and presented to them the bearing of Hole *v.* Barlow, the brick case relied on by the learned counsel for the defendant, as showing the correct principle of law, as applicable to the cause now to be decided. The learned judge gave a very strong opinion as to the enormously exaggerated claim of the plaintiff, and after going through the several points which had been proved in evidence, and commented upon by the learned counsel for their respective clients, he left these points to the jury—Do you find that a nuisance has been committed by the defendant upon the plaintiff's premises; that is to say, do you find that it is a real and substantial nuisance, productive of sensible damage, since the time when this action was commenced? If you are of that opinion, then I ask you to say what damage the plaintiff has sustained; and I will further ask you in that case to say whether you are of opinion the defendant has carried on his business in a reasonable and proper manner, and in a reasonable and proper place, according to the rule laid down in Hole *v.* Barlow.

The jury retired at ten minutes past six, and were absent about three quarters of an hour. On their return,

The jury said they found a verdict for the plaintiff. Damages, £150.

His Lordship.—Do you find that the work was erected in a convenient and proper place, and that the business was carried on in a reasonable and proper manner, so that if a person had been injured by it he had no right to complain of its being a nuisance?

The jury.—We think it is a nuisance.

His Lordship.—But upon the supposition that the person has not been compensated for injury sustained, is it then a convenient place for the work to be carried on, and has it been carried on in a reasonable way?

The jury.—We consider our verdict involves that. We do not consider it is a convenient place for the works.

Verdict for the plaintiff, £150 damages.

The court then rose.

ARMY APPOINTMENTS.

War Office, Pall Mall, *Sept.* 11, 1860.

VETERINARY DEPARTMENT.

Walter Burt, Gent., to be Acting Veterinary Surgeon.

MILITARY TRAIN.

Acting Veterinary Surgeon John Marshall Wilson to be Veterinary Surgeon.

Acting Veterinary Surgeon William Appleton to be Veterinary Surgeon.

Acting Veterinary Surgeon Robert Marshall to be Veterinary Surgeon.

War Office, Pall Mall. *Sept.* 25, 1860.

VETERINARY DEPARTMENT.

Thomas Channon, Gent., to be Acting Veterinary Surgeon.

MISCELLANEA.

TOBACCO.

Theologists have pronounced it an invention of Satan, which destroyed the efficacy of fasting, a point so much disputed in the sixteenth and seventeenth centuries. Councillors forbade it to all ecclesiastics under control. Pope Urban VIII and Innocent XI punished the use of it with excommunication; Sultan Amurat IV, with the most cruel kinds of deaths; Schah Abbas II, with penalties almost as severe; Michael Feodoravitch Tourieff ordered a bastinado for the first offence, cutting off the nose for the second, and the head for the third offence; Prussia and Denmark simply prohibited; and James of England fulminated a "counterblast" against it; and yet it is "the most popular plant in the world" in our day.

HOW MUCH TOBACCO IS USED.

The present annual production of tobacco is estimated to be about 4,000,000,000 pounds—four billions of pounds! this is all smoked, chewed, or snuffed. Suppose it all made into cigars, one hundred to the pound, it would produce 400,000,000,000. Four hundred billions of cigars! These cigars at the usual length, four inches, if joined together, would form one continuous cigar 25,252,520 miles long, which would encircle the earth more than one thousand times. Cut up into equal pieces, 240,000 miles in length, there would be over one thousand cigars, which would extend from the centre of the earth to the centre of the moon. Put these cigars into boxes 10 inches long, 4 inches wide, and 3 inches high, 100 to the box, it would require 4,000,000,000 boxes. Pile up these boxes in a solid mass, and they would occupy a space of

294,444,444—two hundred and ninety-four million cubic feet! If piled up 20 feet high, they would cover a farm of 338 acres; and if laid side by side, the boxes would cover very nearly 20,000 acres. Let some boy who reads this, estimate how large a village or city would be required to furnish store-houses for all these boxes. If a person smoke a cigar every 20 minutes, and continue this night and day, it would require an army of 2,500 such smokers 6,000 years to consume the above; and if each person smoked only 4 cigars a day—a pretty fair allowance we should say—it would take 45,000 smokers 6,000 years—a larger term than the human race has existed—to smoke up all the tobacco now produced in a single year. Allowing this tobacco unmanufactured to cost on the average ten cents a pound, and we have 400,000,000 of dollars expended every year in producing a noxious, deleterious weed. At least one and a half times as much more is required to manufacture it into marketable form, and dispose of it to the consumer. At the very lowest estimate then, the human family expend every year one thousand million of dollars in the gratification of an acquired habit, or one dollar for every man, woman, and child upon the earth! This sum would build two railroads around the earth at a cost of twenty thousand dollars per mile; or sixteen railroads from the Atlantic to the Pacific. It would build one hundred thousand churches, costing 10,000 dollars each; or half a million of school-houses, costing 2,000 dollars each; or one million of dwellings, costing 1,000 dollars each. It would employ one million of preachers and one million of teachers, giving each a salary of 500 dollars. It would support three and one third millions of young men at college, giving each 300 dollars per annum for expenses. We leave others to fill out the picture. Is this annual outlay to increase or decrease in future? Reader, how much do you contribute to this fund?

OBITUARY.

Died, on the 17th ult., from erysipelas supervening on a wound, Mr. William Adamson, M.R.C.V.S., Aycliffe, Durham. His diploma bears date April 16th, 1851.

ERRATUM IN NO. 393.

In the list of subscribers to the Morton testimonial, *for* W. G. Taylor *read* W. B. Taylor.

THE

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Communications and Cases.

OPENING OF THE SESSION AT THE ROYAL VETERINARY COLLEGE.

INAUGURAL ADDRESS BY PROFESSOR SPOONER.

Gentlemen,—To-day, at this, our Alma-Mater, we commence our session of 1860-1, and I am delighted to greet you all on this occasion. My position here, as delivering the introductory address, considering that I have now been a teacher in, or connected with this institution, for a period of thirty years, is in some sense a matter of routine; and yet the presence of so many whose faces I see for the first time reminds me that I have new elements to deal with, and new responsibilities to undertake. To my young friends, to whom this day and this event more especially belong, I would say, you are the successors of a line of pupils, whom we can look back upon as having left a living memory of science, and a lasting spirit of study and attention within these walls; whom also we can single forth from many an honoured position in the world; from many a far scene and distant clime; and of whom we can proudly say to you, There! these sterling men once sat in your places; let their example burn within you towards what is noble and true, and let whatever is unworthy in you be rebuked by the consciousness that you are the inheritors and guardians of the fair professional fame of such predecessors.

To those who are here for the first time, the proceedings of the day must doubtless have a great interest, be deeply engraven on the memory, and probably surpass in importance those of many a preceding day of more stirring events. Attention and curiosity are awake to the beginning of a new career, and the feelings are warm and impressible to the subject. Permit me then to take advantage of this favorable opportunity, to strike while the iron is hot, to arm your curiosity with fresh means of improvement, and fortify your good resolves from my experience, and by my friendly counsel. Recollect that you are the depositories of the hopes of a whole profession, and that each of you places your teachers under a responsibility, so far as in them lies, to introduce you into the organization of that circle whose parts you are to constitute; whose usefulness you are to amplify; and whose humanity, spirit, and science you are, to the best of your ability, to cultivate and extend. Bear in mind that your profession stands around you, to watch and to hail the bright resolves with which you enter upon your first day's duty; and last, not least, the united and tender hopes of your families and your homes—fathers, mothers, brothers, and sisters—have reached here before you, and hover around you as a spiritual protective shield against the evil temptations of this vast metropolis. Are you not then surrounded by an atmosphere, which tends with all its force to incite you to be consistent with the excellence of your calling, and with the hopes of a professional generation, which, though passing away in itself, looks forward to be immortalised in you and those who are to come after you?

You are here, gentlemen, to learn the veterinary art, and the sciences on which it reposes. The practice of your profession is what may be termed the "*veterinary art*;" and of this you must lay the foundation by an unwearied observation of the practice of the College. Doubtless many of you have already had some experience in practice; you will, however, within these walls, enjoy frequent opportunities of extending your knowledge in this department of your professional study. You will be able to profit by the remarks and practice of your professors; and by taking notes, and comparing them among yourselves, of the cases under treatment in the Infirmary. By participating also with your teachers in their feelings of responsibility as to the well-doing of the patients, you will be materially benefited. Let me entreat you diligently to cultivate that faculty of observation with which you are all endowed; and, as I have on a former occasion remarked, it is important for this purpose that you are punctual in your attendance here. A punctual pupil gives, as I have said before, the first evidence of a determination to learn; he loses no opportunity, but watches the cases from day to day, and, leaving out nothing which experience can teach him, carries away a bright copy of it deeply engrafted on his mind; useful for his future career in life.

I have spoken of "the veterinary art" as meaning "the practice of your profession." Let me now say a few words on veterinary science, which is the support of art.

Scientific knowledge makes practice sound. The difference between the uneducated farrier and the veterinary surgeon is that the former has, it is true, to a certain extent the art, but it is unsupported by science, and the practice of the art under such circumstances must indeed be both poor and dangerous; while the latter, by combining science with art, is enabled to pursue his practice with that confidence and success which cannot fail to ensure to him the respect and support of all who may stand in need of his professional services. Our profession, practised as a science, in this country, scarcely dates back three fourths of a century, which is but a short period for the growth and full development of any science. It may be said to have blossomed forth from agriculture, with which it is so intimately connected, and forms so useful an offset.

In the year 1791, several noblemen and gentlemen, members of an agricultural society, called the Odiham Society, having the example set them by our continental neighbours, who had already established several veterinary schools, subscribed a fund, formed themselves into a governing body, and founded the Royal Veterinary College. I, however, am not about to trace the history and progress of this institution, as such has been already recorded; suffice it to say that up to the time of its establishment the sanitary condition of our domesticated animals was placed under the charge of grooms and charlatans, who had nothing to recommend them but their boasted experience and the recipes handed down to them by their forefathers.

The state of things now, however, is far different, and if we compare the present with those times, although we have not yet reached that position in the estimation of the public which we have a right to aspire to, and which it is my belief we are destined to attain, we nevertheless have great cause for self-gratulation. It may be truly said that the incipient blossom of the veterinary profession has ripened into rich fruit, which has scattered its seed, and which, in this our day, has grown up into a stately tree of Science, modestly rearing its head by the side of, and intertwining its branches with, most of the kindred sciences of the age. We must take care, however, that we do not arrest its progress; it is our duty, both individually and collectively, to bring to bear all the untiring industry, intelligence, and experience we possess, on the continuous nurture and cultivation of this tree, rather than by any selfish conceit to permit ourselves to rest in the good labour, and allow it to dwindle away and die in the forest of knowledge which is every where rapidly growing up around it. Recollect that there is no such thing as standing still in knowledge; indeed, it seems to be a law of nature that in every thing there must be either progression or retrogression. I say, therefore, as regards veterinary science, it is our especial province so to exert ourselves as to ensure its onward progress.

The Governors of the College have no other object in view than the advancement of the profession; and their greatest anxiety is, so to conduct the affairs of this Institution as to ensure the confidence and good-will of the body politic and corporate.

Anatomy, gentlemen, claims the first notice, and, if I may use the expression, breaks the ground of all medical science; in fact, without it the application of medicine and surgery, both to man and the lower animals, would be unworthy of the name of Science. Were it not for the exploration of the body by dissection, the existence of even the great organs within would be unknown. We should know that a horse had a skin, and certain other external organs; but that would be all. We should not be aware of the existence of the heart, or the lungs, the liver, the brain, the intestines, &c.; and the diseases specifically affecting these parts would only be apparent to us as so many occult causes of decay, or of death. A haphazard remedy might cure in such a case; but it is evident that you are more likely to cure, when by anatomical and physiological knowledge you are enabled to form a correct estimate of the seat and nature of a disease; and, by comparative reasoning, experience thus obtained will materially assist you in combating similar symptoms in future cases. Therefore, I say, a knowledge of anatomy is the essential requisite of a persistently successful treatment of curable diseases. Reasoning onwards from this, the more profound our anatomical knowledge is, the more the body of our patient is rendered transparent in the almost spiritual light of science; the more clearly and intimately can we tell what the disease with which he may be afflicted is, and thereby place ourselves upon the correct path of treatment. The human mind, when it has a piece of definite knowledge presented to it, seems lighted up from that path in many directions; and definiteness of knowledge of a cause seems often connected by sympathy with rapid conceptions of cure. For this reason I regard the study of anatomy, the pains-taking, memory-engraving study of it, as of inestimable importance in practical veterinary medicine. It admits you to the freemasonry of the forms and functions of organization, and gives, as it seems to me, a right, in the name of conscience, to know something of cure, which the gazer from the outside remains without a claim to attain to. It shows you what *can* be done in surgery, and limits the path whereby it is done. By means of clear anatomical knowledge, also, a humane daring, as it were, becomes engendered, which simplifies and shortens operations, steadies our hands with the consciousness of safety, and saves our patients much danger and much pain.

Again, there is general anatomy, which investigates the constitution of the tissues of organs; and thus seeks to carry the torch of science into the most fairy-like avenues of organic frames. I believe the man who pays a due share of attention to this subject—provided he cultivates the other broader subjects in their own great proportion—has, again, a right and claim to know more of disease, and to be a keener and more successful practitioner, than the man who pooh-poohs structural anatomy, and professes to practise without its aid, for, undoubtedly, many of the changes consequent on morbid action take place in the more minute structures of the body. Indeed, it is a question whether most, if not all the so-called functional diseases, are not referable to a disarrangement of the elementary or molecular particles of the organs they affect. To see those changes, even though it be through the eye of artistic genius, is at least to enable us to give the morbid symptoms with which they are associated a local habitation and a name.

Besides, I again say that the path of incessant investigation, of unwearied studying of the laws of nature, leads to a broad arena where discovery and invention are imparted, where struggle is rewarded, and where—when the toil of the way is suspended for a time—perchance quite unexpectedly, some new light in science, spontaneously as it were, dawns upon the mind. Therefore, full of hope, I entreat you assiduously to prosecute your studies; to diligently cultivate dissection, with a view to obtain experience and tact in the use of the scalpel, which you will find to be of great importance in assisting your surgical skill; and to lose no opportunity of attending *post-mortem* examinations, as by practical information thus obtained, you will be materially assisted in diagnosing disease, and prognosing its probable consequences.

Turning to the living animal: the field of application here is clinical practice. The daily experience of disease and treatment which you will have the opportunity of acquiring within these walls, if you take advantage of it, will afford you a fund of information. All your other knowledge is valuable in proportion as it contributes to practice, but it must be considered as subordinate to it. Theory alone may admit you into the society of the learned and the rich, but it can never support you as veterinary surgeons, for without practical tact and skill you will be ridden over, rough-shod, by the charlatan and the groom. Disease seen with your own eyes is the book of books for you all, in which, of course, I include treatment, and its observed effects. I therefore conjure you, most earnestly, to lose no opportunity of observing every case which comes into the College. Investigate it for yourselves; verify the diagnosis; follow and make notes of the treatment. Keep close along the limits and landmarks of clinical practice, and of all the other departments which will be brought before you here; but constantly respect this as the chief in importance, and as indeed your very calling.

The agents you will see applied in the treatment of disease are the subjects of two sciences—chemistry and materia medica. I mean the drugs; for we have other hygienic agents of great importance besides drugs. Chemistry is a science in itself, infinite in detail, marvellous in definiteness, providing substance upon substance for every conceivable use, medical, domestic, artistic, scientific, manufacturing. The study of it is, as it were, the opening of a new world reaching from pole to pole of nature, and with a future before it inconceivable in the probable greatness of its effects upon civilization. Materia medica resides, as it were, within it, and partakes in some measure of its grandeur.

These subjects will be brought before you in their general bearing, and also in their application to veterinary practice; and you will bear in mind that the more you know of them, the more easily your mind ranges over the multitudinous substances of nature; knowing their properties and affinities, the greater are your resources, and the more abundant the powers of your skill. Nor must it be forgotten that all scientific power comes out of the growth and expansion of the mind itself, and that you cannot enter upon the consideration and knowledge of this science without improving your mental condition by the mere fact of contact with it.

I may not quit this subject without alluding to one who has so long and so worthily filled the chair of Chemistry and Materia Medica in this institution; whose valuable life has for many years past been given to our service; in the excellent fruits of whose labours we have participated; who has left his profession far richer than he found it; who has been a true friend to its members, whether old or young; and whose example has tended to raise a profession, the standing of which in public estimation, depends almost entirely upon the moral and social character of its members. Gentlemen, it is not without emotion that I can allude to the retirement of Professor Morton.

It is, indeed, a ripe and a willing, and, for his own sake, perhaps, a wise retirement. It is worthy of him to enjoy in tranquillity the retrospect of an honorable and useful life, and I trust, long before the end, to seek promotion into the elder ranks of society and social friendship, unalloyed by the toils of scholastic duty. But, assuredly, none the less is his retirement an unavoidable regret to us here. To me, personally, it calls up a host of memories. We commenced together our career as teachers in this institution. Mr. Morton was the first who occupied the chair of Chemistry and Materia Medica in the College, and to him we are greatly indebted for the translation of these sciences to veterinary use. Indeed, we may truly say that he is the founder of the veterinary Materia Medica. Whenever the history of the progress of our profession shall be written, be it even in hundreds of years to come, the name of Morton will be found honorably inscribed on the tablets of our science. When we have all passed away, and the warmth of his heart is no longer known here, the works of his head will be reported and respected by Fame.

Let me say, then, in supplement to this voice of our history, that here Professor Morton has adorned his science with an eloquence of a warm yet legitimate fancy, and that in him the voice of the gentleman has always been heard in our profession. I feel that I am your representative when I bid him "All hail!" from the distance which now separates him from his former functions, and at the same time I express a hope that he may be spared to our affectionate friendship for many a long year to come, and enjoy, as a bright anticipation of the future, all the peace and happiness this world can afford.

A kindred subject now suggests itself. Carried away by the thought of my noviciate pupils, I have said but little of the valued presence to-day of the senior members of our profession. This is because I have spoken, as it were, *from them* to my youngest friends, their latest descendants. I am, however, glad to have their support here, and to find in the

College, on this occasion, a representative assembly of the whole veterinary profession. I also would say to the senior pupils that, if I have not mentioned them more particularly, it is that I feel that words of good counsel never cease to be applicable to all. The admonition, the instruction, the warning aimed at one mark, like a ray of light, diffuses itself on every side; and minds and hearts catch it sometimes not the less influentially because it comes sideways. I would therefore only say in addition, to my old pupils, persevere in diligence; let this session be more workful than the last; study together; be friendly together; be gentlemen together, and allow us the privilege of adding your names and memories to the lists of honour, to be thought of and alluded to hereafter, on occasions like the present.

Consequent on the retirement of Professor Morton, the chair of Chemistry and Materia Medica will be filled by Professor R. V. Tuson, who has been selected from many candidates to fill this important office. His testimonials were most satisfactory and conclusive, and among them was one signed by forty or fifty of his previous pupils; an earnest of grateful regard from those of your own age and standing. I venture, in all your names, to welcome Professor Tuson to his position as a teacher in the College.

A new Anatomical Demonstrator has also been appointed in the person of Mr. William Pritchard, who, if I may judge from the earnest given by him when a pupil, I have no doubt will perform the duties of the office with that zeal, industry, and ability, which cannot fail to ensure to him your confidence and esteem.

The lectures on the other domesticated animals, excepting the horse, will be delivered by Professor Simonds as heretofore. Mr. Varnell, the Assistant-Professor, will continue to deliver the lectures on the descriptive anatomy and physiology of the horse; and my own lectures will embrace the general subjects of anatomy, physiology, and pathology, with veterinary jurisprudence, and the principles of shoeing. You will also have daily opportunities of observing the practice of the College, and of profiting by concurrent clinical instructions.

The books you will chiefly require are Percival's 'Anatomy of the Horse,' and his 'Hippopathology;' Blaine's 'Veterinary Outlines,' and Youatt 'on Cattle and the Dog;' also Morton's 'Manual of Pharmacy,' and his 'Toxicological Chart,' and Simonds' 'Treatises on the Dentition of the Ox, Sheep, and Pig,' and on 'Variola Ovina.'

I must leave it to your new Professor of Chemistry to recommend the special works which he advises you to procure on his subjects; but for other branches of the science, I would recommend you, as I have often advised your predecessors, to study the very pleasing and profitable work of Billing 'on the Practice of Medicine.' You will also find in Carpenter's 'Physiology,' and in the works of Todd and Bowman, a complete record of the present state of physiological science; and in Quain and Sharpey's 'Descriptive and Structural Anatomy,' the structure of tissues answering to that of functions, is most elaborately discussed.

You will most of you, doubtless, become members of the Veterinary Medical Association, which possesses an excellent library, of which you will have the use. By attendance at its weekly meetings, you will cultivate the habit of professional and scientific intercourse, and both receive and impart a great deal of useful information.

So much for your part in this day's proceedings. Let me now congratulate the College upon the fact that our relations with other bodies are both maintained and extended. The Royal Agricultural Society of England still continues its annual grant of £200 in furtherance of our objects, inseparably connected, as they are rightly felt to be, with agriculture.

I may here also mention that the late Professor Coleman made a bequest to the College for the emulation of the students in the pursuit of veterinary science; and from the accumulated interest of this bequest, the Governors have determined, at the close of each session, to give medals and a certificate of merit for the best essay upon any subject, to be chosen by the professors, who will also have the awarding of the respective prizes.

It always gives me the greatest pleasure to signalise the union existing between the medical profession and our own, and I am happy to say that that union was never closer than it is at this moment. This is, indeed, what it should be. Humanity is, and ought to be, the boast of both. Nor are we degraded by the fact that in our humane calling science is applied to the alleviation of the sufferings of creatures lower than ourselves. The realities of the science are the same with both, and even the general text books of the professions the same. Our board of examiners also is partly selected from the eminent men of the medical profession—a constitution which I believe is calculated, under present circumstances, to contribute to the honour, the attainments, and the efficiency of our profession. I believe, likewise, that this alliance of the Royal College of Veterinary Surgeons with the teachers of human medicine is a wise provision of the council of that body, whether it regards the social standing of our members or the general scientific progress of the examined. Our status is now a recognised fact; for veterinary surgeons, as you are well aware, hold commissions both at home and in India in the service of Her Most Gracious Majesty. Let me here pay a moment's tribute to a long-tried friend, I mean Mr. Wilkinson, the principal veterinary surgeon in the army, who, by virtue of his office, has instituted a court of examiners for veterinary candidates for the army. For every duty of his post I believe him admirably qualified; a man, in short, well calculated to raise his profession; gentlemanly, amiable, and humane, as those of you will experience who have the honour to appear before him. Mr. Wilkinson is also the present President of our corporation; and I know of no man in the profession better fitted to fill with becoming dignity and usefulness that high and honorable position.

The veterinary profession now extends over all the civilised world, and it may be said that the sun never sets upon us. Nevertheless, there are nooks and corners in this country into which it is our legitimate province to penetrate, but where we are, as yet, but scantily admitted. The turf, methinks, with its splendid animals, representing great fortunes, yields us but a poor return of patients. The work of veterinary medicine seems there to be principally transacted by trainers and grooms. Are we too honest, or not reputed honest enough to be consulted in cases where great responsibility and confidence are involved? The possession of a favorite race-horse seems to plant a fence of secrecy and suspicion far around the stable, and only the uttermost confidence felt in the veterinary surgeon, will enable him to pass within the barrier. It is almost like the care of an eastern harem, in which the ladies are kept under lock and key. We ought, however, to stand high enough to be privileged to enter, especially as the inmate, which is the centre of a thousand costly chances, holds the balance of probabilities on his general good health and nervous tone, and consequent fitness for the race.

And now my task would be done, but as I began so would I close these remarks by alluding to humanity as contributing, as it were, the very heart heat that evolves the true love of our profession, and ensures the efficiency of those who practise it. I am proud to say that I am a member of the committee of the Royal Society for the Prevention of Cruelty to Animals, and as such I feel it my duty to tell you that in May last I was selected to form one of a deputation to proceed to Paris, there to co-operate with a French society having similar objects, for the purpose of endeavouring to put an end to the horrid and revolting barbarities of vivisection, which are practised day after day in the veterinary schools of Alfort and Lyons. There, in these temples for the alleviation of animal suffering, for the scientific evolution of pity into good works—there, in the wide pleasure-places of an Emperor, who is the eldest son of the Church, and whose will rushes with succouring thousands to the bleeding Christianity of Syria—there twice a week is cruelty, under the hypocritical mask of science, perpetrated to an extent which is almost without a parallel in the history of this planet. A stream of blood seems to run from these places over the whole veterinary profession of France, and ill comports with their mission as ministers of the healing art.

The facts are these: at Alfort, which I visited, and still more I hear at Lyons, the pupils are instructed in surgery by cutting up living horses! Oh, then, is surgery fiendhood? Two days a week, at nine o'clock in the morning, the doomed horse is cast; and then he is subjected to all sorts of surgical operations, such as firing, neurotomy, cutting away pieces of the cartilage of the foot, operating as for stone in the bladder, extirpating the parotid and other glands, or the eyes, or any organ that forceps can pull, or that knives and saws can reach. Steel and fingers, guided by stony hearts, invade the poor animal at all points. These operations on the same horse last from nine o'clock in the morning until four in the afternoon; unless, indeed, he becomes unfit for the diabolism by dying in the mean time. Now, that is what we went over to France to expostulate against. I fear, however, that our deputation made but slight progress towards effecting what I think you will all admit was, on the part of the society, a most benevolent object. To talk of the necessity of these horrors for the purpose of teaching surgery is, I contend, utterly absurd. Here, I am bold to say, we can operate when it is needful quite equal to the French veterinarian, though we have not learnt the art by these direful practices. Our human surgeons, too, are many of them men of consummate skill, though they have not learnt it by cutting and slashing living human beings. The same, indeed, may be said of human surgeons all over the civilized world; and yet if there is any necessity for it in one, surely there is the same necessity in the other. There is not, in fact, a pretext for these acts, but they stand revealed as naked fiendhood; and I hesitate not to say, that every one who has systematically pursued them has become of neeessity enamoured of cruelty, and is out of the possible pale of the healing art.

I hope, gentlemen, the voiee of indignant humanity will rise far and wide, from our profession and from the excellent society to whieh I have alluded—nay, and from all England, where compassion is ever quick to flow towards suffering—until this bloody spot on the veterinary sehools of France is wiped away for ever. It is most painful to me to be forced to comment upon the proceedings of our neighbours in terms so harsh, when a very high form of friendship ought to reign between us. But there is no help for it; and I feel that I should be doing the profession in Franee an injustice, did I not protest with all my heart, with all my mind, and with all my might against acts whieh are destruetive of the best interests and tendeneies of scienee, as well as shameful to civilisation, and utterly hostile to every pretenee of any maxim of Christianity.

Viviseetion for physiological exploration may or may not be justifiable, in rare instances; but, if practised, it always ought to be done under some anæsthetie influence; and the doing of it should be avoided by every conscientious physiologist, whenever possible. I may add that physiologieal sehools of viviseetion, in which all sorts of animals are eut, and slashed, and sawn open, for mere repetition to the eyes of students, are as infamous in cruelty as Alfort or Lyons. The Society for the Prevention of Cruelty to Animals must keep its eyes open to eheek the tendeneies to these horrid practiees, whieh, it is to be feared, are budding forth in this eountry, and bring the publie opinion, and the law of England to bear if necessary, to root them out (loud applause).

And now, gentlemen, adieu! Our profession, in which great diversities of opinion, and even, occasionally, some wars, have existed, reposes now, like a peaceful land, under the sceptre of the Royal College of Veterinary Surgeons; and this our College, like a commonwealth federated to the whole body, pursues its avoeations without fear and without favour. Unanimity may be said to reign. Reforms, as their neeessity becomes apparent, are adopted: merit is, I verily believe, the chief step to suecess and promotion: there is great singleness of aim on the part of the members generally, and I think I may calculate upon the aceordance of all here when I say, in eonclusion—may the veterinary profession prosper, and inerease in appreciation and usefulness, to the end of time!

A PECULIAR AND UNUSUAL DISEASE OF THE OSSEOUS TISSUE IN THE HORSE; RESEMBLING IN MANY OF ITS CHARACTERISTICS MOLLITIES OSSIUM, RHACHITIS, OSTEOPOROSIS, AND FATTY DEGENERATION OF BONE.

By G. Varnell, M.R.C.V.S.,
Assistant-Professor, Royal Veterinary College, London.

(*Continued from p.* 581.)

Continuing my description of these singular cases, I may next observe, that while the artist was making drawings of the diseased bones, a surgeon, who had spent many years in the Western States of America, happened to call upon me, and after a slight inspection of the bones, he remarked that they were analogous in their pathological character with a disease which he had seen in that country, designated "Big Head," from the enlarged condition of the head. He said that he had never investigated its nature, but knew that it was a very common and he believed also an incurable affection.

In the year 1845, it will probably be remembered, that I drew attention to this malady in a short paper which I read before the members of the "*Veterinary Medical Association,*" on some of the diseases peculiar to the horse in America. Ere long I hope to obtain some more authentic information on "Big Head," which I think possesses many of the characteristics of the affection of Mr. Champion's horses.

In a letter which I have lately received from St. Louis, Missouri, U.S., the subject of "big head" is alluded to; the writer, however, says he knows but little of the disease himself, he having been in the above place only a few months, and no case having yet come under his immediate notice. He also says, that, "some time since, a veterinary practitioner from the State of Illinois called on him, and had some conversation on this subject. He attributes the disease to the horses eating too much Indian corn (maize), and is of opinion that much good could be done by altering their food. He explained that the whole skeleton is more or less affected by the disease, and said that he had known both tibia to be fractured in consequence of the changed condition of their osseous tissue. My friend has promised to investigate this disease on the first opportunity that presents itself, and I feel sure that he will let me know the result."

That such diseases of the bones of the horse are rare in England, I think no one will deny. I have no doubt, however, but they occur oftener than we are aware of. I well remember some specimens of similarly diseased bones being laid before the members of the "*Veterinary Medical Association*," by Mr. E. Shave, M.R.C.V.S., Chelmsford, Essex. By referring to 'The Record of the Transactions of the Society,' for the year 1849, page 86, the following particulars will be found, as given by Mr. Shave: "The horse was brought to our infirmary in May, with an enlargement of the superior maxillary bones. Such treatment as was at that time thought proper was adopted, and at the end of about four months the owner sent the horse to us again, and upon examination we found the enlargement had much increased. Other treatment was had recourse to, but was found not to be attended with the slightest benefit. It was now found that he masticated very imperfectly; he fell off in condition, and at last became so much emaciated, that the owner had him destroyed."

The president of the Association admitted that the disease was singular, and that he had not before met with the osseous tissue in a similar condition, and he requested Mr. Shave to obtain the other bones of the horse. This having been done, it appeared that there was scarcely a bone in the whole animal that was not implicated in the change. In the articulations, extensive ulcerations had taken place, which accounted for the pain and lameness during the animal's progression.

I have still in my possession a portion of the lower jaw of this horse, which I took care to obtain at the time; and I find by an examination of it, that the whole of the Haversian canals are dilated, and their surrounding lamellæ extremely thin. I feel satisfied that the disease affecting this bone is of the same character as that of Mr. Champion's horses. There were doubtlessly many peculiarities which were not then noticed in Mr. Shave's case, as the bony tissue was not examined by the microscope. Their spongy texture, however, with their gradual increase in size, the inability experienced by the animal to masticate, and his emaciated condition, all warrant this conclusion. Unfortunately we were not then put in possession of the way in which the horse was fed, or the character of the water he drank; nor did we know whether a similar disease had before affected animals in that neighbourhood.

Since then an opportunity has been afforded me of seeing Mr. Shave, who informs me that the horse in question belonged to a miller, who was in the habit of feeding his horses very largely upon bran. If, therefore, by further observation, it should be found that food so rich in the phosphates has a tendency in young animals to cause softening of their bones, it will add a fact of considerable importance to our present stock of pathological knowledge, and render this account still more interesting.

Softening of bones, in the human subject, is discussed at considerable length by many authors; but in no work that I have referred to, can I find a disease in every respect corresponding with the one in question. I cannot, however, resist making a short quotation from that ancient, but nevertheless unquestionably great pathologist, Morgagni; not particularly on account of his views of this disease, but to show that he had met with the malady; and from the number of cases he refers to, he must have been perfectly familiar with it. In book iv, letter lviii, page 350, he says: "The bony gypsum" (as he calls it) "is softened in consequence of its being alkaline, by the acids which are thrown into the vessels of the bones, and that from hence it is, that persons subject to rheumatic and arthritic pains, are also subject to have their bones become soft."

These observations would lead to the following inference respecting the way in which Morgagni thinks the earthy matter is removed; namely, that the circulating blood contains an acid, which in its passage through the small vessels in the Haversian canals, slowly dissolves the earthy constituents of their surrounding lamellæ, which then become absorbed, and carried away by the current of blood, finally to be excreted. This process (which we have no belief in) going on, and the deposit of the bone-earth being in abeyance, would doubtlessly produce softening of bone, and also a low specific gravity of its tissue.

Monro makes the following statement in reference to softening of bone. "That in some cases, from 74, 75 and 79 parts in 100 consist of animal matter. In the worst form of rachitis, the compact stratum is thinned; the cells of the areolar structure are expanded, and filled with a gelatinous fluid." Such was precisely the case in many of the bones we examined.

"There is not only a want of proportion of animal and earthy matter in these affections, but some think so much phosphoric acid is secreted, that the phosphate of lime, an insoluble salt, is converted into a biphosphate of lime, which is soluble, and of course more readily acted on by the absorbents.

"It is not improbable that this is the first link in the chain of morbid action in some cases, where there is no original deficiency of the earthy salts. That there is no want of material in the system is shown by the undue secretion of phosphates by the kidneys under rachitis."

Thus we see the theories of these two great pathologists are to a certain extent allied. That of Monro, however, is advanced, as far as the chemistry of the question is concerned.

It may be interesting to some of our readers if we give the analysis of healthy bone, as well as that in an abnormal, softened condition. The following is the analysis of adult human healthy bone, by *Lehman*, (Holden's 'Osteology.')

Animal matter	33 per cent.
Earthy matter	67 "
	100

Analysis of the humerus of a healthy cart-horse, aged six years, by Von Bibra. See vol. ii, page 403, Simon's 'Animal Chemistry.'

Earthy matter	67·39
Animal matter	32·61
	100·

The following analysis of a scapula, softened by rickets, is from vol. iii, page 181, of Rokitansky's 'Pathological Anatomy.'

Animal matter	81·12
Earthy matter	18·88
	100·

Analysis of a rickety bone, by Dr. Bosbek, (Holden's 'Osteology.')

Animal matter	79·75
Earthy matter	20·25
	100·

It will be seen that the proportional differences in healthy bone, as compared with bone softened by rickets, is very great; and I have no hesitation in asserting that some of the bones of the horses in question approximate in their proportional deficiency of earthy matter to these analyses.

We regret that the urine was not examined from time to time, for had such been the case, our investigation would certainly have been still less perfect; since, had a redundancy of the phosphates been detected, a clue might possibly have been obtained to the morbid changes that were going on in the organism.

On looking over the pages of *Headland on the Action of Medicines*, I find the following remarks, which, perhaps, may throw a little light on the cause of this disease. At page 129, he makes this statement:

"Lime is deficient in quantity in the grain of some cereals, especially in that grain of universal consumption, wheat. To some rustics who live chiefly upon bread the wanting properties of *lime* may be made up by the use of spring water. To others, by the addition of milk to the diet; to others, again, by the consumption of potatoes. This fact, that the two latter articles of diet are almost universally adopted, even by the poorest of our country, may, perhaps, explain the fact, that the deficiency of lime in wheaten bread is not generally felt here. But the contrary may be the case in some parts of Europe, as in the rural districts of Germany, where the peasants subsist mainly, or entirely, upon stale black bread. Thus Liebig proposes, in making dough for baking, to knead the flour with lime-water. He states that bread made in this way is both wholesome and agreeable."

In a letter received from Dr. Voelcker, of the Royal Agricultural Society, he says, "Professor Johnson, in his Lectures on Agricultural Chemistry, gives the following analysis of bran:

Water	13·1
Gluten	19·3
Oil	4·7
Husk, and a little starch	55·6
Saline matters (ash)	7·3
	100·0

"The ash of bran consists almost entirely of phosphates, viz., phosphates of lime and magnesia (bone earth) 46 per cent. in round numbers, according to Boussingault, and the rest is alkaline phosphates, principally phosphate of potash; there is only one half per cent. of silica in the ash of bran.

"Johnson's analysis agrees pretty well with analyses made by others.

"All analysts give a good deal of oil in bran, also much gluten, or, properly speaking, albuminous compounds.

"I have found from 4 to 5½ of oil, and from 14 to 18 per cent. of albuminous compounds.

"The composition of bran somewhat varies; and, I think, 16 per cent. of albuminous compounds and 4½ of oil may be taken as the average proportion of these constituents. I have never found less than 6½ of ash, often 7 to 7·2 per cent. You will perceive that the composition of bran differs from that of every other grain. Being very rich in nitrogen and in phosphates, bran when given in excess to horses is apt to produce intestinal concretions."

It will be seen by reference to the answer to question No. 12, page 576, that lime was not abundant in the locality where the disease had taken place. Also by question No. 11, that the water the horses drank was very soft; and likewise, on referring to the above extract from Headland, that lime is deficient in wheat, and that, according to Liebig, to render bread made from it wholesome, it should be made with lime-water. If this be the case, we might be led to believe that the food and water these horses partook of were unwholesome from being deficient in lime; but whether or not this took any share in causing the disease in question, I am not prepared to say.

In some of the bones, the morbid change that had taken place would admit of the term "osteoporosis" being applied to it, which, according to Rokitansky (see vol. iii, page 171), "consists in an enlargement of the Haversian canals, and the cells of bone." And he further says, "this state may result from excessive development of the medulla of the bone, or of the tissues which occupy its canals and cells, while, at the same time, the actual quantity of bony substance remains unaltered. By rarefication of its tissues, the bone becomes increased in volume and expanded; the walls of the Haversian canals become thinner and thinner, till at length apertures are found in the interior of the bone, as well as on its outermost lamellæ, and the cavities communicate with one another. The expanded bone is soft, coarsely porous, and spongy, and more or less so in proportion to the degree of the disease. It yields to the pressure of the finger, and may be easily cut with a knife. Its cavities are filled with a large quantity of dark-red, or reddish-brown medulla, traversed by dilated vessels, and contains here and there loose or firm clots of extravasated blood." Further on the same author says, "Osteoporosis sometimes affects a bone in its whole thickness, and the disease may have commenced in its interior, in the medullary cavity, or diploetic substance, or at the exterior, or at all of these parts at once."

I subjoin an analysis by Ragsky, of a bone thus affected, taken from a middle-aged man:

Phosphates of lime and magnesia	55·80
Carbonate and salts	5·59
Cartilage, vessels, and fat	38·61
	100·0

Simon's 'Animal Chemistry,' vol. iii, Case 410.

Osteoporosis, according to this description, most correctly applies to the peculiar changes that had taken place in parts of some of the bones of these horses, and to such an extent, that we might almost venture, were it not for the altered specific gravity before alluded to, to designate the disease by that term. But, as we have before stated, there are other portions in some of the bones that are evidently otherwise affected, and in which the morbid change is quite dissimilar.

It was thought that the term "mollities ossium" would be appropriate in expressing the pathology of this disease; but as far as I understand that term, it merely applies to softening of bones, without reference to any particular cause. The term, however, is usually used in instances where the bony tissue has become absorbed; and by referring to *Dr. Wilks's Pathological Anatomy* (page 25), it appears that there may be two forms of "mollities ossium," the one where the earthy constituents of the bone are removed leaving the animal matter, and the other, which appears to be rather a fatty degeneration. Now, we have seen that the latter is the case in a very marked degree in parts of some of the long bones of these animals.

To show the amount of fat in some bones affected with softening, I have selected the following analysis of a femur, by Lehmann (see *Simon's Animal Chemistry*, page 407):

Phosphate of lime	18·83
Carbonate of lime	3·83
Phosphate of magnesia	·54
Soluble salts	·43
Cartilage	41·54
Fat	34·15

As a proof that bones are subject to fatty degeneration, I would also refer the reader to *Paget's Lectures on Surgical Pathology* (vol. i, pages 133 and 134), from which I have extracted the following observations: "But it is now to be added, that the bones, like other organs, are liable to fatty degeneration, which, because of the obscurity of its origin, we must be content to call spontaneous; and this fatty degeneration of bone is the disease which most English writers describe as 'mollities ossium.'"

I have now but few more remarks to make in concluding this paper, and which, like many of the preceding, will be more interrogatory than assertive in their nature. It was thought that the mares were exempt from this disease, and up to the time of writing the history of these cases, they appeared to be so; not one having died, or shown the slightest indication of the affection. It is, however, very singular that I have just received from Mr. Wallin a communication, in which he states that one of Mr. Champion's mares has lately shown symptoms analogous to those exhibited by the horses when labouring under the disease in its early stages. These symptoms are so very slight, he observes, that he cannot at present assert that the malady will prove to be of the same nature. Should it not, and the singular fact remain, that it was wholly confined to the horses, it will be an interesting question for the physiological pathologist to solve, why such should be the case. The mares, we are informed, were about the same age as the horses; but they had each had foals. Now, can it be possible that pregnancy had anything to do in preserving the system against the development of such a disease? Or is there any peculiarity in the sexes, from which a clue can be obtained to account for such phenomena?

We see, by referring to the answers to the questions propounded, that no case occurred on the other farm, about two miles off, although the horses were fed in the same way as those affected. This may be the case, but, were all the other circumstances precisely the same? Had they more exercise or less? Was the water they partook of the same in character, namely, very soft?

I think it not a very far-fetched idea to suppose that the want of exercise could possibly induce some of the changes the bones have undergone; and may not the continual use of soft water, and the kind of food on which the animals lived, also take some share in the production of the disease?

If it can be shown that on the other farm, and where no case occurred, that the young horses, as a rule, had more exercise than those on the farm where the disease took place, and that the water they drank was *hard*—spring water, then I think we ought to attach some importance to such facts. We are told that the horses on both farms were fed in the same way. Now, it is possible that the hay, and perhaps also the other kinds of food on which they were fed, as well as the land where no disease took place, were of that character which contained more lime than was the case on the other farm.

Further, if it can be shown that both the food and water were deficient in this important constituent—lime—which may have been the case, yet not noticed; although there may have been no disease resulting from such a circumstance before, I nevertheless think that such facts ought to be taken into consideration in looking for the cause of this singular malady.

ON THERAPEUTICS.

By Professor Brown, M.R.C.V.S.,
Royal Agricultural College, Cirencester.

(*Continued from page* 588.)

MEDICINAL AGENTS.

All substances which are capable of producing effects on the animal system, differing from those occasioned by the ordinary food, may be considered as medicinal agents. Undoubtedly, every kind of material introduced into the animal economy, produces some effect. Every article of diet influences secretion, but only in the course of the digestive process by which the body is sustained, while medicines produce actions differing from the ordinary actions under healthy conditions, these amounting either to "excitement," to "decrease," or to change of structure or function. Articles of ordinary diet, under some circumstances, are found to affect the animal functions to a considerable extent, and, under such circumstances, they may be said to possess medicinal properties. This action is, however, irregular, and often depends upon a diseased condition of the organism, or some change in the constitution of the agent.

The dietary of man contains many substances which are known to possess decided medicinal properties; as compounds containing alcohol, spices, and various condiments; and these differ from medicines only in not being given with the intent to cure disease, and in the fact of their constant employment rendering the body comparatively indifferent to their effects.

Medicines, we have seen produce certain decided actions which amount to disease. The essence of the allopathic system is in apportioning this artificial disease to the amount of the natural one to which it may be opposed; just so much of the new disease being required as may counteract the effects of the old one.

The way in which medicines produce these new actions is not a profitable subject for discussion, as the only conclusion at which we can arrive is, that the action is dependent on the property of the agent; and however far we pursue the inquiry we come at last to this halting point. The nature of the action we decide by experiment; the cause of it can only be a matter of speculation, and to refer it to the property possessed by the agent is as definite and satisfactory a course as any other. Certain agents, then, are found to possess the property or power of producing effects on the healthy animal similar to those resulting from disease, and upon the character of those effects will depend the classification of the agents. By a somewhat singular coincidence, we find upon examination, that all our medicines may be arranged in classes, corresponding to the number and character of the principal elements of disease; for instance, we find class one to contain agents capable of increasing action; corresponding to the element "Excess." In class two, we have agents capable of depressing action; corresponding to the element "Defect." And in class three, we arrange agents capable of producing a change in the character of a secretion or a structure; corresponding to the third element of disease, "Perversion," which consists in a change in the composition of any portion of the animal body. This arrangement only collects a number of medicinal agents in groups, without specifying their particular properties, which are easily indicated by a subdivision.

Medicines which are excitant in their effects may be divided into the following:

Cathartics.	Diaphoretics.
Stimulants.	Tonics.
Diuretics.	Counter-irritants.

It is not of course contended that all these are stimulants in the ordinary sense of the word, because the very first subdivision includes drugs which are powerfully depletive; but by the designation *excitants*, is meant that the immediate and characteristic action is such upon some portion or function of the body; and that consequently all medicines of the first class possess the property of inducing the element "excess."

Medicines which are depressing in their action, may be subdivided into

Narcotics.	Refrigerants.
Sedatives.	Astringents.

These are all characterised by the property of diminishing action, and consequently in reference to some portion or function of the body they induce the element "defect."

Agents which possess the power of changing the character or condition of a function or a tissue, may be subdivided into

Antacids.	Caustics.	Antiseptics.

These agents acting upon the healthy body, produce new combinations, and thus induce conditions allied to the element "Perversion."

The classes we have enumerated seem to us to include all the positive and individual actions of drugs, although other terms are employed in medicine to designate specific effects. Thus we have cardiacs, digestives, antispasmodics, nauseants, emetics; all of which divisions we have excluded from our system of classification, for the reason that they are not suggestive of any distinctive properties belonging to the agents used. "Cardiacs," including all spices, are merely stimulants to the membrane of the stomach, and may be classed among the other stimulant drugs. "Digestives," being agents that cause suppuration, also belong to the stimulant class. They comprise turpentine and emetic tartar, whose effects are undoubtedly stimulant when applied to the skin, or to wounded surfaces; suppuration or the formation of pus being the consequence of the inflammation which follows their use. "Antispasmodics" cannot be said to possess any single action at all; as anything which lessens spasm, or, in other words, diminishes excessive irritability of muscle, would come under this denomination, and as spasm may be present under the most opposite conditions of the system, either stimulants or sedatives may at different times be antispasmodic in their effect. Nausea and vomition are consequent upon excitement of the reflex functions, from a variety of causes irrespective of medicinal influence; and the drugs that induce the excitement possess different properties, which more conveniently rank them in separate classes. All the terms we have been considering are legitimately employed to indicate consequences both of medicinal, and non-medicinal influences, but not to mark primary and characteristic properties of medicinal agents.

Referring to the three classes, we find the divisions of each to include a certain number of agents allied by the possession of properties capable of producing certain and similar actions upon the animal body, by "increasing," "diminishing," or "modifying" the functions or structures. Among the agents used, we find some that act particularly upon one part of the system, and some that have a special influence upon another. The observation of this fact leads to a second division into the sub-classes we have mentioned under each head. Although the agents belonging to each sub-division are connected by a similarity of action, they nevertheless produce their effects in various ways: a consideration of the actions belonging to each will be a proper preliminary to their application to the cure of disease.

THE CONDITIONS OF MEDICINAL ACTION.

Medicines we have found to possess a power of influencing the animal economy, and for the perfect development of this power that certain conditions are necessary. First, we are to assume a susceptibility to the action of the agent, as it is by no means a necessary consequence that what acts with energy in the body of one animal shall equally or at all affect the organism of another: the determination of this very important point is due to experiment. As a matter of philosophic interest, it may be legitimate to reason upon the causes of such idiosyncrasies of the system, but no speculation can supply the place of absolute proof, with which alone science can be satisfied. Secondly, the medicine is to be appropriated by the system, through the medium of some part or organ. Some agents act more quickly and decidedly when applied to the surface of the skin, others only produce their effects when introduced into the stomach. Again, injection into the circulation, or into the intestinal canal, are methods by which some most powerful action may be obtained. Either, or all of these methods are at the service of the experimenter, and the selection of either must depend upon a variety of circumstances. It would seem that something analogous to digestion is necessary before the action of a drug can be developed, as a certain time always elapses between the administration and the establishment of its characteristic effects. This period differs according to the method of administration, and the nature of the agent: in some cases the time is exceedingly short. The effects of chloroform are quickly apparent when the agent is given as a draught or enema, or in the form of vapour; or more decidedly when injected into a large vein: the intervening time differs in all these methods of administration, but in no case do many minutes pass before some action is perceived. Aloes given to the horse requires to remain in the system from eight to twenty hours before purgation results, according to the solubility of the drug, and its method of preparation, as well as the condition of the system. This great difference in the time of incubation must depend upon the degree of ease with which the agent is assimilated and carried into the circulation. Agents which are not capable of assimilation, still require a certain time for their effects to become apparent, because acting as they do, by mere contact, certain changes must be induced in the rate or amount of circulation, or in the composition of the texture before the specific action is obtained. Thirdly, a division of the agent must be effected by mechanical means before administration; particularly is this necessary, where the drug is only partially or not at all soluble. Trituration, or mixture with something to increase the solubility, or its solution, are means by which substances are minutely divided. Considering how much the action is facilitated by the careful preparation of the drug, it becomes a question whether it is not often advisable to follow the homœopathic plan of successive triturations, in respect more especially to insoluble medicines, as sulphur, carbonate of lime, and many others, whose solution occupies time. A very simple plan would suffice: the agent should first be reduced to the finest powder, then mixed with equal parts of sugar of milk, and triturated again; portions of this might be mixed equally with the sugar of milk, and triturated again; the process repeated for three times would occupy very little time, and would, we believe, much enhance the value of the drug. The three triturations would of course be designated; first, second, and third, and either may be used, as a powerful or moderate effect should be desired. We have followed this plan in preparing medicines for small animals, with results that justify our recommendation. Fourthly, the proper development of medicinal action requires that no opposing influences should be present. Such influences are found in the peculiarities of constitution, which oppose themselves to the action of certain agents; and this sometimes so completely as to render the agents altogether inert. They are found in the food, sufficiently to modify medicinal effects. This position is clear if we remember the presence of alkalies, of astringents, and of laxatives among the articles of diet. Not probably in sufficient quantities to produce very decided effects, but enough to interfere with the action of medicines of an opposite tendency; for example, the action of an astringent would be modified by the presence of purgative substances in the food, as linseed, or even bran. In man, whose diet includes so many substances of a decidedly stimulant, narcotic, or sedative action, the illustrations might be indefinitely multiplied. They are also found in the ordinary position of the animal; in the temperature of the atmosphere, with its influence upon the surface of the body; in the various matters mixed with the air of the place in which he may be confined; and in the amount of exertion which his daily duties may entail; all these circumstances should be taken into account when medicinal action is in question. As a cold atmosphere will destroy the effects of a sudorific, so excessive exertion is antagonistic to the operation of a tonic. Nor are these considerations fanciful or puerile, on the contrary they are of as much importance in connexion with the production of medicinal effects, as the absence of adulterations in the agents used. The mixture of any impurity with a drug, we all readily enough oppose; but are not the agencies we have just noticed, and others that the observant inquirer will discover, more potent in their disturbing effects than most of the materials to whose admixture we should so strongly object? "Circumstances alter cases," is among us a maxim, and in nothing is it more true than in reference to medicinal action.

Opposing influences are likewise found in the admixture of a number of medicinal agents in the same compound, and this more frequently than is suspected. Chemistry decides how far combinations are possible without positive chemical union; but a minute knowledge of effects can alone preserve the dispenser from more serious errors than the simple junction of incompatibles. As a rule, no two agents from the opposite classes can ever be combined without detriment to the action of either one or the other; and no agent from among those which excite the functions can be properly united to one of those whose action is to diminish them, excepting under peculiar circumstances; for instance, in a disease where the pain is severe, and its acuteness can be lessened by the use of narcotics or sedatives; while at the same time cathartics or stimulants are being directed against another element in the malady. The scientific dispenser will then employ such combinations unhesitatingly; but he does so knowingly, and calculates with comparative certainty the disadvantages and the benefits. In the absence of any decided reason for the violation of this rule, mixtures will only include drugs whose actions are not opposed. Agents of the third class, those which induce a change in the character of a secretion or a structure, may be advantageously conjoined with either of the other classes, always provided that no chemical incompatibility be present. It may often be necessary to diminish or increase a secretion, and change its character at the same time, if possible; but it will seldom be necessary to increase it in one part and diminish it in another at the same moment. We do not oppose the attempt when circumstances justify it; but, we do not anticipate the frequent occurrence of such a necessity.

The dose is another important consideration, too lightly estimated. Not only is the age of the patient to be taken into account, but the continuance of the medicinal effect. Generally we require the action of a drug to be apparent for some time, and to exist for that time without cessation. To gain this object very small doses, frequently repeated, are indispensable. No definite statement can be made of the number of times in the day the medicine should be administered, nor indeed of the precise quantity of the agent to be given, but just enough should certainly be exhibited to produce the desired effect, and repeated sufficiently often to avoid any positive interruption to the action. Large doses are administered only when powerful and evanescent action is desired. It is much to be feared that we are in the habit of exhibiting medicines in quantities fixed by custom, rather than determined by individual judgment, and according to the exigencies of the case.

With this preliminary and somewhat discursive review of the *causes* by which medicinal effects are modified, we pass to the consideration of the agents included in our three divisions, in the attempt to justify our system of classification, by adducing the admitted properties of drugs as illustrations. It would unnecessarily detain us to examine the constitution of the various agents, or their preparation, or doses; for ample information on all these points, we refer to Morton's 'Veterinary Materia Medica,' modestly called a 'Manual' by its author.

The application of medicines in the treatment of disease requires an acquaintance with its agents, and a knowledge of this we have a right to consider is possessed by our readers. Upon this assumption, we propose to discuss the actions of the various classes and sub-classes into which we have divided medicinal substances, with the view to ascertain how far our employment of certain drugs may be consistent with our knowledge of the science of pathology.

At the outset, we desire to develope a general plan of action in curative treatment.

First. It is important to ascertain the "actual and predominant element," in the disease to be treated; nor is this at all times so obvious as might be imagined. Nervous excitement may exist with extreme debility; and directly depressing means, that might be employed to lessen this excitement, would be opposed to true principles. The predominant element in such a case is "anæmia," or more expressively, "general debility," and must be met by agents which excite and modify action, and not by those which depress: this illustration is sufficient to explain what we mean by predominant elements. Without a very close analysis of symptoms, an incomplete or erroneous diagnosis may easily be formed, and a ruinous system of treatment built upon it. At the risk of being tedious, we must reassert that the whole success of our remedies depends upon ascertaining, absolutely and definitely, what is the defect to be remedied. The selection of any one prominent symptom may lead to an entirely wrong conclusion. It is only by a comprehensive view of the whole evidence, that the true pathology of a malady can be appreciated.

Secondly. In the absence of sufficient evidence to satisfy the mind of the exact nature of the disease, no decidedly active measures should be instituted. The system may then be more safely left to the restorative action of its own functions, than treated actively on an empirical plan, in which the chances are much in favour of the wrong course being taken. Urgent symptoms, as pain or extreme excitement, may properly be attacked without waiting at all times to discover their causes; but in reference to serious disturbance of the organism, we speak advisedly when we say—to do nothing is far better than to act in ignorance of what is to be done.

Thirdly. Remove all opposing influences, in the shape of predisposing or exciting causes of disease, so far as they are under our control; also all impurities in the agents used, and in fine all those influences whose operation we have before considered.

Lastly. Arrange the times of administration of the agent, with the intent to keep up its action, and give the dose with as little disturbance to the animal as may be. For this purpose we advocate the form of powder whenever admissible.

Our somewhat discursive and lengthened introduction concluded, we now pass to the examination of the three varieties of medicinal action, and their influence upon disease.

(To be continued.)

BOTANY AS APPLIED TO VETERINARY SCIENCE.

By W. Watson, M.R.C.V.S., Rugby.

(*Continued from* p. 511.)

The injurious effects produced on a cow from eating a large quantity of the hollyhock (*Althæa Rosea*).

The action of the hollyhock (*Althæa Rosea*), when partaken of by a cow in large quantities, has recently come under my observation, and I think it of sufficient interest to record it in this month's Journal, instead of continuing my observations on the leguminous plants.

On Friday evening, June 28th, 1860, I was requested to see a cow, the property of the Countess Wratislaw, of Rugby. The animal was eight or nine years old, of the Alderney breed, and had been in possession of the countess for some considerable time, without having had any previous illness.

The attention of the servant was first attracted by finding, on the morning before I saw her, that the cow gave a much less quantity of milk than usual, and she appeared dull. Finding her worse in the evening, I was requested to see her. I found her standing in one corner of the paddock (and from which place the servant informed me she had not moved many yards all the day), showing the following symptoms:—looking vacantly around, eyes protruding, pupils much dilated, pulse 120 and oppressed, breathing increased and laboured—resembling that of a badly broken-winded horse—ears cold, muzzle dry, no secretion of milk since the morning, refusing both food and water; and when made to move, doing so with a reeling, staggering gait.

With some difficulty the animal was removed to a shed; and being somewhat struck with the peculiar symptoms exhibited, I was induced to ask the attendant if the cow could have eaten of any injurious shrub, such as the yew, or rhododendron, &c.? I was informed that such could not have been the case, as the various shrubs, with which the paddock was surrounded, were securely fenced off; but the gardener coming up at the time, said that, much to his annoyance, the cow, during the previous night, had bitten off and eaten most of his *hollyhocks*. I examined the place, and found that, by reaching over, she had managed to bite off all the stems, leaves, and flowers, on the upper part of a considerable number of plants. I carefully examined the other shrubs, but found that the animal could not get at them. I therefore came to the conclusion that the symptoms exhibited were produced by the hollyhock, although plants in the "natural order" to which this belongs are not considered to possess any injurious properties.

I at once gave a diffusible stimulant, and in two hours after a brisk purgative. The next morning I found her in much the same state; the staggering, indeed, if anything, was worse. During the night the bowels had acted slightly, the fæces being fluid, of a black colour, and possessing a very offensive odour. I repeated the stimulant, and applied a blister to the back of the head.

June 30th.—Since the previous day the bowels have acted freely; the pulse is 90, the breathing more regular, but the pupils are still dilated. When she is made to move, she reels about; she gives no milk, and refuses all food. I gave a draught containing

Spt. Ether. Nitrici, ℥j;
Potas. Nitrat., ℥j;

in a quart of water, and during the day ordered her to be drenched with linseed gruel.

July 1st.—Animal better; she is inclined to drink, and partake of a little food, walks more steadily, and the pulse and breathing are nearly natural.

From this time she began gradually to improve, although the irregularity of her walk continued for more than a week afterwards, since which she has been in perfect health.

Although I shall refer to this subject again, when noticing the poisonous plants, it will, perhaps, not be out of place to give here a brief outline of the botanical characters of the hollyhock. The *Althæa Rosea* (hollyhock) belongs to the class of *Exogens,* and the *sub*-class *Thalamifloræ* (the *stamens* united to the ovary), and to the *natural order Malvaceæ* (mallow-worts), which has the following essential characters:—They are either trees, herbs, or shrubs, with *alternate* and more or less divided *leaves,* having *stipules, flowers axillary, sepals* 5, *valvate, petals* 5, *twisted in æstivation, stamens indefinite,* with *filaments* united in a *column, anthers* 1-celled, opening transversely; *fruit* consisting of one or many-seeded *carpels, seeds* without *albumen.*

This order of plants may be easily recognised by the *filaments being united,* forming a column, and the *valvate sepals.*

Examples of the order may be seen in the *Malva Sylvestris* (*common mallow*), and the *Althæa Officinalis* (*marsh mallow*).

The hollyhock (Althæa Rosea) is familiar to almost every one, it being a great ornament to our flower-gardens, for which purpose it is chiefly cultivated. "In 1821 two hundred acres of land, near Flint, in Wales, were planted with it, in order to convert the fibres into thread, similarly to that of hemp or flax. In the process of manufacture, it was discovered that the plant yields a blue dye equal in beauty and permanence to the finest indigo."

The root is biennial, and the stem attains the height of from four to eight feet, having divided leaves, bearing in their axils flowers of great beauty, and almost every variety of colour.

(*To be continued.*)

SINGULAR DISEASE AFFECTING SHEEP.

By W. A. Cox, Jun., M.R.C.V.S., Ashbourne.

The loss among sheep during the spring and lambing seasons, has been very great in all parts of this country. It has been attributed to the inclemency of the weather, and also various other causes.

Several singular cases have recently come under my notice. I had a patient to visit, some miles from this town, and on going into the farm-yard I noticed they were bleeding a flock of sheep. Commenting on this, the owner said his sheep were dying in a very strange way, as if affected with blackleg. One of the sheep, which had been shorn four hours previous to the attack of the disease, was lying dead. He described the affection as commencing in a small swelling, generally between the fore legs, and extending under the belly. It was not, however, invariably confined to this part; the head, throat, and neck, being occasionally implicated.

I was asked to examine one in which the disease had commenced an hour previously. I found an extensive, discoloured, swelling, between the fore legs, which was emphysematous, and on puncturing it with a lancet a discharge of bloody-coloured serum flowed from the puncture. This animal died after suffering four hours.

At the commencement of the disease the animal refuses food, shows a disinclination to move, and great dejection of spirits; the swelling extends very rapidly, until it attains the size of a man's head, in which state it remains. In those that have recovered, the enlargement has burst, and discharged a large amount of pus mingled with serum. The animals that die, linger, in most cases, but a few hours.

Post-mortem examination.—The viscera generally healthy, except the intestines, which are much discoloured throughout their convolutions, the mucous lining membrane being also in a highly diseased state. The tumour, when opened, emits a quantity of foul gas, and a little serum.

Remarks.—This flock of sheep had been kept on the hills during the severe weather of last winter, and been stinted in food, and on their removal to better pastures in the valley they had grown very rapidly, but none died until after they were shorn of their wool.

I should imagine that the increase of nutritive principle in the food, from the animals being in a debilitated condition, could not be appropriated by the wants of the system, and therefore it acted as a predisposing cause; the shearing becoming the excitant cause of the malady. The person when shearing the sheep noticed that if the wool was cut very close, the skin became discoloured, and the animals that were slightly cut began to swell at the part.

There has been another disease very prevalent among sheep; the lungs being the organs affected, but in the above cases the lungs were perfectly free from disease.

Facts and Observations.

THE DIGESTIVE POWERS OF THE PANCREATIC JUICE.

Dr. Corvisart, who has paid so much attention to this subject, is prosecuting his inquiries with undiminished ardour. At the meeting of the Academy of Medicine of Paris, held on the 20th inst., Dr. Corvisart read a paper wherein are related several new experiments, which entirely confirm the views he has set forth respecting the digestive powers of the pancreatic juice. The pancreas may therefore be looked upon as an organ having, like the liver, a direct action on intestinal digestion.

THE DISCOVERY OF THE CIRCULATION OF THE BLOOD FORESTALLED.

The *Gazette Hebdomadaire* of the 23d instant quotes some Italian verses extracted from a work of one Cecco d'Ascoli, who was born in 1257, and whose poem entitled "Acerbo" was printed only in 1476, which verses might be so construed as to contain a clear statement of the circulation of the blood as discovered by Harvey. Cecco was burned as a heretic in 1347.

HYDROPHOBIA IN CONSTANTINOPLE.

The Medical Society of the Turkish capital has appointed a committee to investigate the cause of spontaneous hydrophobia as observed in dogs. These animals are allowed to run about in an almost wild state at Constantinople, and, as their number is great, the importance of prophylactic means as regards hydrophobia is self-evident. The case which gave rise to the inquiry is that of a man, who, annoyed at the nightly barking of a dog, went out and endeavoured to destroy the animal. The latter, infuriated by the repeated blows, bit his antagonist in the hand; and the latter, who felt no apprehension whatever about the wound, as the dog had not given any signs of hydrophobia, was, some time afterwards, seized with the disease. The question which arises out of this case is, whether hydrophobia can be suddenly developed in an animal when under a high state of excitement, be the latter owing to heat, thirst, the venereal appetite, or anger.

PROPHYLACTIC AGAINST HYDROPHOBIA.

Dr. Petit says that as soon as an individual is bitten by an animal supposed to be mad, he ought to wash the wound and neighbouring parts with ammonia or boiling milk, and continue the washing for at least three days. (A footnote informs us that the Dr. prefers to cauterize the wound either with the actual cautery or sulphuric acid.) At the same time the patient should take every morning fasting, for nine consecutive days, a glass of the following decoction, warm:

Angelica root (in powder)	30 grammes.
Gentian root ,, ...	30 ,,
Venice treacle	30 ,,
Assafœtida (well crushed)	15 ,,
Oyster shells (in powder)	15 ,,
Sweetbriar root	40 ,,
Root of viper's grass (unscraped) . . .	40 ,,
Rue tops (fresh) . . .	of each half a handful.
Sage (chopped fine) . .	of each half a handful.
Sea salt	of each half a handful.
1 Clove of garlic.	
3 Leeks with the beards.	
2 Small onions.	
Daisies, a pinch.	

Boil all together with three litres of red wine of the best quality possible, in a covered pot, until reduced to half, then express and strain. The decoction may be kept for nine days in closed bottles. Delicate and weak patients sometimes vomit the first doses, but the stomach soon becomes accustomed to the curious mixture. For children under ten the dose is only half a glassful, and for those between ten and twenty, three quarters.—*Répertoire de Pharmacie.*

[The above is a curious prescription for a physician to write in the nineteenth century. After an immediate cauterization, we have no doubt it might be a very useful medicine, but not otherwise.—*Editor of Chemical News.*]

TANNIN AS AN ANTIDOTE TO STRYCHNIA.

As the result of many experiments performed on rabbits and dogs, Dr. Kurzak comes to the conclusion that tannin promptly administered is the best antidote in poisoning by strychnia. From twenty to twenty-five times the quantity of tannin is necessary; but even a larger amount should be administered, as the contents of the stomach, and especially gelatine, may absorb a portion. Tannin is the more eligible a remedy, inasmuch as it is easily procurable in the shape of gall-nuts. A portion may be rapidly reduced to powder and administered in water, while an infusion or decoction is prepared. For every grain of strychnia at least two and a half drachms of the gall-apples should be given. It will, indeed, be most prudent to administer a still larger quantity, especially when vomiting occurs. The experiments made by the author with *green tea* show that this also possesses a certain amount of efficacy; but, as it requires to be administered in such large doses, it becomes itself almost a poison. It can, therefore, only be of use when a very small quantity of strychnia has been taken, or as a mere adjuvatory. *Coffee* exerts still less effect. *Oak-bark*, containing 8·5 per cent. of tannic acid, may be advantageously used when the oak-apples are not accessible; and various other substances containing tannin, as acorns, horse-chestnut-bark, green-walnut-shell, &c. Vegetable acids must be avoided during the treatment of strychnia poisoning by tannin, as they favour the solution of the resulting precipitate. The same caution applies to alcoholic drinks. As the experiments have shown that active efforts increase or even induce the convulsions in strychnia poisoning, every care in treating the accident must be taken to avoid all such movements or any powerful stimulation.—*Zeitschrift der Aerzte zu Wien*, No. xi.

PHYSIOLOGY OF DROWNING.

M. Beau has recently laid before the French Academy an account of his experiments on this subject, made upon dogs. He gives as the result his belief that the death of the drowned has the greatest resemblance to that which happens in consequence of tetanic affections of the nerves of respiration.—*Comptes Rendus.*

THE VETERINARIAN, NOVEMBER 1, 1860.

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

OPENING OF THE SESSION OF THE ROYAL VETERINARY COLLEGE.—VIVISECTIONS.

Once more we are called upon to chronicle the opening of the scholastic session at the Royal Veterinary College, an event which interests to a greater or less extent the majority of the members of our profession. The inaugural address was delivered by Professor Spooner, and probably to the largest audience which had ever assembled within the College walls. Indeed, these annual gatherings have increased so much of late years, that we cannot help contrasting them with those of by-gone days, when, beyond a few of the leading veterinary surgeons of the metropolis, and the pupils—new and old—with some of their friends, scarcely any other persons were present. Now, indeed, besides those who were wont to attend, we see many members of the sister science and other learned professions, agriculturists and others who are more immediately interested in the day's proceedings. Did we require evidence of the higher appreciation of our profession by the public in general, we have it here; and while this must be exceedingly gratifying to the authorities of the College, we see in it an assurance of a still greater success attending their efforts to advance the science of veterinary medicine. The connection which happily has existed for several years between the College, the Royal Agricultural, and other kindred societies, has tended in no small degree to the bringing about this desideratum. It has shown to the great mass of the people, and especially to the farmers and horse-owning public, that the treatment of the diseases of the lower animals requires to be founded on the same scientific basis as that which supports other branches of medical knowledge. The charlatan and man of mere routine, who would treat animals, when suffering from disease, as if they were but inanimate machines, in which some wheel or spring had become worn out or broken, have thus been compelled to give place to the educated practitioner. These things being so, it seems to us that, year by year, advancement is certain, if care be taken to avoid the rocks and quicksands which beset our path. In the language of the editor of *The Mark Lane Express*, we desire that "the student may not merely qualify as a veterinary surgeon, but that he may rank as a gentleman. The somewhat dubious position," says the same writer, "which he may have held, while the farrier was graduating into the duly-passed master of medicine, is strengthened every year the College reopens. Whatever yet be the type of the medical student—'the rough,' or the scapegrace that caricaturists have delighted to depict him—it will be the young veterinarian's own fault if he is not recognised as something more reputable. It is only the naturally evil spirit that grows worse from its association with the horse, while surely the proper study of that noble animal should be to only the more humanise the dispositions of those who devote themselves to his service."

To return to the address. This we are enabled to give in another part of our Journal at considerable length, and we feel assured that it will be read by all with interest, and by many to advantage. May the good advice to the pupil which it contains make a lasting impression on his mind, and be the means of enabling him rightly to decide respecting the things of this life. Humanity was its great theme, and, correctly considered, its tendency, as a whole, was to elevate and ennoble. Parts of it were certainly calculated to excite indignation at the cruelties which are yet practised in the name of science.

Very lately we raised our voice in condemnation of vivisections, and, as such, we now prefer to give place to the opinions of others. Commenting on the entire lecture, the editor of *The Daily Telegraph* makes the following pointed and just remarks :

"The horse in this country is certainly a favoured animal.

We will not say that he is petted like a lap-dog or fondled like a kitten. He is treated far better. He receives almost the same amount of attention as a human being. His food is ample and nourishing, his stable is warm and comfortable, his coat is for the most part kept clean, bright, and glossy by vigorous brushing and continual ablutions. And then with what affection he is regarded by his owner! Here and there we meet with a coarse and cruel ruffian, who so far surrenders himself to stupid rage and unreasoning viciousness as to torture with unmerited chastisement the patient and laborious quadruped that does his bidding; but such examples occur rarely now, and, thanks to the watchful action of the Society for the Prevention of Cruelty to Animals, are every day becoming less frequent. It is scarcely an exaggeration to say that he who owns a horse treats it with kindness and consideration. Not merely in the training stables of Epsom or Newmarket do we notice this, but in the omnibus yards of London, on the metropolitan cab-stands, and even in the humble *écuries* of the street salesman and wandering costermonger. There are, no doubt, prudential and economical motives at work to explain this circumstance, for horses, like American slaves, are too costly to be systematically ill-treated, or continuously forced to perform more labour than their strength is capable of. But still there is a general sentiment of affection—nay, almost of respect among men for the most useful of domestic animals, which, perhaps, has a greater influence in rendering their position, comparatively speaking, a favoured one. The horse shares, indeed, with the dog the general esteem of the community for his intelligence, his docility, his spirit; but he is even more valued than the latter for his vast utility and adaptability to so many purposes, whether for war or for sport, for fashionable display or for useful everyday labour.

"But even if a stronger point of resemblance between the treatment of the horse and that of our own species be needed, it is to be found in the efforts made by science for the cure of those diseases to which the noble beast is subject. Until the close of the last century equine maladies were little understood, and no adequate means were taken to comprehend them or to find remedies for them. When a horse fell ill, it was handed over to the bungling treatment of an ignorant stableman, or to the dangerous prescriptions of some quack still more ignorant. But agricultural attention was at length roused to the subject, and in 1791 the Royal Veterinary College started into existence. This institution has gone on steadily improving year by year, widening the sphere of its influence as means increased, until it is now entitled to take rank side by side with any of our schools of human medicine. The list of studies the pupils have to engage in so as to qualify themselves to act as physicians to the stable, looks almost as imposing as an Oxford examination paper. They have to give up a good part of their attention to practical anatomy, to physiology, to veterinary jurisprudence, and to the principles of shoeing; they have to attend post-mortem examinations, to note the diagnosis of disease, and to apply their knowledge in the wide field of clinical experience; they have to attend lectures upon chemistry, and to go through a regular course of reading, embracing such works as Percivall's 'Hippopathology,' Blaine's 'Veterinary Outlines,' Youatt on 'Cattle and the Dog,' Morton's 'Manual of Pharmacy,' Carpenter's 'Physiology,' and Quain and Sharpey's 'Descriptive and Structural Anatomy.' The Veterinary College is on intimate terms with the different medical bodies, it is aided by the Royal Agricultural Society of England, and its surgeons hold commissions in this country and in India as servants of the Crown. One of the first lessons, too, taught to the students directly appeals to their feelings of humanity. They are in every respect to treat their patients with the consideration and gentleness which human invalids expect from their physician and their visiting surgeon. There is to be no roughness, no brutality, and, above all, the investigations by which a practical knowledge of disease is gained are to be conducted with a scrupulous regard to the tenderness—if we may use the term—of genuine science. The doctor who in modern times tends the horse during sickness is not, it will thus be seen, to be confounded with the ignorant farrier or pig-sticker of other days. He is a person of education and of enlightenment, whose mind has been trained by a proper course of education to observe and to remedy certain forms of disease, and who is as fairly entitled to take rank as a professional man as his brethren who follow another and a more lucrative branch of medicine. The object of both is the same—to alleviate pain and to save lives which, although in different degrees, are of value to the general community.

"While the horse is thus cared for with so much tenderness in England, it is sad to find that in France a practice prevails calculated to set the example of cruelty to all who have the animal in any way under their direction. Were it not for the high authority of Professor Spooner, who stated the fact in his address to the students of the Veterinary College a few days since, we might almost hesitate to attach credit to the statements made by the speaker of the horrors which are to be witnessed at Alfort and Lyons. But those statements bear too distinctly the mark of authenticity to be for a moment called in question. Mr. Spooner was himself one of a deputation which went to Paris in May last, in connection with the Society for the Prevention of Cruelty to Animals, to co-operate with a French institution of a similar nature for the purpose of attempting to put a stop to the horrible custom of vivisection, or dissecting alive, which it seems is maintained in the two chief veterinary colleges of France. Nothing can be more revolting than the picture drawn of the scenes which take place in those establishments. Twice a week the pupils are instructed in surgery by cutting up live horses. At nine o'clock in the morning the wretched animal selected is led out to be operated upon. There is no torture human ingenuity can devise to which he is not subjected. He is stabbed, he is ripped up, pieces of his flesh are cut away, his eyes are dragged from their sockets, his feet are slashed, his glands are torn away, operations of the most delicate nature are performed upon him, whatever the sharp knifes or the tenacious forceps can do, aided by a stout arm and a pitiless will, is effected, and for seven hours the sanguinary work goes on, unless the wretched animal falls exhausted meanwhile beneath the sharp pangs of agony he is compelled to endure. Such cruelty as this, perpetrated too in the name of science, is, we have no hesitation in proclaiming it, a blot upon the name of France. We seem to be reading of some wild country in the interior of Africa, rather than of that which lies next to our own shores. The barbarities practised at Alfort and Lyons must take rank as wanton and gratuitous. It is impossible to believe that they are needed in the interests of science, or that veterinary surgery could not be studied without inflicting such agonising suffering upon a noble animal. Mr. Spooner maintains, indeed, that position. He declares that vivisection is utterly unnecesary; and it seems obvious, indeed, that if human surgery can be learnt without such barbarity, veterinary surgery must be placed under the same conditions. There is no possible excuse, therefore, for persistence in a system which shocks all the higher sentiments of our nature, and which, by the authoritative sanction accorded to it, assumes the proportions of a national disgrace. It is not usually the duty of one country to remonstrate with another upon its purely domestic shortcomings; but in this case we cannot do otherwise than accord our heartiest approval of the course adopted by the Society for the Prevention of Cruelty to Animals, or refrain from expressing a hope that the exertions it has used to put an end to the atrocities in the French veterinary schools will soon be attended with the most complete success."

Criticisms like these are well calculated to rouse public attention to the attempt which has been made by "*The Society for the Prevention of Cruelty to Animals*" to remove so great a blot from the shield of science as the infliction of *un*necessary pain and suffering on animals, and to strengthen its efforts in so just a cause.

On the day succeeding the publication of these remarks, we read in the pages of the same journal the following letter, which shows at least that an impression had been made in the right quarter, and consequently that ere long we may hope to see the beneficial effects of this ventilation of the question.

To the Editor of 'The Daily Telegraph.'

Sir,—It will gratify many people to find by your journal of this morning that you are exerting your powerful pen in opposition to the practice of vivisection. You do not, however, seem to be aware that the practice is still followed to a horrible extent, and not only in France, but also in this country, under the idea that it is useful in the study of physiology and diseases of man. I am not now singular in having for many years publicly combated that error, and I have repeatedly challenged the advocates of vivisection to select any series of investigations for analysis which they thought most useful or defensible.

It is, however, only recently that any serious attention has been accorded to the subject, and this has been obtained chiefly through the influence of the societies for the prevention of cruelty to animals of London and Paris. A commission of eminent persons in France has been appointed to consider the subject, and the report which they have made now lies before me. Whilst the document places vivisection under some restrictions—which, *pro tanto*, in the present state of the question, are not wholly worthless—it still concedes advantages to it which are entirely unfounded and demonstrably erroneous.

The report has been placed in my hands by the Royal Society for the Prevention of Cruelty to Animals, in London, and I have undertaken, at the wish of the Society, to prepare a reply. This, as I am instructed, will be published in the course of next month. I shall, in my answer, show, so far as the limits prescribed to me may allow, that vivisection is useless; that it invariably "fogs" the question it proposes with interfering influences, so as to render it impossible to deduce any logical, much less useful, conclusion; that vivisectors themselves, almost without exception, unconsciously furnish us with evidence of the superiority of other and entirely unobjectionable modes of inquiry; that no one useful discovery has ever resulted from vivisection; that some which have been attributed to it, such as Mr. Hunter's operation for aneurism, &c., are simply, as matters of history, untrue, having been deductions from facts to which vivisection in no degree contributed; that Charles Bell, quoted in the report as an example of the utility of vivisection, was one of the strongest opponents of it, and his own words will be quoted to show that he concurred in the opinion I have long ago expressed myself, viz., that vivisection has only tended to obscure the questions it sought to solve, and thus to impede, pervert, or indefinitely postpone other and more philosophical modes of research. My reply will of course state fully the facts on which these assertions rest, and be also, I trust, a brief exposition of that defective philosophy of which vivisection is an illustration, and of which the present conjectural condition of medical science is the necessary product.

En attendant, your insertion of this letter may do some good, in helping to excite that rigorous examination of the subject, which is, in all matters of science, the one thing needful.

I am, sir, yours, &c.,

George Macilwain, F.R.C.S.

3, *Court Yard, Albany; Oct.* 12.

As we have also been favoured with a copy of the report alluded to by Mr. Macilwain, we here give it insertion. It speaks so plainly for itself, that comment from us, and especially under existing circumstances, is not required.

REPORT ON VIVISECTION MADE TO THE SOCIETY FOR THE PROTECTION OF ANIMALS, IN PARIS.

In the Name of a Commission, composed of Messrs. Barault-Roullon, Dr. Blatin, Dr. J. Cloquet, H. De Castleneau, Crepin, Dr. Carteaux, Aug. Dumeril, I. Godfrey-Saint-Hilaire, Dr. Baron Heurteloup, Ern. Kaufmann, Leblanc, Duc de Larochefoucault Doudeauville, Dr. Lobligeois, Magne, Vicomte de Valmer, *and* A. Sanson, Reporter.

Societies formed for the prevention of cruelty to animals, could not fail to be deeply moved at the sight of the sufferings imposed upon the brute creation with the aim of making experiments for the benefit of surgical science. Already have several of these humane institutions loudly proclaimed in the most absolute terms, their opposition against the practice of vivisection, that is to say, against all those torturing operations practised upon the living animal, with no other aim than that of scientific improvement.

Our society, ladies and gentlemen, has, for a long time past, felt a desire to be enabled, by practical acquaintance with the subject, to come to a decision upon this important question. The society has, therefore, honoured us with the mission of examining the details of the matter, and we are about to lay before you the elements of a solution of this most difficult point in the clearest and most practical manner possible.

The aim of every Society for the Prevention of Cruelty to Animals, is to put an end, by every available means, to the great cruelties exercised towards dumb animals. With this sole aim before our eyes, our task becomes one of the most simple nature; it consists merely in the inquiry whether the practice of vivisection is, in reality, a cruelty; and, first of all, let us examine what is the true meaning of the word.

If I were called upon to define the term, I should give it a much wider meaning than that to be found in the dictionaries, which tell us that it is "Inhumanity, inclination to shed blood, to cause suffering, or to delight in witnessing the sufferings of others." Following this explanation, we need go no further. It is evident that vivisectors have some other object in view than the mere pleasure of shedding blood, or of beholding the sufferings of "others." For animals may certainly be regarded as "others." An act of cruelty, according to our interpretation, is the infliction of pain, however slight, and of whatever nature it may be, which is gratuitously inflicted upon any species of living creature.

Humanity and tender feeling should, in our state of advanced civilisation, govern all our actions. But however great may, and ought, to be our solicitude for the brute creation, there is one sentiment which must always rise above it, and that is the interest experienced in our own preservation, and, I may add also, of our own amelioration likewise. It is this peculiar principle of social philosophy which we denominate *utility*. Everything *useful* to humanity is to be regarded as a moral fulfilment. This is the supreme law.

To dwell longer upon these considerations would be superfluous. There are certain convictions which escape discussion because they form a part of the sentiments which fill the soul of every man of sound and healthy mind. This is one of them. It is, moreover, like the innate idea of the necessity of society, one of the most natural conditions of humanity.

With this admission, we have only to examine whether vivisection be useful in this particular sense. And if we can establish the fact of its having rendered service of ever so trifling a nature, we must defend the practice, for we must, in that case, be permitted to infer the probability of ulterior service as well.

If the question were propounded thus, before an assembly of physiologists, it would excite nothing more than a contemptuous smile. They would instantly inform you that physiology itself has only been acknowledged as worthy to take rank amongst the sciences since the day when, discarding all empty dreaming, all paradoxical reverie, it began to devote itself exclusively to the research of positive fact and example. Its claim to be considered amongst the serious studies imposed upon medical men, can only date from the moment when it became obligatory for the student to penetrate the secrets of life, by contemplation of the inward structure of the living animal. Physiologists will tell you, that the only certain means of becoming acquainted with the functions belonging to each organ, is to surprise them while actively employed, and in full movement of vitality.

We are not compelled to believe them upon their assertion alone. But if it be recognised, after examination, as correct, then are we bound, not only to accept as a painful necessity the means whereby they arrive at the result, but even while proclaiming ourselves protectors of the very animals upon which they practise their experiments, to contribute our share of praise and encouragement to those efforts, the aim and result of which are of such paramount interest to physiological science, and consequently of the utmost importance to the well-being of every living creature.

There is no need to insist upon that elementary truth so long and so often unrecognised, that the study of man can alone lead to the proper government of human things. Now, the study of man is precisely the science which we term physiology. And, without seeking to attack certain questions which might be considered out of place here, we shall run no risk of contradiction by affirming that the functions of the nervous system, for example, have a decided influence over the determination of the human race.

We cannot pause to pass in review before us all the divers points of physiology which have been brought to light by experiments made upon the living animal. It would be a work of time and labour, and, moreover, intolerably tiresome, to those who take no direct interest in the science.

There are certain facts which we must not endeavour to over-prove. All those who are acquainted with the progress made by physiology during the last thirty years, know well to what degree of precision and exactitude we have arrived in the knowledge of the successive functions, by which we are enabled to digest the aliments indispensable to the preservation of existence. They are aware, also, of the use which has been made by pathologists in the study of the divers diseases which impede the exercise of these important functions. In short, they have learnt how, physiology having reduced the faculty of digestion to a series of purely chemical actions, doctors have been enabled to determine with the greatest exactness the nature of the means which may be successfully opposed to the disorders occasioned by the morbid influences incidental to the human frame.

Without seeking to enter upon a scientific dissertation, we may be permitted to affirm that this progress dates from the establishment of the gastric fistulæ—a vivisection. This is a fact which no man will seek to deny. And if the paramount importance, in the vital economy of the human frame, of the function be considered—since it is the first of all those necessary to the preservation of life—there will be no need to dwell further upon the extent of the benefit this conferred.

Setting aside, therefore, all reference to medical or surgical illustration of our argument, let us confine ourselves to one single object, the most striking of all, from the peculiar position in which we stand, and also because it offers more serious matter for reflection than any other. Certain vivisections seem to have no other aim than that of provoking manifestations of pain: these relate to the study of the nervous system, and these have more need than all the rest to be justified by the plea of utility in the result, for no human being, endowed with the smallest spark of sensibility, could be supposed to practise such experiments unless he had constantly before him the sublime result of which he is in pursuit, both for the good of science and humanity. If we can, therefore, succeed in establishing that the experiments hitherto made upon the nervous system, by the scientific discoveries to which they have led up to the present moment, cannot be classed amongst the definitions we have just given of "cruelty," we shall then be justified in declaring that the practice of vivisection may be considered as a legitimate branch of scientific research.

The nerves belonging to the system of sympathetic life transmit to the brain the *sensitive impressions* collected from the surface of the body on the contact of external agency; they serve likewise in the transmission of the exciting motive, which issues from the sensorium under the influence of volition. The currents determined by these two distinct orders of action are consequently directed in a contrary sense. Some of these nerves—which have been compared to the wires of the electric telegraph—serve exclusively for the transmission of one or other of the two currents; others, again, which doing double service, are useful in transmitting both. The first are the sensitive nerves; the second the muscular; and the last are called mixed.

It would be difficult to imagine how these distinctions, now so plainly demonstrated, could ever have been established without experiments upon the living animal. It had become necessary to behold whether sensibility or motion, or both at once, became annulled by the section of the nerve belonging to the organs where its terminating divisions are distributed—and this could only be done by living proof. It was indispensable for this purpose to divide alternately the two branches, or rather the double root, by which the mixed nerves are connected with the spinal marrow, in order to obtain conviction that, according to the peculiar case, it may be either one or other of the currents which may be interrupted by the operation. It is to the vivisections made by Sir Charles Bell, confirmed by those of Magendie, Müller, Valentin, Longet, &c., that we owe this valuable conquest in physiology, so fruitful in therapeutical application, and I may add, so consolatory likewise, even from the peculiar point of view in which we ourselves are accustomed to view the subject. We owe to the experiments made by M. Brown-Séquard the definitive demonstration of another important fact—that of the extension of the roots to the nerves dependent on the spinal marrow, to which they correspond. Further researches, made by the same physiologist, have brought to light one more fact of equal importance—that of there being no need of a total separation of the spinal marrow to occasion the interruption of all perception through the encephalus of sensitivity—that is to say, for the abolition of pain—it being sufficient to attack the gray substance which occupies the centre of the marrow. It has been ascertained likewise, that this same gray substance, although serving to transmit to the sensorium all sensitive impressions, remains in itself absolutely insensible to all direct excitement.

A moment's reflection on the influence of external excitement on the formation of our ideas, will enable us to comprehend these simple indications, and we need not, therefore, enter into further details. We are compelled to refer to the numerous treatises on physiology, which have been written on the subject for the instruction of those to whom our explanation may not suffice. Here they would perceive at once how entirely the idea of the sufferings which have been compulsorily inflicted upon animals, often of the lowest order, upon reptiles, upon batrachians, vanishes before that of the greatness of the results obtained. They will here behold that, in these functions of the nervous system, in this laboratory of thought, where all was formerly darkness and mystery, an invaluable flood of light has been admitted through the practice of vivisection.

But we wish, above all things, to call your attention to those of a nature calculated to dispel a widely disseminated error, an error which, more than once, has served to awaken, without cause, your just sensibility. How often has it happened that your pity has been stirred at the description of phenomena, which possessed the semblance of manifestations of pain without the reality ? We speak of the *reflex action*, the consoling discovery of which, I again repeat, is entirely due to vivisection.

The physiological denomination of *reflex action* of the nervous system, that peculiar faculty, in virtue of which muscular contractions, convulsious, *motion* in short, is wont to succeed to *impression*, without any perception or *sense* of the latter being conveyed to the brain—that is, without the possibility of any existence of *pain*.

When such phenomena are exhibited upon the body of an animal entirely decapitated, it is impossible to deny that they must be accomplished without perception, since the acknowledged seat of perception is the encephalus, and all communication is interrupted. In cases where they have been observed in the head when it has been already separated from the trunk, the demonstration of the fact, although less evident, perhaps, becomes not less certain notwithstanding, as it is known that every cause which suspends the flow of blood towards the brain immediately occasions the loss of sensibility. Therefore it is impossible to conceive the continuance of perception, sensation, or pain there, where sensibility exists no longer.

All phenomena of contraction of the eyelids, of the ears, of the lips, the movements of the eyeball, so frequently observed in the head after separation from the body, in the case of animals at the *abattoirs*, belong, therefore, solely to this *reflex action*, exactly the same as the involuntary dropping of the eyelids, denominated winking, and various other involuntary motions of our organic life, to some of which had been already given, before their real nature had been ascertained, the name of "sympathies."

We are only enabled to pass lightly over these divers subjects. To enumerate the list of services rendered to science by vivisection, would be to retrace the whole history of the nervous system. We will say nothing of the fixed habitation which the practice has enabled us to bestow, in the divers portions of the sensorium, to the various functions over which each one maintains its especial government and rule—habitations established by the vivisections of MM. Flourens, Longet, &c., and which an endless number of pathologic examples have already tended to confirm. These facts permit us to determine, at least for the present, the nature of the functional disorder at the precise seat of the lesion.

We will not seek, either, to enter into further examination of the consequences obtained by the knowledge thus acquired of the objects just mentioned, with respect to certain nervous disorders of the most serious kind, which, until now, had conveyed the greatest disappointment and discouragement to the hearts of medical men, and which now present the greatest hope of successful domination for the future.

Once more, let us repeat, we must be careful to guard against over-abundant proof.

We have said enough to show that, without the aid of vivisection, we should remain in almost total ignorance of the functions of the nervous system which regulate our economy, the complete mastery over which can alone give a solid foundation to philosophy and moral teaching. Our pretended professed philosophers, who make to themselves a kind of glory in their profession of ignorance of the physiology of the human frame, and who yet assume a thorough competence of judgment in their long-winded dissertations on the human understanding, produce in my mind the effect of a madman who might undertake to drive a steam-engine, without ever having studied the organs of which it is composed, nor the nature of their uses. No one could possibly wonder, in such a case, to see the train thus conducted hurry to its ruin.

The aim pursued by vivisectors—the knowledge of man—the immense results already obtained in this line, independently of those relating to objects of a less elevated order, all this does not allow us to admit a moment's doubt of the utility of vivisection as a principle, as a means of scientific research, worthy of the approbation of all who are sincerely interested in the progress of science, which means the real welfare of humanity.

But to deserve this approbation, the science of vivisection must be strictly maintained within the limits of this noble aim. It must be regarded solely as the means of verifying by experiment a hypothesis circumscribed beforehand, so as to limit the sufferings of the living creature upon whom they are necessarily imposed to the bare research of the solution of the difficulty under consideration. Beyond such limits, the question of cruelty begins, inasmuch as it is at this point that commences the gratuitous infliction of pain, the absence of utility. Vivisection can only be exercised with morality when its object is the pursuit of new discoveries, of course, in the silence and solitude of the laboratory, and under those certain conditions wherein the will of the operator masters the experiment, instead of allowing the experiment to master his will.

It is this reason which renders it so difficult for us to understand how vivisection has ever been considered an art, and how this art has ever been elevated to the rank of a branch of public instruction. No one can deplore with greater sincerity this excess, nor lament more deeply the existence of a sentiment of scientific curiosity, powerful enough to silence that sense of feeling inherent to the intelligence of man, and to furnish spectators to the exhibition of this mortal agony. But we can go no further. Our influence would be powerless to repress this excess. Were it otherwise, we should hesitate to use other weapons than those of persuasion, for, in order to hit the abuse, we should fear the risk of smiting the custom. If the first be decidedly reprehensible, we have nothing more to do than to impart the conviction of the lawfulness of the second.

Another word in answer to a widely spread opinion which has been emitted in the bosom of our own Society.

Many people are persuaded that the habit of vivisection deadens the sensibilities and hardens the heart. It is sufficient to understand the nobility and elevation of that peculiar sentiment we designate as the love of science, to perceive the fallacy of such an idea. I am acquainted with a certain vivisector, the greatest of our day, the individual whose labours have been the most fruitful in useful results, whose whole life bears witness in the most peremptory manner to the error of this verdict. During the days of his probation in life, it has often happened to him to deprive himself of nourishment for days together, in order to ensure sufficient food to those animals he was supporting with a view to his scientific experiments. I know of no more noble and more disinterested nature, no friend more devoted, no man endowed with greater sensibility in the exercise of every domestic virtue.

We will conclude with a short anecdote which will speak more eloquently than the finest dissertation on the subject.

One day during the past year I had been invited with a great physiologist, my friend, to pay a visit to the skilful vivisector of whom I have just spoken. The object in view was the verifying, by experiment, the truth of certain statements made with regard to some peculiar physiological doubt upon the nervous system, which had been accepted by some practitioners and opposed by others. Just as our experimentalisers were about to strip the spinal marrow of an unfortunate rabbit, a little boy four years of age, belonging to the vivisector, who was playing in the garden close to the summer-house where the experiment was going on, happened to fall from a wheelbarrow and cut his forehead on the gravel. No sooner did the father hear the child cry, than, without a moment's hesitation, abandoning rabbit, instruments, and everything at the most interesting moment, he snatched the child up in his arms, and gave way to demonstrations of the most acute sympathy. For an instant we could not help fancying that the *cruel* vivisector was about to faint away with emotion.

It may be said without fear of contradiction, that if the habit of witnessing the sufferings of animals had the power to blunt sensibility, we never could have to record this scene, the principal actor in which has accomplished thousands of experiments upon the nervous system. Cruelty is not an acquired trait of human nature. It is an inherent vice which may be in some measure corrected by education, but can never be taught.

To sum up our argument, we flatter ourselves that we have established the conviction in our hearers, that it would be going beyond a healthy appreciation of facts, to consider the practice of vivisection, when confined to scientific research, as nothing more than cruelty to animals. This mode of experiment is justified by the elevation of its aim, by its utility, and by the immense results it has already produced.

But in the same degree that we feel bound to approve the practice of vivisection when pursued for the exclusive advancement of science, that is to say, with an object limited beforehand, whose just pursuit is sufficiently established by the usefulness of the research; so are we compelled to declare ourselves averse to the unrestrained practice of torturing, sometimes gratuitously inflicted upon poor dumb brutes by inexperienced hands, who torture without any fixed purpose. These tortures have never been turned to any other account than by provoking unexpected manifestations, which serve to build up artificial theories, only made to be overthrown by the experiments of wise and judicious practitioners.

For the sake of completeness, we add two other letters which have appeared in *The Times*. The writer of one of these, it will be seen, fully confirms the statements made by Mr. Spooner, from his own personal observations.

HUMANE SOCIETY IN FRANCE.

To the Editor of 'The Times.'

Sir,—The attention of the public ought to be again called to the atrocious acts of cruelty which are now being weekly perpetrated in the veterinary colleges of France, and its assistance requested in framing some plan for inducing the French authorities to consider the subject.

On the 8th instant, Professor Spooner delivered an address to the Royal Veterinary College, from which I take the liberty of sending an extract:

"The facts are these:—At Alfort, which I visited, and still more at Lyons, the pupils are instructed in surgery by cutting up living horses. Oh! then is surgery fiendhood! Two days a week, at nine o'clock in the morning, the doomed horse is cast, and then he is subjected to all sorts of surgical operations, such as firing, neurotomy, cutting away pieces of the cartilage of the foot, operating as for stone in the bladder, extirpating the parotid and other glands, or the eyes, or any organs that forceps can pull, or that knives or saws can reach. Steel and fingers, guided by stony hearts, invade the poor animal at all points; these operations on the same horse last from nine o'clock in the morning until four in the afternoon, unless, indeed, he becomes unfit for the diabolicism by dying in the meantime."

Comment is superfluous. It is well known that vivisection has long been considered unnecessary to the successful cultivation of the veterinary art, and is repudiated with horror by our English surgeons. The Society for the Prevention of Cruelty to Animals have made a vain effort to induce the French colleges to abolish these proceedings, and my only hope now, in addressing you, is that, by constantly keeping the subject before the public eye, the higher powers in France may be brought to exert themselves in behalf of these helpless sufferers.

The Emperor himself reads *The Times* and, from his well-known love of the horse, may feel interested in saving the old and worn-out relics of that faithful race from a fate horrible to contemplate, and most disgraceful to a Christian land.

I am, Sir, your obedient servant,

October 11th. H. D. E.

HORSE-TORTURE IN FRANCE.

To the Editor of 'The Times.'

Sir,—Referring to the subject of "H. E. D's" letter in *The Times* of Saturday, I am sorry to be able to confirm the accuracy of the statements quoted from Professor Spooner's lecture, in allusion to what he has most aptly designated the "fiendish" practices carried on at the veterinary school at Alfort.

Being recently in France, I visited this celebrated institution, in consequence of my having been requested by the Secretary of the Society for Prevention of Cruelty to Animals, to report from personal observations as to the horrible cruelties said to be so extensively and systematically practised at Alfort.

At the period of my visit it was the vacation; consequently, experimental operative surgery was not being practised so regularly as during the session, but, as I was there when the veterinary surgeons attended, and operated if necessary, there were present a considerable number of advanced students or assistants (dressers?), very intelligent, well-informed young men, with several of whom I had long conversations, and they unhesitatingly admitted that, in addition to practising vivisection for the sake of physiological research or experiment, every operation which could by possibility be required to be performed in the course of veterinary practice was, on two days a week, during the session, performed over and over again by the teachers and students, on living (diseased or worn-out) horses, operations of the most exquisitely painful nature being successively performed on different parts of the same horse, until nature gave way, the wretched animal having been tortured to death by knife and fire in as barbarous a manner as man or devil could devise. To add to the brutality, horses which have only been partially experimented on are often left till the next operating or experimenting day (not the following day), when a renewal of their tortures takes place. My question as to whether they ever gave chloroform or ether to the animal before vivisection was answered in the negative, and with a derisive smile.

That such revolting barbarities are committed from week to week, and from year to year, in a country which not only claims to be civilized, but to be the leader of civilization, and whose ruler is called the eldest son of a Christian Church, must be a matter of great surprise and deep regret to many in this country, and must also react injuriously in brutalizing the minds and hearts of considerable and successive portions of the youth of France, not only the veterinary practitioners, but the many who in the rural districts throughout the provinces and in the army come within the sphere of their influence and example. For their sake, therefore, but more especially for the sake of the suffering, helpless, unoffending brute, such cruelty should be exposed and condemned, and, as there is no one whose denouncement of the practice, and whose opinion as to its being utterly unnecessary, can carry greater weight than the learned principal of the London Veterinary College, every humane man must feel indebted to that gentleman for having spoken out on this subject in a manner alike creditable to his head and heart.

It is right to state that there does exist in Paris a "diluted" imitation of the London society—namely, the Société Protectrice des Animaux, of which an enlightened and talented physician, Dr. Lobligeois, is secretary. This gentleman confirmed the correctness of the information which I received from the *élèves* at Alfort, and he expressed his regret that, while he and the Société Protectrice condemned the acts, they were unable successfully to combat the difficulties thrown in their way by interested and indifferent parties.

Apologising for trespassing so far on your valuable space,

I have the honour to be, Sir,

Yours most obediently,

15, Harrington Square, Oct. 15th. D. FRASER, M.D.

Here, then, we may safely leave the question for the present. That good will arise out of the discussion, no one can doubt; and if but a modification of this system of teaching the practice of the veterinary art be effected, all will have reason to rejoice that the subject of vivisections formed the chief theme of the inaugural address of 1860.

Translations and Reviews of Continental Veterinary Journals.

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

Recueil de Médecine Vétérinaire et Pratique.

THE NUTRITIVE PROPERTY OF SUBSTANCES WHICH CONTAIN A LARGE AMOUNT OF CARBON, FOR FEEDING OF CATTLE, AND PARTICULARLY THE WORKING HORSE.

By M. J. Magne, Professor of Agriculture and Hygiene, Imperial Veterinary School, Alfort.

M. Magne, in his work on agriculture and hygiene, has endeavoured to prove that the substances which contain the greatest amount of carbon are more required by those animals that are employed in severe work than by those that are idle, or merely fattening. Further, that the rations which are generally given to post-horses contain more carbon than those given to oxen for fattening them.

This opinion is contrary to that which is generally received, namely, that the substances which are highly nitrogenous are better adapted for working animals, while those which contain the largest amount of carbon should be reserved for such as are fattening. It is therefore not surprising that a distinguished colleague should maintain that this opinion is erroneous, and that, far from giving vigour to the animals, carbonaceous substances render them indolent and feeble. Under their influence, he says, they rapidly increase in size, by the accumulation of fat in the tissues, but, at the same time, their vigour diminishes, and they become less fit for active service; particularly for fast work. This is a consequence of fattening, but fattening does not necessarily follow on a system of feeding upon substances in which carbon predominates. Feeding on these substances only increases the size of the animal, and produces atony, and fattens only when the animals are kept in idleness, and make no use of the large quantities of carbon and hydrogen they take in as food. Fattening is principally dependent on the care that is taken of the animals, and the way in which they are stabled. It is the absolute rest they enjoy which gives size to the ox, and an abundant secretion of milk to the cow. As to their provender, it is less rich in carbon than that given to animals which are submitted to hard work. Such food has nothing within it in particular, except it contains a large quantity of water; while that which gives to horses the necessary strength and vigour for fast action, and for drawing heavy loads, must contain those elements of combustion which are required by the respiratory organs when under great exertion and fatigue. This is easily demonstrated. Of those rations which are given to fattening cattle, and of which analysis has been made, the proportion of carbon to that of nitrogen was from 260 to 291 of carbon to 100 of nitrogen; while those advocated by M. Warnes, who with a mixture of linseed and barley formed rations, contained 469 of carbon to 100 of nitrogen. These were found too strong to produce good meat, and to excite the appetite in animals gorged with food and weakened by rest. Rations are considered very good when the proportion of carbon is 175 to 100 of nitrogen. In oil-cake, which is so advantageously used for fattening, the proportions are 160 to 100, while in meadow hay there are 330 to 100, and in oats 334 to 100. Rations which are generally given to animals destined for the butcher would not suffice for horses doing even slow work. By the quantity of carbon contained in oats and hay, we are able to estimate the difference in the food of the post- and the race-horse, as compared to that of the ox fed for the butcher. That of the horse contains at least 327 of carbon to 100 of nitrogen. This amount of carbon and hydrogen is necessary to keep up the excited respiration during the daily task of four or five hours, fast work. Nothwithstanding the richness of the rations in carbon, post- and race-horses are never very fat, but they have a great amount of vigour and endurance. Experiments show that whenever, either for economy or otherwise, lucerne and barley cake are substituted for meadow hay and oats, in the same proportion horses cannot do their work; and that rations in which the carbon to the nitrogen is only 208 to 100 are not sufficient for post-horses; but when the carbon amounts to 320 to nitrogen 100, these will sustain them for an indefinite period. How does the first act? It must be in the difference of the composition of its constituents, there being an excess of nitrogen in them.

On another occasion, 3 kilogrammes of barley were substituted for 3 of oats, the hay being in both cases the same (9 kilogrammes). The first contained 262 of carbon to 100 of nitrogen, the latter 328 of carbon to 100 of nitrogen. The post-horses to which this substitution was given, were unable to do their work. The following is from a report made by M. Leblanc on the horses of the Imperial Omnibus Company. They were in good condition, and did their work well on rations consisting of meadow hay 2 kilogrammes 50 grammes, 7 kilogrammes of oats, 5 kilogrammes of straw, used as bed; while others were weak, without vigour, and unable to perform their work on cut hay 2 kilogrammes 500 grammes, bruised oats 4 kilogrammes 750 grammes, bruised barley 2 kilogrammes, cut straw 500 grammes, and straw for bed 5 kilogrammes. In the first, the carbon is in the proportion of 324 to 100 of nitrogen, in the second 238 to 100. In some experiments made in 1858, on the cavalry horses, which it would be too long to transcribe, it was proved that barley and lucerne instead of oats and hay caused the horses to lose condition, and rendered them less able to do their work. This result could not be attributed to anything else but the less amount of carbon in the barley and the lucerne. In all the regiments subjected to these experiments it was acknowledged that the horses did not lose flesh when fed on barley; on the contrary, some were found to gain it, although not so fast as those that were fed on oats; but there was a loss of vigour in them, and they were slow in their paces, and perspired much in their work. These experiments were discontinued for fear of worse consequences. In all of them, 5 kilogrammes of straw were allowed for litter, but which is always partly eaten by the horses. Barley has often been given to the horse, but always with unsatisfactory results, unless it is combined with other provender rich in carbon.

M. L—, farmer, in the Camargue, has substituted 3 kilogr. 500 grammes of barley for 3 kilogr. of oats, allowing in both cases straw *ad libitum*. On this food he has kept his horses and mules since 1855. The straw is very rich in carbon, and contains very little nitrogen, and therefore constitutes with the barley a very good provender. Supposing that the horses and mules consume 8—10 kilogr. of straw, they would receive 395 grammes of carbon to 104 of nitrogen. In the first ration, the proportions of carbon are 434 to nitrogen 100; in the second, 315 to 100. They thus receive as much carbon as when fed on oats and meadow hay; but the drivers assert, that when fed on oats they were more vigorous, which tends to prove that the energy of animals is in proportion to the carbon they take in their food.

Carbonaceous substances are as necessary to man as they are to animals, when they have to perform laborious work. Thus workmen in the field, navigators, &c., value their diet in proportion to the fatty matter it contains. They care but little for lean meat, however delicate it might be. What they like is fat meat, or in its absence, vegetables well impregnated with fat or butter. They eat, with evident pleasure, such fat bacon as would disgust the sedentary inhabitant of the town.

This universal use of fatty matters for our food does not depend on caprice, but on an imperious necessity of our nature. The desire for it, when general, is only the expression of this necessity.

The author considers the question, whether the maladies, from which sheep and cattle suffer have any relation with this subject of diet, and states that a certain malady in sheep (*sang de rate*) has been more frequent since the system of artificial pasturage has been introduced, and leguminous plants have been substituted for the gramineous and aromatic herbs; and, in fact, that it prevails more in those places where the meadows have been ploughed up, while it suffices oftentimes to diminish its ravages to remove the flocks to loamy or marshy land covered with plants belonging to the graminea, or to depasture them on young rye, barley, or oats.

As to pleuro-pneumonia, a disease which has made such ravages amongst cattle of late years, it is without doubt more common than formerly. It is more fatal also in the stables of the distillers and milkmen, where the animals are fed on beet-root and grains, which have a greater proportion of nitrogen than carbon. If we bear in mind that the graminea are richer in carbon than the leguminosæ, and that, when cattle are depastured on the natural grass, they fatten both sooner and better than when depastured on artificial meadows, such as clover and lucerne, may it not be presumed that diet exercises a great influence on the development of certain diseases in cattle? and that that diet in which nitrogen is superabundant contributes either to their production in some way or other, or predisposes the animals to the contraction of them?

This question is, however, a very complicated one, and it would be very dangerous to come to the conclusion that the food which constitutes so great a part of the wealth of the agriculturist is detrimental to the health of our domestic animals, on account of the abundance of nitrogen it contains. But at the same time it is most important to discover the truth, and to ascertain whether these artificial foods are the cause of certain maladies which were unknown to the ancients.

The author next examines the question, whether the amount of carbon required varies according to the breed of the horse. But, before solving this, he finds it necessary to dispose of the quantity of carbon required by the post-horse. It is well known, since the time of Lavoisier, that respiration uses up the carbon and hydrogen contained in the food, thus becoming the source of animal heat; also that the consumption of these bodies, considered either in the different breeds or in each particular animal, in a state of health or disease, and when at rest or in motion, is always in proportion to the activity of the respiration. It is under the influence of strong exercise that the large amount of carbon which is contained in meadow hay and oats is appropriated. MM. H. Bouley and Lassaigne have found that the loss of carbon during rest is 2200 grammes, and 4800 when in exercise, in twenty-four hours; and other chemists have come to the same conclusions. M. Alibert admits, in his learned memoir on alimentation, that the loss of carbon in twenty-four hours, in a horse weighing 500 kilogr., amounts to 2400 gr. during repose. To appreciate the influence of exercise, he has experimented on man. A man raised a weight of 10 kilogr. to the height of one metre from the ground without letting it fall, and lost carbon at the rate of 58 gr. ·068 in the hour. The same individual, on getting out of bed in the morning, and before having taken any exercise, emitted carbon at the rate of 10 gr. 8·40 in the hour. The experiment lasted ten minutes. The weight was lifted five times, the exertion being very considerable, and the man was in a violent perspiration. During this experiment, which was made with the greatest care, the consumption of carbon was five times greater than when in a state of rest. In an old horse the respiration became increased from 12 and 13 to 27 and 28, during work; in a mare from 16 and 17 to 44 and 46; in a gelding from 17 and 18 to 36 and 40, after half an hour's trotting. The first two were worked at the plough at the end of January, the weather being rather cold; the last was ridden by a man of ordinary weight, at the beginning of April, the weather being mild. From this it will be seen, that the respiration is nearly tripled during exercise. The expiration of carbonic acid is not increased in proportion to the number of expirations. If the quantity be 4·1 per cent. in 12 expirations per minute, it is only 3—3 per cent. in 24 expirations, and only 2—9 in 48; but although the quantity is less in each expiration, the total in a given time is more when the respiration is accelerated.

The hydrogen contained in the food, like the carbon, is consumed during respiration, and forms water, which is exhaled by the tissues and cannot be easily estimated. The loss of carbon by respiration is variable, and in proportion to the more or less rapid exercise and its duration, and without exaggeration it might be taken at one third more; as, for instance, a horse that emits 2400 gr. in 24 hours in the stable, would lose at work 100 gr. more per hour, and taking 10 hours' work would be 1 kilogr. These 3400 gr. correspond to the quantity contained in the food, the ration being composed of 7 kilogr. of oats and 7—500 of hay. We know that these carbonaceous substances contain 176 per cent. of carbon, and the neutral bodies, as starch and sugar, contain 44 per cent.

Post-horses which work only a few hours a day consume more carbon than horses at slow work, working 10 hours a day. The latter do well on rations that contain less carbon than the former. On the other hand, horses that have to undergo violent exercise, lose flesh very fast, although the exercise be but of short duration. Such is the case with race-horses when training. The question may be asked, whether all the functions are not equally increased by exercise, and the loss of nitrogen and the phosphorus be not increased also. The answer to this is, they are not all equally increased by exercise; on the contrary, some are decreased; as, for instance, the secretion of milk, the urine, and the semen. A horse that perspires much stales less, and consequently loses less nitrogen and phosphorus by the kidneys. It is true, that during rapid progression, and necessarily accelerated respiration, accompanied by abundant perspiration, the action of the kidneys is lessened, for the skin then emits a certain amount of nitrogen and other mineral substances; but this does not establish the balance, for at the same time the skin also gives off a quantity of gaseous matter, amongst which carbonic acid forms a large item; but this acid is partly derived from the action of the oxygen of the air on the carbon of the blood. The inference from these considerations is, that animals lose more carbon and less nitrogen when at work than when at rest, and hence a large quantity of carbonaceous substances are necessary in their food to supply the loss.

In the experiments made on cavalry horses, it was found that the substitution of barley for oats was less detrimental to the light cavalry horses than to the large horses of the heavy cavalry. In the East, barley suffices to keep horses in good condition, while oats cause in hot countries, at times, serious inconvenience to them, generally rendering them too vigorous, even when given only in quantities which would be insufficient to sustain horses in cold countries. In

America, horses are fed on maize and straw. In France, Spain, and Italy, maize is frequently substituted for oats. In Provence, horses and mules are fed on barley and straw. It is a general opinion, and a well-founded one, that to render horses vigorous, they must be fed on oats, no other grain can be compared with it. The following is the composition of some of the cereals:

		Carbon.		*Nitrogen.*
Oats	contain	324	to	100
Buckwheat	„	168	„	100
Barley	„	152	„	100
Rye	„	95	„	100
Wheat	„	55	„	100
Beans	„	42	„	100

In meadow hay, and the leguminosæ, the proportions are, carbon 330 to nitrogen 100.

		Carbon.		*Nitrogen.*
Lucerne . . .	contains	182	to	100
Clover	„	182	„	100

It would be a difficult task to ascertain the exact quantity of carbon and nitrogen required by the herbivora, but they all do well on rations consisting of meadow hay and oats, while horses are enabled by this food to do the greatest amount of hard work; and, moreover, they never get tired of such diet. We may therefore take it as the standard of what the diet of horses should consist.

It is important, in the substitution of one kind of provender for another, to study the chemical composition of each, so as to provide animals with those elements which are necessary to their constitution, and to the work they have to perform. Nor can it be questioned that many diseases, the causes of which are at present unknown, are produced by the food, and consequently a knowledge of the chemical constitution of the alimentary substances is of very great interest.

Veterinary Jurisprudence.

ALLEGED BREACH OF WARRANTY OF A COW.

Kingston County Court, Tuesday, September 18th.

Before J. F. Fraser, Esq.

Baldry *v.* Kidd.

Claim £10 18*s.* for damages alleged to have been sustained on a warranty in the exchange of a cow. Mr. Haynes, of Wandsworth, appeared for the plaintiff, and Mr. Pearce, Barrister, for the defendant.

Mr. Haynes opened the case, and stated that plaintiff had sold defendant a cow in the market, in the month of August last, which was afterwards exchanged for another, the first having been injured, and when exchanged the defendant did not tell plaintiff about it, although he knew of it, and the cow had to be sold at a considerable loss; and the plaintiff now sued for the difference, for the damage sustained, and expenses incurred for attendance on the cow.

Mr. Baldry was called, and said that he sold a cow to defendant for £17 10*s.*; she was in calf and quite sound, and the calf was to be returned. A week after defendant applied to him, and said that he wished to part with the cow, and he looked at another in the market, for which he asked 18*gs.* Ultimately an exchange was effected, and defendant gave 5*s.* and his cow, declaring that the cow was quite sound and perfect. After getting her home, he found out that the udder was bad, and he could not get milk from it. He afterwards complained to Kidd about the cow, who told him it was a bad job, and he must get what he could for her, and he sold her for £9. He applied to Kidd for the money he had lost by the transaction, which he refused to pay.

In the cross-examination nothing was elicited to shake the previous testimony.

John Bundy, in plaintiff's employ, said, he was present when the first cow was sold. The defendant examined her before he bought her. Recollected the cow coming back to his master's place, and they could not get any milk from her.

Cooper, a drover, was called to prove that defendant examined the cow's mouth and also her teats, and he drove the cow to the paddock in the Home Park.

Charles Jones said, he was present at the bargain, and heard defendant say that he would warrant the first cow being sound and perfect. Took the second cow over, and received back the first one, which defendant had said was all right. The udder turned out to be inflamed. When she got home it was bathed.

Mr. Ward, veterinary surgeon, deposed that he examined the cow, and found the udder inflamed. The disease would arise from a variety of causes, and he should say, that in this case it arose from inattention in calving. The cow could not recover the injury, as it would be permanent.

This closed the case for the plaintiff, when *Mr. Pearse*, in a very clear and able manner, contended that his client was not liable for any damages, and that if the cow had been injured, it was done after she had got into the plaintiff's possession a second time. He should show that the plaintiff had pressed the exchange of cows, and the defendant never gave any warranty, or said she was sound, and a direct contradiction would be given by defendant as to the plaintiff's statement regarding the warranty.

The defendant was then called, and stated, that when he purchased the cow plaintiff told him she would calve in about six weeks, but she calved a week after the purchase. She was several hours in calving, and he told plaintiff about it, when he replied she was a stock cow, and he had one that would suit him. Defendant went to Kingston, saw the cow, and asked for two sovereigns and the first cow. After that he agreed to take 5*s*. The cow was not delivered to him until Saturday, the 18th of August. He never warranted her, nor said she was sound, but he did not know to the contrary. Plaintiff came on the 21st and said the cow had been kicked or injured; and he told plaintiff that if his men had injured her, he did not wish him to lose by her, but he should first inquire of his men what they had done. He then detailed the conversation that took place on the occasion,

After defendant had been minutely cross-examined, *David Cook* and *James Powell*, two of defendant's men, were called to prove the cow had not been injured by them, but that every attention had been paid to her.

Henry Meades deposed that when he delivered the cow and calf to Baldry, on the 18th ult., he told him one of her teats was stopped, and that she was very vicious, when Baldry replied, "I will soon put that all right, for I will throw her on her back and probe it."

This was corroborated by *Robert Humble*.

The witnesses were severally cross-examined by *Mr. Haynes*, who very ably replied upon the whole of the evidence, and contended that the plaintiff had made out his case.

His Honour differed with the learned advocate, and said that it was impossible to make out that the defendant had given a warranty, as he had only had the cow a week. Baldry had not warranted her sound when he sold her to plaintiff. Defendant, who said he had no wish to part with her, nor did he seek to do so by sending for plaintiff, who, on the contrary, sought the defendant, and was actually at the premises half an hour after the cow had calved; there, therefore, was no reasonable ground to suppose that a warranty was either given or asked for, and he should nonsuit the plaintiff, who, if he was not satisfied, might have the case tried by a jury. Costs allowed.

OBITUARY.

Died, on the 19th of September, after a few days' illness, at Stoke-upon-Trent, John Carless, Jun., M.R.C.V.S. His diploma bears date April 30th, 1851. The immediate cause of his death was an attack of inflammation of the lungs, supervening on a weak state of constitution.

ERRATUM IN NO. 394.

Page 593, fourth line from the bottom, *for* more *read* less.

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Communications and Cases.

ON THERAPEUTICS.

By Professor Brown, M.R.C.V.S.,
Royal Agricultural College, Cirencester.

(*Continued from page* 660.)

THERAPEUTIC ACTION OF THE FIRST GROUP.

In our attempt to group numbers of agents possessing a similarity of property, we have distinguished three several actions, which are characteristic of one or the other class. Observation proves that no drug can be said to produce any single effect upon the animal system. Many agents possess a specific action upon a part of the organism, but in consequence of that action an effect is produced upon the system not at all corresponding in character to the action of the medicine upon the part: for example, purgatives are undoubtedly stimulant to a portion of the organism; they excite muscular action, and secretion in the intestinal canal. Diuretics, in a like manner, increase the secretion from the kidneys, but as a consequence of the local excess of action, the entire organism is weakened. Bleeding, beyond all question, is a most direct depletive, and its effects are immediately and palpably depressing; yet when an accumulation of blood in the brain causes a suspension of nervous function, attended with depression, even to a loss of consciousness, the withdrawal of blood will be followed by symptoms that would be relatively indicative of the action of a stimulant. We speak of medicines which excite, and those which depress, but the terms are not absolutely correct, and must be received with qualification. To cavil at the use of such terms would be productive of no benefit. At the same time, it is only fair to say that we employ them with the understanding that they express only the immediate and specific, or local action of the drug under ordinary circumstances, without any allusion to the after effects, or to effects modified by disturbing agencies. The science of therapeutics does not insist upon a slavish adherence to the letter of its technicalities, in face of the fact that no one word can usually express the operation of the simplest agent.

Medicines, of the first group, we consider to possess a stimulant action, as they excite the function of an organ or part; still many of them, as will appear hereafter, will induce debility of the system when it is subjected to their continous action. There is nothing really inconsistent in this; on the contrary, a knowledge of the laws regulating the organism will prepare us for the reception of such facts. It is perfectly natural, we know, for excessive action to be followed by diminution of the general tone; what therefore may be stimulating to a part may depress the whole body, and excited secretion of one organ may be synonymous with diminished secretion of another, as diminished action in one part may cause excessive action in another. With such evidence before us, we cannot consent to confine ourselves to a single expression, for the purpose of indicating the action of each agent, except as a matter of convenience. Nor can we still further consent to, what would seem a natural consequence of our line of argument, viz., of universal employment of agents capable of producing one action upon the body for a disease whose apparently principal element is the opposite. We admit it to be a law of the allopathic system to treat disease by medicines which produce the opposite conditions; but in making this admission, we must be understood to object altogether to the treatment of a *symptom*, for the disease. Constipation may be effectively opposed by cathartic action, and this would be allopathic practice; but no reasoning pathologist would at once feel justified in the employment of a cathartic, merely because he discovered such a symptom of disease; his first object would be to ascertain the cause. He would at once comprehend the possibility of a number of circumstances being concerned; to wit, defective secretion of bile, debility, congestion of some distant organ, or inflammation of the intestines, or some other part; and after deciding upon the cause, he might discover constipation to be only such a minor element that a purgative would increase the real disease.

As an axiom, we repeat the statement, that medicines capable of producing certain actions upon the healthy body, are remedies for the opposite conditions of disease; the real difficulty is to comprehend that the actual disease is very frequently not the apparent one, and that much consideration, and often the entire rejection of most plausible evidence, offered by seemingly clear symptoms, must precede a true diagnosis. To this end, signs referring to a part must be received with caution. Excessive or defective action of an organ may be connected with a condition of the system opposed to the condition of the part: thus defective action of the liver may be associated with general excess of blood (plethora), and excessive action of the kidneys, or the mucous membrane of the intestines, with general defect of blood (anæmia): the single prominent symptom in each case will give but little assistance to the examiner. His investigations must extend beyond the organs apparently most affected, before his conclusions can be truly drawn. In discussing, therefore, the actions of each class, it will be our endeavour to show under what conditions of disease certain medicinal effects may be desirable or not.

CATHARTICS.

First among the medicines of the first group, are "CATHARTICS,"—agents which occasion more frequent and altered evacuations from the intestinal tube. The drugs possessing this property are by no means allied in their general character or constitution to each other: nevertheless, they uniformly cause increased secretion from the lining membrane, and in some instances excite the muscular coat at the same time. As muscular contraction is excited by the motor nerves of the part, and as both the determination of blood which occasions the excessive secretion, and the excited peristaltic movement, are due to the same cause, we can explain the action of all purgatives by referring it to the nervous system. Without the excitation of the reflex functions, we cannot understand the secretion from the membrane, nor the action of the intestinal muscular fibre. Whether the impression upon the sensient nerves be direct, from contact with the agent, or through the medium of the blood, or whether both these positions be true, under different circumstances, are not questions pertinent to our present inquiry. It is evident that the movements and secretions of the intestines are dependent upon reflex action, these functions are increased in obedience to the amount of stimulus applied; whatever, therefore, in any way produces an impression upon the nerves of the intestinal canal sufficient to excite such reflex action, will occasion the effects observed.

A consideration of the agencies that induce catharsis will show how varied are the circumstances under which it may occur. Under all conditions, however, a stimulus is necessary. Mental excitement, mechanical or chemical irritants, the bitter principle, and certain salts, possess the requisite power. It does not seem at all necessary that the agent should always be brought in contact with the intestinal membrane; injection into the circulation, or absorption from any surface, will suffice to produce the required excitement of the reflex function. It would be futile to reason upon the particular elective property which diverts the action from the point of contact to a distant part; the fact being perfectly established, that the medicinal properties of agents are not dependent for their development upon any particular method of introduction into the system, but once within the organism their influence is immediately directed to certain parts. The degree of action may vary, but not its character. Nor is it more remarkable, that a purgative, placed upon the tongue, should produce an impression upon the nerves of the intestines, than that a mental emotion should have the same effect.

Cathartic agents differ, we have already remarked, from each other in their general properties, and in a measure in their method of action. Referring to 'Morton's Pharmacy,' we find them thus arranged:—*Aloes*, *Croton*, *Chloride of Mercury*, *Linseed*, *Olive* and *Castor Oil*, *Clysters*, *Mashes*, *Sulphates of Magnesia* and *Soda*, *Salt*, *Sulphur*, and the *Acid Tartrate of Potash.*

For the horse, ALOES is the common and most effective drug. It is considered to act principally upon the large intestines, where it finds the necessary alkaline matters to assist its solution; but by combining the alkali before exhibition, and giving the agent in the form of solution, its action is certainly more rapid, milder, and probably more diffused.

CROTON is presumed to act as an irritant. Its effects are often most violent, and seldom desirable. Very few cases can we conceive where catharsis would be so absolutely necessary as to justify the employment of such an agent uncombined.

CHLORIDE OF MERCURY owes its purgative action, in part, to its influence on the liver; and as it also possesses the property of exciting the salivary glands, and increasing the secretion from them, there seems to be no reason why its influence should not extend to the mucous glands of the intestinal membrane, and increase their secretion at the same time. This agent is by some practitioners not considered safe for the ox. We can only assert, that we have employed it, both in the same doses and for the same objects, as those dictating its use in the treatment of the horse, and cannot recollect any symptoms induced by it that would lead us to condemn it. As a cathartic, however, it is seldom given alone; when it is necessary to augment the biliary secretion, then it is most valuable, and the laxative effect that follows is seldom objectionable, although it requires careful watching, as there appears to be a remarkable susceptibility on the part of the mucous membrane under the influence of this drug, and fatal superpurgation is very common from exposure to cold or wet, after the exhibition of repeated doses of it.

The various oleaginous purgatives produce their effects either mechanically or by the operation of a medicinal principle they contain, as instanced in linseed and castor oils. Excepting to such animals as dogs, calves, and occasionally to sheep, we have long discontinued the use of oils as cathartics, merely on the ground that no particular advantage attends their use; while, as a rule, they are bulky and inconvenient to give. They are, however, to be recommended to the amateur in medicine on account of their safety, as superpurgation of a serious character seldom or never attends even their excessive use.

Clysters may contain a purgative agent, and which may thus be brought in contact with the intestinal surface; or in the simple form of warm water *they distend the rectum, and thus induce contraction*, besides softening the feculent matter, and so promoting its expulsion; while from their cleansing influence upon the mucous surface, they may even tend to produce an increased secretion from it.

Mashes owe their action to minute particles of silica, which probably increase the secretion by slightly irritating the lining membrane.

The sulphates of magnesia and soda are considered to operate by endosmose and exosmose, and the same action would belong to all saline purgatives. Their effects are sometimes very quickly developed, and no irritation seems to follow their use. For cattle, the sulphate of magnesia is the ordinary purgative. Still there is no reason for our confining its employment to the ruminant. We have used it with beneficial effect for all our patients, horses being equally with the ox susceptible to its action. Where saline purgatives are indicated, the salt may be given in doses of from two to four ounces in the animal's water, twice a day, until the desired effect be produced.

SULPHUR is commonly combined with other agents as a cathartic for cattle. For the horse it is hardly likely to be used in any quantity sufficient to cause purgation.

In selecting any of these agents, according to circumstances, we are prepared to expect, in most cases, an action corresponding to the amount or frequency of the dose; thus a laxative, instead of a purgative effect, may follow in the event of a small dose being given. Again, most of the agents possess the power of destroying and expelling worms from the intestines, and thus they rank as *anthelmintics*. Or still further, if given in doses too small to produce either of these results, they may occasion nausea, or vomition, and thus become *nauseants* or *emetics*. Also under judicious management, their effects may be so regulated as to modify the condition of the system, without any of the usual indications of their action being present, when they may be termed *alteratives*.

The diversity of property is more apparent than real, depending upon quantity, or method of administration, or some circumstance which prevents the development of their characteristic action. No confusion, however, results, and the term cathartic continues to express that medicinal effect which consists in the following phenomena—mucous secretion in excess, and excited muscular action, followed by fluid or softened alvine evacuations.

As therapeutic agents, cathartics are employed to lessen plethora, to overcome constipation in inflammation of various organs or parts, in general excitement from pain or any other causes, in indigestion, and in fine it is almost impossible to mention a single active disturbance of the functions of the frame where purgatives do not form part of the ordinary curative treatment; therefore their exclusion from the pharmacy would leave many practitioners, we fear, powerless. This universal resort to these powerful medicines is not productive of so much mischief as we might suspect, in consequence of the energetic action preventing the accumulation of any amount of the drug in the system. Nevertheless, the effects of excessive evacuation are by no means beneficial to the animal body, nor is the comparative smallness of the injury done a justification for the indiscriminate use of a most energetic remedy. Without detracting from the merits of cathartic agents in the least, we must protest against their present excessive and injudicious administration, especially in cases where at the best they are not productive of the least good.

First, in case of an animal in ordinary health we object to the use of violent purgatives as a method of improving the condition of the system previous to a surgical operation being performed. We cannot divine what is the intention of such a procedure, and certainly unless time be given for recovery from the medicinal disease, we can imagine very unfavorable consequences to result. The common opinion we believe to be, that such treatment diminishes the chances of inflammation. This argument would only be worth notice when the subject is in very high condition, in which case moderate diet and exercise will effect more than purgatives, and without any disturbance of the organism. In a healthy animal inflammation may of course occur after an operation, nor is it probable that a previous purging will lessen the tendency or moderate the attack. Undoubtedly too much care cannot be taken to ensure a perfectly healthy condition before operating, nor have we found any difficulty in doing so without medicinal aid. The occurrence of fever after the operation should be met at its commencement by diluents, a mash diet, and the never-failing aconite, the action of which we have found almost magical in all cases of constitutional excitement following operations.

Our objections to the use of purgatives take a more decided form in cases of animals that are undergoing the process known among the initiated as "conditioning." Of course we anticipate an outcry,—The plan of physicking is sacred in its antiquity. No conscientious groom would dream of relinquishing his right to administer the proper three doses; at least, some years ago, he would have entertained the idea with horror; but somehow, in our present railroad times, innovations dash through an old and rotten system so easily, that no opportunity is left for remonstrance, and we really believe that in many establishments there are found men now sufficiently heretical in their views as to train a horse upon two or even one dose of physic, instead of the orthodox three. Nor do we despair of being permitted by and by to suggest that none at all might answer the purpose equally well. Seriously, we cannot, as scientific practitioners, tolerate the notion of submitting an animal, in a perfectly healthy state, to the action of a powerful medicine simply because he may be too fat, or his coat be too long, or he may have been kept on soft food, or he wants reducing, or for some other enlightened reason so invariably urged in excuse. With the use of purgatives in training men down to a certain weight in a certain time, we have nothing to do. If a man voluntarily permits his constitution to be played with in such a way, we presume he alone is the responsible person; but in "conditioning," so called, our object is to improve the tone of the system in every respect, an object we shall accomplish most certainly by a system of dietetics with proportionate exercise. Even a slight constipation of the bowels may be effectually met by a mash diet, without the aid of medicine, whose operation we would distinctly confine to diseases. The statement in its favour, that it does no harm, is merely childish. Hundreds of absurdities might be tolerated on the same plea. Our deliberate conviction is, that purgatives are really necessary in about one case out of every hundred in which they are administered.

The action of a purgative may be desirable in some cases of bad condition of the system; for instance, where indigestion exists from defective secretion from the liver, or from a generally sluggish state of the circulation in the digestive organs; but we are speaking of those more numerous instances in which no disease is present, and in which no medicinal treatment would be thought of, except as a matter of custom.

In extreme plethora, purgatives are considered necessary as depletives. In the course of their action they tend to lessen the bulk of the body in the same way that excessive evacuations do it under all circumstances; namely, by quickening the passage of the food through the intestinal canal, thus preventing absorption, and inducing a temporary debility and nausea which are unfavorable to nutrition. By the continued use of purgatives, a plethoric animal may be rapidly reduced; but that such a method of reduction is consonant with the laws of the organism, we certainly deny. The same general results may be obtained much more satisfactorily by exercise, with moderate diet, and, if necessary, this being pushed to nearly total abstinence for a short time. Purgatives, therefore, we deem unnecessary for the treatment of plethora under ordinary circumstances.

Constipation is the one element of disease which would seem to be especially remediable by the use of cathartics, which induce the exactly opposite condition. And were it the case that constipation, under all circumstances, presented itself as a simple disease, consisting in defective secretion, or diminished muscular action, purgatives would at once furnish the means of its removal. But before giving an unqualified consent to the use of cathartics, even in cases of diminished action of the intestinal canal, we must examine the actual nature of this element, and the conditions under which it may exist. During the course of any malady attacking the nervous, digestive, circulatory or secretive systems; in other words, in the course of nearly every disease to which the animal body is subject, the action of the intestines must to a certain extent be disturbed, in common with other parts, but not on that account the less decidedly. In such cases, constipation is one of a number of symptoms indicating a certain condition of system; and, as a symptom, its removal will naturally follow the restoration to a healthy state. The scientific treatment of disease, therefore, will include all the means that may tend to cure the affection, of which constipation is one of the consequences. Purgatives may remove the symptom without attacking the essential disease, or they *may* form a necessary part of the therapeutic treatment: at present we can only perceive that their action is not as a matter of necessity indicated. To make this obvious, let us examine the cases where constipation is present.

(*To be continued.*)

A CASE OF CHRONIC LESION OF THE DIAPHRAGM, RESULTING IN DEATH FROM THE ENTRANCE OF INTESTINE INTO THE RENT.

By H. Taylor, M.R.C.V.S., Hull.

Dec. 7th, 1860.—A day or two ago, I was sent for, late in the evening, to see a horse belonging to G. P. R. Neison, Esq., of Manor House, Anlaby, near Hull. I was with him at ½ past 11 p.m. and remained until 2 next morning. I saw him again at 9 a.m., and at 4 p.m., of the same day; but on my last visit, I found he had died just two hours before my arrival.

Mr. Neison is a gentleman who resides generally in London, but for the last two months has been living at his country residence at Anlaby. He keeps several carriage horses, all of which are *aged* animals. They are in regular work, and, before they came here, had generally been in double harness, but occasionally in single harness. Prior to the *last* pair coming down (one of which is the subject of this communication), I had been called several times to the other horses, in consequence of their being the subjects of catarrh, accompanied with sore throat and cough, and terminating in diarrhœa. I attributed these attacks, however, to the stables not having been much used by the previous occupier.

The horse in question had done his work well since his arrival, and on the day of his attack had been in double harness to Beverley and back, a distance altogether of fourteen miles. An hour was occupied, both in the out and home journey. While at Beverley, where he stopped two hours, he had a feed of oats, a little hay, and some chilled water. I found that the village blacksmith had been called in before I was sent for, and had given him some linseed oil, with other agents, but of what kind I could not learn. The horse had done his work well, and was not distressed when he arrived at home. Both the bladder and intestines were freely acted on at 7 o'clock, when he was walked about the yard for a few minutes. On being again taken into the stable, he almost immediately showed symptoms of spasm of the intestines, which led to the smith being sent for. Before I arrived, they had also given him one of my "antispasmodic draughts." I found the usual appearances of severe colic, such as violent knocking about, lying down, rolling, &c. I at once administered some opening medicine, in conjunction with a sedative draught. I also emptied the rectum of its contents, and by gentle pressure on the bladder succeeded in assisting him to evacuate a small quantity of urine, about a pint. I likewise had the abdomen well blistered, rubbing in the liniment for half an hour. I staid until 2 a.m., and on leaving, gave directions to repeat the draught and the opening medicine at 5 a.m., which was done.

I saw him again at 9 a.m., as before stated, but found that he had been in continuous pain ever since I left. Another sedative draught was given, and more counter-irritation to the abdomen had recourse to; after this he was quiet for about an hour, and the owner thought he would do well; but I told him I thought no better of the case, and that I feared the worst. He died at about 2 p.m.

On my visit at 4 p.m., I at once proceeded to make the *post-mortem* examination, in the presence of the owner and others. I found, on opening the abdomen, that the stomach, liver, kidneys, and bladder were healthy in appearance. The stomach, however, was puffed up, and on feeling at the œsophageal opening of the diaphragm, I found the duodenum to be apparently firmly tied round the cardiac orifice of the stomach. On further examination, however, I discovered that a small rupture, which, as you will see by the parts sent, had evidently been of *long standing,* existed in the diaphragm, and that through it the intestines had protruded, consisting of the duodenum and a portion of the jejunum. The bowel was so much strangulated, as to be of a perfectly black colour. It was also so much enlarged, that I could not extricate it from its situation; I therefore removed the whole mass together.

The coachman, who has been more than twelve months with his master, says that nothing has been amiss with this animal before. On one occasion, some months ago, he ran away in London, but was not thought to have sustained any injury. I am of opinion, however, that the lesion in the diaphragm took place at that time, for there is no *appearance* of its being a *recent rupture.*

I have only once before seen a similar case. The animal was the property of Sir John Lister Hayes, of Denby Grange, near Barnsley. The case occurred in 1837, at Sheffield, when I was assistant with the late Mr. Peech. The patient, a mare, had been hunted in Leicestershire all winter, and on her return home, stopped all night at the "Tontine," Sheffield. We saw *all* the horses at 6 p.m., and remarked to the groom that the mare looked well, but that she had not touched her food. He answered, she never will eat when any one is in the stable, but will begin to feed when we leave. She is one of the best we have, and Sir John has often refused £300 for her this winter.

The groom, on going the next morning to the stable, at 5 o'clock, was greatly surprised to find the mare lying dead in her stall. She had eaten her corn and hay, but apparently soon afterwards was attacked with abdominal pain. On Mr. Peech opening her, he found what was evidently an old rupture of the diaphragm, and through this the intestine had passed, and become strangulated.

[The lesion in the diaphragm, sent by Mr. Taylor, existed near to the crura. It was evidently of long standing, and adhesions had taken place between its edges and the peritoneal covering of the spleen and the gastro-splenic omentum. A knuckle of the ileum had passed through it, and become strangulated. The impacted intestine was about nine feet in length.]

OVARIAN TUMOUR IN A PONY.

By J. S. Worm, M.R.C.V.S., Watton.

The ovarian tumour which I send for your examination was taken from an extraordinary well-bred pony, the property of G. Cassingdick, Esq., of Saham.

On the 11th of July I was requested to examine the animal in consequence of the immense size of its abdomen. I inquired how long the pony had been in that state, and was informed that the enlargement had been noticed some weeks since. To assist my diagnosis, I resorted to percussion at the inferior parts of the abdomen, and at once was enabled to decide that ascites existed to a considerable extent; but not feeling perfectly satisfied as to its cause, I made an examination per rectum, and afterwards requested my assistant to do the same, when we both distinctly felt an enlargement of one of the ovaries. The bulk of the tumour was placed directly below the rectum, in the situation that a fœtus would have occupied. As the pony had been suffering from long-existing constitutional disturbance, and was much prostrated, I did not consider it a case by any means fit to be operated on with any probability of success, and therefore I stated my opinion to be that there was no hope of cure. However, to palliate the sufferings of the animal, I gave an opiate; but the next evening she was taken much worse, and very soon died.

Post-mortem examination.—On opening the abdomen, at least ten gallons of fluid escaped, when the tumour was at once brought into view. On removing it from its connections, it was found to weigh no less than sixteen pounds. The kidneys were slightly enlarged, but the other abdominal viscera gave no evidence of structural change. The pericardium, however, contained a good deal of serum.

REMARKS ON THE ABOVE, BY ASSIST.-PROF. VARNELL.

No disease affecting domesticated animals has probably received less attention from the veterinary pathologist than that of the ovaries. A correct diagnosis has been but seldom arrived at, and I am not aware that any attempts have ever been made to treat such diseases, either experimentally or otherwise.

In the September number of the *Veterinarian*, page 512, Mr. E. J. Bovett has recorded a case of the death of a bitch, about eleven years old, from an immense ovarian tumour, weighing as much as fifteen pounds. In this instance the existence of ovarian disease was not suspected during life, the enlargement being thought to depend simply upon an accumulation of fluid within the abdominal canal. Recourse was therefore had to paracentesis of the abdomen, by which operation about one pint of sero-sanguineous fluid was withdrawn.

In Mr. Worm's case, on the contrary, it appears that he was enabled to detect the enlargement of the ovary, but he did not think it prudent to operate, in consequence of the animal having suffered so much from long-continued constitutional disturbance.

Mr. Worm has not, however, told us anything of the nature of the operation which, under other circumstances, he would have had recourse to. Would he have attempted to simply evacuate the fluid from the interior of the tumour by puncturing it through the peritoneal cavity, or of removing the entire mass by a more bold surgical operation? In our opinion, neither of these operations, separately, or even both conjoined, would have succeeded; nor do we think that an operation for the removal of the diseased ovary would have been successful even in Mr. Bovett's case. Nevertheless, to entertain the idea of having recourse to an operation in such cases is a sure means of exciting professional inquiry into the circumstances under which it would be justifiable, as well as how it ought to be performed, and on what kind of animal; whether mare, cow, ewe, or bitch, it would be most likely to be attended with success.

In the cow and bitch the peritoneal cavity may be opened almost with impunity, in so far as the risk of peritonitis supervening is concerned, but in the mare experience has shown that such a procedure is attended with considerable danger. An operation on this animal should therefore be avoided as a rule, or if undertaken it must be so conditionally and experimentally.

The value of a correct diagnosis in the cow rests, to a great extent, on the veterinary surgeon being enabled to advise that the animal be destroyed while in fair condition, for such disease is not likely to deteriorate the meat as human food.

In the bitch we see many reasons why an attempt may be made to remove an ovarian tumour. In the first place, there is, as before stated, but little risk incurred in opening the peritoneal cavity, and thus the operation is rendered comparatively safe. Secondly, the size of the animal is not only favorable to enable us to diagnosis the case correctly, but also to perform the operation. Thirdly, if the animal die from the effects of the operation, the real loss in the majority of instances would be but trifling. Fourthly, if successful, an animal, often of great *imaginary* value, would be saved, to the great credit of the operator, more especially if it should happen to be the pet of some benevolent lady, having a strong attachment to this class of animals.

It is somewhat singular that the tumour met with in the bitch in Mr. Bovett's case, as well as that in the mare in Mr. Worm's, should be about the same weight; and considering the comparative size of the two animals, the one taken from the bitch must be viewed as being very large. Both tumours were ovoid in form, and nodulated on their external surface, which gave no evidence of having been attached to any of the abdominal viscera, except by a kind of pedicle to the horn of the uterus—the natural attachment of the ovary.

The interior of the tumours likewise presented similar appearances. Numerous cavities—large and small—bounded by fibrous walls, but having free intercommunication with each other, formed the principal part of their structure. These "multilocular cysts" contained either a glairy semi-transparent, or else a thick coffee-coloured fluid. No part of their structure, as far as the unaided eye could detect, was of a cancerous nature.

The recording of cases of ovarian disease cannot fail to be of interest to the veterinary surgeon, but more especially is it so to the pathological anatomist who is labouring in a field which, so far as our profession is concerned, has been as yet but little cultivated.

EXTRACTION OF A URETHRAL CALCULUS FROM A TWO-YEAR-OLD PONY.

By Charles Carter, M.R.C.V.S., Swaffham.

The subject of the above operation was a two-year old pony, twelve hands high, the property of a labouring man residing at Narford. On May 11th, 1860, I was requested to look at him, when I found that he frequently voided his urine by involuntary jerks; but it was perfectly clear, and passed without any apparent pain, or putting himself in the natural position. In all other respects the animal was healthy. Upon a further examination I observed that the insides of the thighs were covered with a sabulous-looking matter, which the owner said was always there in the morning in spite of his cleaning it off over-night. Suspecting that there was something wrong in the bladder, I at once examined him per rectum, and found, on passing my hand along the gut, an enlargement of the urethra, to the size of a duck's egg, occupying the floor of the pelvis, at its anterior part. I at once came to the conclusion that it was a calculus, and told the owner so, adding that it must be removed by an operation. The following day being our fair, he was very anxious to part with him, rather than run any risk, as he could not afford to lose the animal. He was not, however, successful in selling him, and therefore was contented to place him under my care, and sent him to my infirmary stables.

Being full at the time, I sent the pony back, and gave Acid. Hydrochloric. ʒij, morning and night, until July 1st, when he again came to my infirmary. Deeming it desirable to make some preparation, I gave an aloetic purge and kept him on low diet till July 7th, when I cast him, with the collar rope used in castration. Being assisted by my friend, E. Reeve, M.D., a whalebone staff was passed up the urethra, in the usual manner, and cut down upon in the perinæum. We then endeavoured to pass the concretion into the bladder, as we were unable to get the least hold of it with the spoon-bill forceps, but in this we failed. I therefore passed my left hand up the rectum, and pressed the stone backwards towards the incision, when I could feel it with the finger of my right hand. Not being able even then to grasp it with the forceps, I passed my finger above it, and found it to be closely adhering to the mucous lining membrane of the urethra, which I was compelled to separate, superiorly and inferiorly, from the calculus. This was effected only with some difficulty, as it was so rough on its surface. After being so liberated, it still required great strength to extract it. By the use of the forceps we could move it a little, but unfortunately it broke, leaving no hold, therefore we had to complete the removal with the fingers. Undoubtedly it was rendered friable by the use of the acid. Having washed the parts with tepid water, we applied two sutures to the wound, and then allowed the animal to rise. Although he suffered a great deal during the operation, which lasted about half an hour, as soon as he was up he commenced feeding, and appeared to be little affected by it.

Healthy pus was formed about the third day, without much swelling taking place. The urine passed partly through the wound and partly through the natural channel, until the wound was completely healed, which took place gradually.

The calculus weighed ℥iij avoirdupois, was of a conical shape, the base being anteriorly placed, flattened, and very rough on its surface. It was a very large one for so young and small an animal. He left my establishment the latter part of the month; and going past the owner's a few days since, I called to see him, when I noticed that he still voided the urine as he did prior to the operation, but not so frequently. I have therefore my fears if he will ever perfectly recover.

DILATATION OF THE RIGHT VENTRICLE OF THE HEART, ACCOMPANIED WITH A FIBRINOUS TUMOUR WHICH NEARLY FILLED ITS CAVITY.

By W. Furnivall, M.R.C.V.S., Kington.

May 16th, 1860, at 2 p.m., I was requested by Mr. Robinson, of Hawkswood Farm, to attend on a four-year-old brown cart mare, which the waggoner reported to have been taken unwell at 9 a.m.

On my arrival I found she had been bled, and two antispasmodic draughts given her, but which had afforded no relief.

Symptoms.—The visible mucous membranes injected; extremities alternately hot and cold; bowels relaxed; urine scanty and high coloured; tremor of the anterior pectoral muscles, and also of those clothing the arm; body of normal temperature; pulse intermitting, accompanied with a peculiar spasmodic jerking of the heart, detectable by auscultation; respiration quick and deep, and indications of severe pain, apparently located in the abdomen. The animal appeared as if afraid to move, but shortly laid down. In doing so she rested her hind quarters firmly on the ground ere she attempted to lower the fore legs, which she did carefully and slowly, accompanied with a loud grunt; when down, she reclined at once on the right side.

Diagnosis.—Diseased heart.

History.—The mare was bred on the farm, stabled on the 1st of May, 1859, and worked up to the end of November, when she became sluggish and would not answer to the whip. She appeared afraid to walk at the same pace as the other horses, and if urged on, the carter observed that she trembled like a leaf, and oftentimes nearly fell. She fed, however, as well as the others, but always appeared unthrifty. My attention had not been previously called to her when attending at the farm on other cases.

I informed the owner that there was no chance of her surviving long, but at his request she was treated, and I consequently administered a sedative consisting of Pulv. Digitalis, gr. xx, et Ext. Hyoscyami, ʒii, in haustus. Before leaving, Mr. Robinson likewise expressed a wish for me to visit the animal again the next morning, as early as possible.

May 17th, 10 a.m.—Arriving at the farm, I was informed that the mare had died at 11 o'clock last night. She walked round the box three times, and then dropped down dead.

The carcase being removed to the kennel, the owner ac-accompanied me to the *post-mortem.* On exposing the contents of the abdomen, they appeared normal; the lungs, however, were congested, and the heart was found to be of an enormous size. The left ventricle was of its natural dimension, but both auricles were enlarged and somewhat attenuated. The walls of the right ventricle were very much dilated and as thin as tissue paper; it likewise contained a solid fibrinous tumour, of great magnitude.

The owner was perfectly astonished that an animal could live and work, even on a farm, with such a diseased organ.

I am afraid to say what the weight of the heart and the tumour was, as I had no opportunity of ascertaining the fact correctly.

HÆMORRHAGE CONSEQUENT ON CASTRATION.

By the Same.

A TWO-YEAR-OLD black cart stallion was operated on by a castrator on the evening of the 28th of May, and directly the animal was up, the owner noticed him to be bleeding freely from both orifices, but being assured by the operator "that it was nothing," he, too, deemed it to be immaterial. However, on the 30th, about 5 p.m., finding that the hæmorrhage still continued, he wished me to see the animal.

On my reaching the farm I found my patient still bleeding from the scrotum, and being satisfied that it was venous blood I plugged the orifices, and placed a pad of *spongio piline* upon the parts, securing it with a bandage over the loins. I also gave Plumbi Acetas et Pulv. Opii, ana ʒii, in bol., and directed the diet to consist of only cut grass or young clover.

31st.—The bleeding has diminished, but considerable swelling of the sheath exists, and the animal is unable to move his hind quarters. He eats grass well, but drinks no gruel or water; the abdomen is tucked up; the body and extremities are tolerably warm. Repeat the ball, and scarify the sheath freely. Continue the diet as before ordered.

June 1st.—Hæmorrhage arrested. Still there is considerable swelling of the sheath and belly. The appetite continues good. Remove the pad, plugs, &c. Dress with Ung. Sabinæ, and scarify the swellings. Exhibit diuretics, and give clover, allowing some bran and oats.

The animal, up to the 7th instant, continued to do well under this treatment, when I had him sent out to grass, since which he has gone on well.

Facts and Observations.

PREVENTION OF CRIB-BITING.

Mr. W. Shirley, M.R.C.V.S., of Twickenham, writes us that "the habit of crib-biting may be prevented without the application of either a strap around the throat or a muzzle, by merely having the manger of the stall or box, in which the crib-biting horse is placed, lowered to a level, or in some cases a few inches below his knees. Under these circumstances the animal will not be able to indulge in his favorite but unhealthy practice."

He adds that "it is now four months since I discovered this fact, and that during this time I have tried it with many inveterate 'cribbers,' and always with success. I think, therefore, that I may now venture to direct the attention of the profession to the circumstance, that it may be fairly tested by all who, like myself, are interested in everything appertaining to the horse."

ESTIMATION OF THE CONSTITUENTS OF MILK.

Daubrawa gives some new methods of estimating the constituents of milk. Caseine, he states, is completely precipitated by salts of mercury, in the nearly constant proportion of five equivalents of caseine for each equivalent of oxide of mercury employed. In this way the caseine may be easily estimated by a standard mercuric solution, and the sugar-of milk by a standard solution of copper, or even by determining the specific gravity. The author, however, prefers in practice the following method. A given volume of milk is mixed with twice its volume of alcohol of 85° (Cartier), which precipitates the caseine and butter together, in such a state that they may be estimated by measuring their volume in a graduated tube. The filtered solution has a density different from the density 0·9005, which would be that of a mixture of alcohol and pure water, and this density will increase by 0·094 for every hundredth of sugar-of-milk contained in the liquid examined. The necessary corrections for variations of temperature may be made by the tables arranged for mixtures of alcohol and water. We may determine in this way, with sufficient accuracy for ordinary cases, the amount of the principal elements contained in milk.—*Chemical News.*

AGRICULTURAL STATISTICS OF IRELAND.

Mr. Donnelly, the Registrar-General of Irèland, has just issued his annual report on agricultural statistics, which is full of valuable and interesting matter. We take the following particulars from the *Irish Agricultural Review*, as being chiefly interesting to our readers:

"The inquiries commenced on the 1st of June, and terminated about the middle of July; the results are very important, and exhibit among other things the effect of the great deficiency of the hay and other crops of 1859 on the number of live stock. It is, however, satisfactory to find that the decrease in cattle and sheep is not so great as might be expected, when the extraordinary prices of hay and all feeding materials for farm stock is taken into account.

"The total number of live stock in Ireland in 1860 was—horses, 621,938; cattle, 3,599,235; sheep, 3,537,846; pigs, 1,268,590.

"The changes in the number of live stock between 1859 and 1860 were as under:

"Horses in 1859, 629,075; in 1860, 620,938; showing a decrease of 8,137. Cattle in 1859, 3,815,598; in 1860, 3,599,235; showing a decrease of 216,363. Sheep in 1859, 3,592,804; in 1860, 3,537,846; showing a decrease of 54,958. Pigs in 1859, 1,265,751; in 1860, 1,268,590; showing an increase of 2,839.

"Total value of live stock in Ireland in each year, from 1855 to 1860, calculated according to the rates assumed by the Census Commissioners of 1841, viz.:—For horses £8 each; cattle, £6 10s.; sheep, 22s.; and pigs, 25s. each. In 1855, the total value was £33,053,478; in 1856, £33,120,220; in 1857, £33,700,916; in 1858, £34,334,890; in 1859, £35,368,259; and in 1860, £33,839,899. The difference in value between 1859 and 1860 showed a decrease of £1,528,360.

SUPERPHOSPHATE OF LIME.

To obtain the above compound, now so largely used as an artificial manure, Mr. J. D. Bryant has patented a process which, says *The Chemical News*, "involves an exceedingly ingenious idea, and although we fear there will be practical difficulties in carrying it out, we sincerely trust they will be overcome so as to enable the patentee to work his process on the large scale. All who have made bone superphosphate, or who have in any way given their attention to it, are aware that it invariably contains a considerable quantity of gypsum; moreover it has hitherto been impossible, from the very nature of the raw material, to prevent its formation. Burnt bones consist principally of carbonate and phosphate of lime; now it is evident that on treating such a mixture with sulphuric acid in excess, the whole of the carbonate of lime will be converted into sulphate, and, moreover, that until the carbonate is decomposed, the acid will be unable to render the phosphates soluble. Mr. Bryant has applied himself to overcome this difficulty by burning the bones at such a temperature as to causticise the carbonate of lime, and then dissolve the quicklime out with—1st, rain, river, or spring water; 2d, water mixed with acids, or combined with alkaline or magnesian salts from chemical manufactories or other sources; 3d, water mixed with bittern, or the refuse of sea-salt masalt manufactories; 4th, sea-water in its natural state, and this latter will, according to the patentee, be generally found the most economical solvent for the purpose.

"When bittern is employed, or even sea-water, a double decomposition takes place between the chloride of magnesium and the lime, chloride of calcium remaining in solution, and magnesia being precipitated. The patentee gets over this apparent difficulty by availing himself of the levity of magnesia as compared with phosphate of lime. The stream of fluid is so managed as to wash away the former and leave the latter.

"Undoubtedly the processes patented involve more than one chemical and mechanical difficulty, but from the general tenour of the specification we doubt not that the patentee is capable of successfully grappling with them. The importance of the subject is so great that we hope he will be successful."

THE VETERINARIAN, DECEMBER 1, 1860.

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

THE PROGRESS OF PLEURO-PNEUMONIA IN AUSTRALIA AND AMERICA—LEGISLATIVE ENACTMENTS.

WE took occasion a short time since to notice that the fatal disease of Cattle, known as pleuro-pneumonia, had made its appearance in Australia and also in America. The facts connected with its introduction into both these countries so completely proved the contagious nature of the malady, that we did not hesitate to declare our conviction that, unless the most prompt means were forthwith adopted to arrest its progress, it would gradually extend itself, and cause a fearful destruction among bovine animals.

The intelligence which we have recently received not only confirms these opinions, but puts us in possession of the measures which the respective governments have had recourse to, and which we must designate as being bold and decisive, especially on the part of the government of Australia.

If the Home government had taken up the subject in the same spirit on the first appearance of the malady here, doubtless we should not now have had to lament the ruinous consequences it has brought upon so many individuals, nor the immense losses which the country, as a whole, has sustained. It is right, however, to say that we lacked originally the same proof of the disease being contagious which has been afforded to our transatlantic and antipodal brethren. The malady reached our shores as an ordinary *epizootic*, and, singularly enough, only a few months before our free importation of Continental cattle took place. Had it delayed its coming, fewer doubters of its being contagious would at the first have been found; and probably some preventive measures might then have been adopted by the legislature, as was the case on the introduction of the smallpox of sheep. But is this any excuse for the apathy which has ever since been manifested respecting its *continued* existence and *extensive* spread? Most assuredly not, but rather an argument that steps ought long since to have been taken to ascertain whether the disease did not possess other means of dissemination, besides those of an ordinary epizootic.

Now that the whole case is before us, we trust that agriculturists will agitate the question until something is done. No fitter subject can be brought before our Farmers' clubs and Agricultural meetings, and we hope to see that resolutions are come to by the members, insisting on the adoption of legislative enactments to arrest the progress of the malady. Although we cannot deal with the question as has been done by the Australian and American governments, *namely*, slaughtering the affected herds and giving compensation to their owners, and thus annihilate the malady, simultaneous with the adoption of measures to guard against its *re*introduction, we can nevertheless make it a misdemeanour, punishable by the infliction of a fine, to knowingly expose diseased animals in fairs and markets, or pasture them on commons and wastes.

As it is, one can scarcely visit a fair or market without seeing animals in all stages of the disease, exposed for sale with those which are healthy. If it be asked who are the persons that suffer the most from the disease under these circumstances? it will be found that it is such as are compelled to be making frequent purchases of stock. The breeder is comparatively exempt—a fact which offers a good proof of the risk which attends the buying of cattle at a fair or market, from the causes we have alluded to. Much might be written, and profitable too, on this subject, but we refrain for the present, as we are desirous of placing before our readers the latest intelligence respecting the disease which we have received from Australia and also from America.

In *The Age*, Melbourne, August 25th, it is stated that—"The disease in cattle, known as *pleuro-pneumonia*, now in full progress within a few miles of Melbourne, has attracted much attention, and lately £1000 has been voted by the Legislature for compensation to the owners of destroyed cattle. The government have acted promptly in the matter, and have appointed W. Lyall, Esq., M.L.A., and Alexander Brock, Esq., as commissioners, to make full inquiries into the disease, and to enter into the necessary arrangements with the owners of any cattle that may become affected, for allowing them some compensation for the immediate destruction of all such stock.

"As yet the disease has proved purely local in its extent, but within that extent, the effects have been so disastrous as to create almost a panic amongst neighbouring farmers. Near Preston, about six miles N.E. of Melbourne, on Mr. Hooper's farm, an investigation has taken place into the state of the cattle affected with this disease. Out of 124, nine have died, one has been slaughtered in an advanced stage of the disease, and it is surmised that all the rest are more or less affected by it. With regard to the disposal of them we believe that an understanding has already been arrived at, and now only awaits the approval of the government. Upon this being obtained, the whole of the stock will be slaughtered, Mr. Hooper being compensated at the rate of £5 per head (the full value of them), Mr. Hooper to find all the labour, and to act under the superintendence of some person appointed by the government.

"As the matter is one of interest to English readers, we subjoin a pre-mortuary and post-mortem examination of the beast belonging to Mr. Hooper before referred to, made by competent authorities on the spot. Previous to being slaughtered she was subjected to a careful examination by Mr. Miscamble, who stated that her right lung was perfectly useless—'as silent as the grave;' and on striking the ribs with the hand, there was not the natural hollow sound produced, but one similar to that experienced in striking a bag of flour. The left lung was stated to be diseased, though still able to perform its duty so far as to keep the animal alive.

"Upon opening the animal after death, the appearances were as follows:—A white glutinous mucus lined the inside of the windpipe; the right lung was swollen to an enormous size, three or four times larger than its natural dimensions, and had lost all the normal characteristics of that organ, having become as firm and compact as a piece of beef, and streaked and variegated in colour like a piece of marble. The left lung was also diseased, as numerous depositions had taken place in it, but it did not appear to be so much enlarged as the other. The heart was thin and flaccid, but this was to be expected as a natural consequence following the disease of the lungs, and the defective circulation arising therefrom. The liver was also diseased, and abounded with large flukes in the biliary ducts—a state of things in no way connected, however, with the lung affection. The pleural cavity on the right side might be said to be obliterated, as an extensive effusion of lymph had taken place, and the large diseased lung had become adherent to the internal surface of the ribs, and had communicated the disease even to the flesh, which was here much discoloured."

"The editor adds, that 'having cut two slices from the diseased lung, we brought them into town. Dr. Rolf has since examined them under the microscope, and is of opinion that he could discover traces of vegetable growth in the structure of the lung. He is desirous, however, of prosecuting the inquiry further before he says definitely anything more about their structural changes.'"

To this interesting account, we are enabled to add the report of the *post-mortem* examination of the entire herd belonging to Mr. Hooper, extracted from the '*Victorian Farmers' Journal*' of September 8th, which only reached us on the eve of going to press.

"*Report of* ANTHONY A. SMITH, V.S.M., B.C.V.S.E., *of the post-mortem appearance of Mr. Hooper's cattle as slaughtered.*

"In the whole number destroyed we find that 72 out of the 123 were sound, and the rest more or less diseased. By a reference to the list, it will be seen that nearly all the worst cases were old cows, or simply cows, while the heifers or calves were generally slightly affected only. It will be seen, also, that a large proportion of the 'sound' were heifers and calves.

"Mr. Hooper's Farm, August 31st, 1860.

"Commenced killing cattle—the stock on this farm—and, on examination, found the post-mortem appearances as follows:

No. 1. Cow—right lung completely hepatised, and extensive effusion of lymph into the thorax.

2. Cow—slight adhesion to the right side of the chest, and the substance of the lung dark coloured and congested in some parts.

3. Old cow—same as No. 1.

4. Heifer—sound.

5. Young cow, do.

6. Heifer—slight adhesion to the chest; substance of the lung sound.

7. Cow—sound.

8. Cow—had been ill for some time, and in the way of recovery. Right lung adhering strongly to the chest; about one half of the posterior lobe disorganised and enveloped in a strong membrane.

9. Cow—sound.

10. Heifer do.

11. Do. do.

12. Do. do.

13. Do. do.

14. Aged cow—right lung hepatized, and a quantity of purulent matter in the chest.

15. Heifer—right lung adhering

to the chest, and a large cyst of matter in the substance of the lung, the animal apparently recovering.

16. Aged cow—sound.
17. Young bull—same as No. 1.
18. Cow—sound.
19. Do.—slightly affected in the right lung.
20. Heifer—sound.
21. Cow—sound.
22. Do.—dark spots in the right lung.
23. Heifer—sound.
24. Cow—sound.
25. Do.—left lung completely hepatized, and effusion of lymph as in No. 1.
26. Heifer—adhesions on the right side, substance of the lung sound.
27. Do.—sound.
28. Do.—slightly affected.
29. Calf—sound.
30. Do.—slightly affected.
31. Heifer—sound.
32. Do. do.
33. Do.—slightly affected; dark spots on the right lung.
34. Aged cow—sound.
35. Heifer do.
36. Cow do.
37. Aged bull do.
38. Cow do.
39. Heifer—slightly affected.
40. Calf—sound.
41. Do. do.
42. Heifer—slightly affected.
43. Do.—left lung completely hepatized, and extensive effusion of lymph as in No. 1.
44. Cow—slightly affected.
45. Aged cow do.
46. Do.—sound.
47. Cow—slightly affected.
48. Do.—extensive disease on left side of the chest, same as No. 1.
49. Do.—sound.
50. Calf do.
51. Cow —
52. Heifer —
53. Do.—extensive disease commencing in right lung.
54. Heifer—sound.
55. Do. do.
56. Do. do.
57. Calf—extensive disease; effusion of lymph.
58. Cow—sound.
59. Do. do.
60. Heifer —
61. Do.—slightly affected in right lung.
62. Do.—sound.
63. Do. do.
64. Do.—slightly affected in right lung.
65. Cow—sound.
66. Heifer do.
67. Cow.—slightly affected in right lung.
68. Do. do.
69. Do.—sound.
70. Do. do.
71. Do. —
72. Do.—slightly affected in right lung.
73. Do. do do.
74. Do. — —
75. Do. — —
76. Heifer.—sound.
77. Do.—slightly affected in right lung.
78. Do. do do.
79. Cow—effusion of serum into the thorax.
80. Do.—sound.
81. Do.—left lung hepatized and adhering to the chest, the animal apparently recovering.
82. Do.—sound.
83. Do. do.
84. Do. —
85. Do. —
86. Do. —
87. Do.—right lung affected as in No. 1.
88. Do.—slight adhesions to the chest.
89. Do.—sound.
90. Do.—effusion of lymph on the right side, and part of the interior lobe of the lung hepatised.
91. Do.—right lung adhering strongly to the chest; completely hepatised; the animal apparently recovering.
92. Heifer—slightly affected and recovering.
93. Do. do do.
94. Do.—effusion of lymph on the

right side, substance of the lung diseased.

95. Do.—sound.
96. Do. do.
97. Do. do.
98. Do. do.
99. Cow—adhesions to the chest, substance of the lung sound.
100. Heifer—dark spots on the lungs, and a number of the same appearances on the peritoneum.
101. Do.—appearances as in No. 100, in the chest, but the peritoneum not affected.
102. Calf—sound.
103. Do. do.
104. Heifer —
105. Do.—right lung as much diseased as in No. 1.
106. Yearling steer—sound.
107. Calf—sound.
108. Do. do.
109. Heifer —
110. Do. —
111. Do.—adhesions to the chest, but the lungs sound.
112. Calf—sound.
113. Heifer do.
114. Do.—extensive disease as in No. 1.
115. Do.—sound.
116. Calf—slightly affected.
117. Working bullock—sound.
118. Do. do.
119. Do. do.
120. Do. do.
121. Do. do.
122. Do. do.
123. Cow—slightly diseased.

"(Signed) ANTHONY A. SMITH, V.S."

As it is unnecessary to make any comments on this report, which speaks so plainly of the great increase the disease had made in this herd, and of the necessity of at once preventing its further progress, we pass on to explain that the malady had likewise no sooner found a firm footing in the United States than "the House of Representatives" referred the question to "the Committee of Agriculture," for investigation and suggestions as the best preventive means to be adopted.

Instructions were given that they "*inquire respecting the novel and alarming malady now prevailing among the cattle in certain localities of the United States, known as pleuro-pneumonia; that they consider whether the infection is likely to become so general as to become a subject of national concernment, and to recommend any action which it may be competent and expedient for Congress to take with a view to arresting the ravages of so destructive a disease.*"

The report of the Committee was presented in June last, and is replete with important suggestions on every branch of the subject which had been referred to them; but on this occasion we content ourselves by quoting the resolutions which were arrived at, together with that part of the report which records the history of the outbreak of the malady, bearing as it does on the main question of the extension of pleuropneumonia by contagion.

HISTORY OF THE INTRODUCTION OF THE DISEASE.

"In 1847, the distemper was introduced into this country from England, by a farmer in New Jersey, Mr. Thomas Richardson. He discovered it among his *imported* stock, and before other herds were exposed. Knowing the malignant type of the disease, *he immediately killed his whole stock*, valued at $10,000, a most noble act. He lately wrote to a gentleman in Massachusetts that the only way to get rid of the malady is to kill every herd which has been exposed. Some of the farmers in his neighbourhood assert that the disease has been conveyed by moving the hay from a barn where the cattle were diseased.

"On the 23d of May, 1859, the distemper was brought into Massachusetts by four cows, *imported direct from Holland* by Winthrop W. Chenery, of Belmont, about six miles from Boston. These cows were black, thick-skinned, large, and said to be great milkers. On landing they appeared hungry, thirsty and neglected, and one of them, it is said, had not been on her legs for twenty days. Two of these cows were so feeble that they had to be carted to Belmont. A few days after their arrival, on the 31st of May, one of the cows died. On the 2d of June a second died; and on the 30th of June a third died. The fourth is now alive and doing well. In all, Mr. Chenery has within a year lost twenty-seven head of cattle, of other importations, then on his premises. The disease was not supposed to be contagious, and was attributed to local causes.

"In June, 1859, three grade Dutch calves were purchased from Mr. Chenery by Mr. Stoddart, of North Brookfield; as they were being taken there, one of the calves appeared to falter, and gave evidence of physical disability. The distemper with which the animal was affected was at once communicated to the cattle in the vicinity, and it has since raged there with fatal violence. A district about twelve miles square, from which, at this time last summer, large quantities of butter and cheese were made for the Boston market, is almost destitute of cattle.

"The distemper began to extend its ravages, and in April, just prior to the adjournment of the legislature of Massachusetts, an act was passed, appointing three commissioners, with authority to take such action as would, it was hoped, circumscribe and extirpate the disease. They were authorised and required to visit without delay several places in the commonwealth where the disease was known or suspected to exist, and were empowered to cause all cattle which had been diseased, or had belonged to diseased herds, to be forthwith killed and buried, and the premises where they were kept cleansed and purified; to appraise in their discretion the value of the cattle killed which were apparently well, and certify to the State government the allowances made to the owners of the cattle respectively; and to communicate for publication the result of their observations and inquiries relative to the nature of the disease. It was also enacted that 'any person who should knowingly disregard any lawful order or direction of said commisioners, or who should sell or otherwise dispose of an animal which he knows, or has good reason to suspect, has been exposed to the aforesaid disease, should forfeit a sum not exceeding five hundred dollars.'

"Governor Banks (the committee quote from his message) issued commissions, under the provisions of this act, to Richard S. Fay, Esq., of Lynn, Paoli Lathrop, Esq., of Hadley, and Hon. Amasa Walker, of Brookfield. These gentlemen entered at once upon the performance of their duties. After some progress had been made, Mr. Fay, from the pressure of private engagements, withdrew from the commission, and the vacancy was supplied by the appointment of Dr. George B. Loring, of Salem, Mr. Lathrop, of South Hadley, acting as chairman. The commissioners have been assisted in their labours by Dr. Thayer, Dr. Dadd, Dr. Bates, and other gentlemen of established reputation as veterinary surgeons.

"From a detailed report of the operation of the commissioners under the statute, it appears that all suspected herds have been examined, and many cattle have been isolated by their order. Eight hundred and forty-two have been slaughtered, for which compensation has been allowed by the commissioners to the amount of $20,432 83. No report, however, of allowances made to the owners of cattle has been received, and on money has been drawn under the statute from the treasury. The appropriation of $10,000 made by the legislature was very soon exhausted. The labours of the commissioners would have been at once brought to a close, but the distemper continuing to spread, and the public mind becoming more excited in the districts where its ravages were chiefly confined, and where it seriously affected, and seemed to threaten the destruction of the principal occupation and support of the people, many generous and public spirited citizens, representing different business interests, voluntarily subscribed to a fund which was intended to enable the commissioners to continue their work, notwithstanding the failure of the appropriation, and to guaranty all parties concerned against loss, in case the legislature should fail to recognise and provide for the unauthorised expenditure of money.

"Subscriptions to the amount of nearly $20,000 were at once made, and the commissioners, under the protection of this guarantee, made some further progress. But the disease had spread over a larger territory then was at first supposed. More definite instructions from the legislature as to the course to be pursued were desired. It was believed that more stringent regulations than those allowed by the act of April 4th, 1859, were required, and that additional appropriations from the treasury might be indispensable.

"On the 18th of May, the commissioners made a formal request that an extra session of the legislature should be called. This request was supported by a petition of a committee of the State Board of Agriculture, by several members of the board, and by many influential and honorable citizens of different parts of the commonwealth. On the 24th day of May, the proclamation was issued for a session of the legislature for the consideration of this special subject, and the members assembled on the 30th of May. They appointed committees, who at once commenced examining diseased herds, and will doubtless take efficient measures to arrest the progress of the distemper (if it be possible so to do) by legislative enactments.

"Meanwhile the distemper has been carried from Massachusetts into Maine, New Hampshire, Connecticut, New Jersey, and even into Michigan—*every case easily traced to the cattle imported from Holland.* The price and value of stock in the neighbourhoods where it prevails have been decreased, and, as a consequence, drovers have purchased cattle in those neighbourhoods, and driven them far away for sale."

The Committee concludes its report by recommending Congress to adopt the following resolutions:

"*Resolved*, That, in view of the extent and magnitude of the national interests threatened by the fatal malady now prevalent among the cattle within several of the States of this Union, this House cannot but regard with special solicitude the efforts and measures adopted by the citizens and legislatures of the States immediately concerned, aimed at the speedy extirpation of so destructive a disease.

"*Resolved,* That the Secretary of State be requested to open a correspondence with the consuls of the United States, in such countries as may have been visited by the malady in question, and to ascertain from them what sanitary measures have been adopted, and with what success; what steps have been taken to exclude animals coming from countries where the disease exists, and what medical treatment has been adopted.

"*Resolved,* That the Secretary of the Interior be requested, in having the agricultural information and statistics collected during the next fiscal year, to obtain statements of the condition and progress of this disease, and the action and results of the State commissions; and that, should the disease not be checked, he be further requested to communicate the result of his inquiries to this House at the commencement of its next session."

ELECTION OF NEW EXAMINERS.

On the day of publication of our last number, the Council of the Royal College of Veterinary Surgeons assembled for the purpose of exercising one of its most important functions, *namely,* the election of members of the profession and others as examiners. This step had become necessary in consequence of several vacancies having occurred in the section of the Board acting for Scotland, and one in the London section, caused by the lamented death of the late James Turner. To fill the latter-named vacancy, Mr. W. Mavor was chosen; a gentleman well qualified to discharge the duties of this important office in all its several bearings. We have ever been in favour of Mr. Mavor's election, knowing full well that the interests of the profession would not suffer in his keeping, while the dignity of the office would be fully maintained.

It is, perhaps, almost unnecessary that we should now revert to the efforts which were made on former occasions to place Mr. Mavor in this position, but we cannot allow this opportunity to pass without congratulating both himself and the council on the evidence which the act affords that party spirit has seen its day of dissolution.

This remark has its verification also in the choice which has been made for Scotland, and we trust that a sure foundation has now been laid for reconciliation and co-operation, so that we shall be *de facto* a united profession, each in his own sphere endeavouring to raise our art to that elevated position it rightly attains unto.

We have now in truth a strong and most efficient board for Scotland, and one too which bears on its standard the olive branch of peace. The requirements of the public and also of the profession are assuredly well provided for by a court of examiners, which comprise such men as Professor Miller and Drs. Begbie, Dunsmore, and Struthers; with Messrs. Cartledge, Cockburn, Cowie, Lawson, Robertson, and Secker, as practical veterinary surgeons.

May the seeds of concord, which have at length been planted, soon bring forth rich fruit in such abundance that all may partake and be satisfied.

FRENCH VIVISECTIONS.

The following letter has just been published in *The Lancet* of November 24th:

"Sir,—Having observed in *The Lancet* some remarks upon the vivisections as practised in the French veterinary schools, I beg to call your attention to the method pursued in those establishments of instructing the pupils in practical surgery, by making them perform the different operations upon old and worn-out animals while still alive.

"In the spring of 1856 I was permitted, through the kindness of the director of one of the three veterinary schools in France, to make some drawings of the anatomy of the horse in the establishment over which he presided, and as the building in which the operations were performed adjoined the dissecting room, I had many opportunities of seeing the practice of which I now complain.

"Every week old and worn-out horses and mules were provided, and the students of the two senior classes commenced, soon after nine in the morning, with the slighter operations of bleeding from the neck and feet, nicking the tail, putting in setons and rowels, &c. At midday a short interval was allowed the students for refreshment, and on their return they cast the animals, and proceeded to perform the more serious operations of firing, lithotomy, neurotomy, cutting away the walls and cartilages of the hoofs (as required in cases of canker), and other operations equally painful. This lasted till near five in the afternoon, when the classes were dismissed, and the animals, if not already dead from pain and loss of blood, were dragged into the yard and destroyed.

"These operations were not intended as experiments to elucidate any physiological phenomena; they were simply an exercise, or drill, to render the students expert in the use of the operating instruments, and correspond to those performed by the student in medicine upon the dead human subject in the dissecting room. I remonstrated with the professor in charge of the class upon the cruelty of the proceedings, which he admitted, but contended for the advantage derived by employing a living animal instead of a dead one, as it accustomed the students to the sight of blood and the shrinking of the animal when touched by the instruments; and it made them cool at operating, though in most instances he thought it taught them cruelty. The system had, however, existed so long that they were now used to it, and no one cared to raise his voice against it. Subsequent conversations with his colleagues and the students tended to confirm my opinion as to its demoralizing influence, and clearly showed that, whatever advantages might be derived from the practice, they were more than counterbalanced by the brutalizing of the mind.

"At the same time I saw many experiments performed on animals, the position of the professors affording them great facilities for procuring and keeping the animals. Some of these experiments were extremely cruel, but were perhaps excusable, as the object sought was the improvement of scientific knowledge; but as regards the operations, they are lessons in practical cruelty, and the sooner they are abolished the better. I may add that the system is but little known, no visitors being suffered to enter the theatre while the proceedings are going on.

"I remain, Sir, your obedient servant,

"ALFRED PERRY.

"Camden Terrace West, Nov. 1860."

In *The Medical Times* also, of the same date, we find, under the head of USELESS VIVISECTIONS, the subjoined pointed remarks on this question by the editor, accompanied by the extracts to which he refers:

"The *Moniteur des Sciences Médicales* makes the following lame reply to charges which have been made of the wanton cruelty in practising operations on living animals at the French veterinary schools:—'Our learned friend [the editor of the *Cosmos*, who had reproduced the English charges] must know, better than we can tell him, that exaggeration is a defect in anything, and it is a pity that he did not declare to his London and Dublin correspondents that their zeal carries them too far. Personally, we deplore, as much as any one can, useless cruelties, whether exercised on man or beast; but we cannot admit that our excellent friends at Alfort and elsewhere are transformed into Cabochés or Caligulas, merely because they practise their pupils on living animals, *which is, however, unfortunately true*. But we cannot allow ourselves to decide that they are able to do without this procedure of instruction, and must confine ourselves to expressing a wish that they may be able to do so, and we beg our learned friend to transmit our statement to his honorable zoophitist correspondents!'"

Extracts from British and Foreign Journals.

REMARKS ON THE COMPOSITION OF THE BLOOD, AND PRINCIPALLY WITH REFERENCE TO THOSE DISEASES OF CATTLE AND SHEEP IN WHICH THE FLUID UNDERGOES IMPORTANT PATHOLOGICAL CHANGES.

By James Beart Simonds.

(*Concluded from p.* 611.)

In the cattle plague of Eastern Europe—the pathology of which terrible scourge was recently investigated and reported on by us to the Society *—the presence of the *materies morbi* in the blood leads to an exudation of the fibrine from the capillaries of the mucous membranes. The blood of such patients does not clot after death, but remains perfectly fluid in all the larger vessels, and particularly in the veins, from being thus *de*fibrinated. Convalescence is a sure sign of the reappearance of the fibrine; and if, at that time, blood be experimentally drawn from an animal, it be found to form a soft gelatinous mass, the density of which will be in proportion to the extent of the re-established health.

A loss of fibrine also so far alters the viscidity of the blood, that it does not circulate so perfectly through the capillaries as it otherwise would do, which produces a tendency to congestions, hæmorrhages, &c.

From what has been advanced it will be inferred that nutrition is mainly due to the fibrine, and as an appropriation of it for this purpose takes place in the systemic capillaries proper to each organ, so, on comparing its quantity in the arterial with that in the venous blood, a slight difference will be observed. According to Müller, the proportion is as twenty-nine to twenty-four, the larger amount necessarily existing in arterial blood.

Chemically considered, there is not much difference between albumen and fibrine, while, on the contrary, both the physical and vital properties of the two fluids vary, as we have seen, to a very considerable extent. Much more might be said respecting this constituent of the blood, but it is unnecessary to add to these remarks, except to state that, united with the serum, as we find it within the vessels, it constitutes the true *liquor sanguinis.*

* The Royal Agricultural Society.

We shall now proceed to a consideration of the red cells —the colouring matter of the blood.

The Red Cells.—It has already been said that the redness of the fluid is entirely due to certain cells which are floating within it, commonly designated the red particles. These bodies exist in such vast numbers, that many hundreds may be said to be present in every drop of blood, and it has been estimated that, on the whole, they constitute no less than an eighth part of the entire quantity of the circulating fluid. The discovery of the red cells is said to have been made by Malpighi, a celebrated Italian anatomist, who flourished in the latter part of the seventeeth century. Since his time, they have excited the liveliest attention on the part of all investigators of the blood, which has led to a more complete knowledge of their structure, as well as of their uses in the animal economy, than had previously existed.

The aid of the microscope is indispensable even for obtaining cognisance of their presence, and our more extended knowledge of these cells is, in a great measure, due to the improvements which have of late years been made in the defining powers of this instrument. In man, and in most of the mammalia, the red cells are circular in shape, but in birds, reptiles, and fishes, they are oval. The exceptions to the circular shape in mammals are met with in the camel, the alpaca, and their allied species, in which the cells have, as in birds, an oval form. It is not to be inferred because the red cells are round, that they are therefore globular-shaped bodies; for, having flattened sides, they rather resemble the form of an ordinary coin. Correctly speaking, even their sides are not flat, but slightly concave, so that the cells may be described as bi-concave circular discs. This is their more general and, it may be said, perfect shape, but as they readily imbibe fluid through their pellucid and colourless walls, so, by an addition to their contents, will their sides become first flat, and afterwards convex, according to the amount which is absorbed.

Their size is likewise liable to great variation in different animals, and even in the same animal it is not uniform. In man their diameter varies from the 1-3000th to 1-4000th of an inch, and their thickness is about 1-10000th of an inch. According to the measurements of Mr. Gulliver, given in an appendix to Gerber's 'Elements of General and Minute Anatomy,' the average diameter of the red cells of the horse is 1-4706th of an inch; of the ox 1-4267th; the sheep 1-5300th; the pig 1-4230th; and the dog 1-3542d. In the goat and deer tribe, they are smaller than in the sheep, reaching their smallest known size in the Napu musk deer, in which their average diameter is said by Mr. Gulliver not to exceed the 1-12325th of an inch. Gradation in their size in ruminants seems to prevail, the cells becoming smaller with the diminution of the size of the animal. This, however, is so far from being the case among the mammalia in general, that it is ordinarily stated that the bulk of an animal has little to do with the size of the red cells of its blood. It would appear, however, from recent investigations of Professor Quekett that the calibre of the capillary vessels of each individual animal is to be taken as a more correct standard of the size of the red cells than anything else—the two rising or falling together.

A great deal of discussion has taken place in former times, as to whether these cells were, or were not, nucleated in mammals; different observers of equal eminence maintaining opinions the very opposite of each other. The matter is one of some importance, as elucidating the probable means of their reproduction. Like every other part of the organism, the red cells undergo changes which result in their ultimate dissolution or breaking up. If then they were nucleated, it is evident that they would follow the same law as all other cells of this class in their reproduction, *namely*, the setting at liberty of their nuclei by disintegration, which would then develop into new cells.

The opinion that they possess a nucleus has doubtless had its origin in the circumstance that, when viewed as transparent objects, their bi-concave form gives them an appearance of having dark centres, from the refraction to which the rays of light are exposed. That this is the true cause of the phenomenon is proved by placing these bodies in a fluid less dense than that which they contain, when, by their imbibition of a portion of this, the dark spot disappears; they being thus changed from bi-concave to flat-sided or even double-convex discs. This procedure would, on the supposition that they were nucleated, tend, however, to bring the nucleus more into vision. The converse also is equally true, *namely*, the rendering the dark spot more distinct by emptying them of some of their contents, which is accomplished by placing them in a fluid of greater density than that which is located in their interior.

It is a singular fact that, when considered in connexion with the blood-cells of other creatures, those of mammals should be *un*nucleated. In birds, reptiles, and the amphibia, the red cells possess a nucleus; they are also very much larger than in the mammalia, a circumstance which affords many advantages for the study of their structure, &c., in these creatures.

The proportionate quantity of the red cells to the other constituents of the blood has already been said to be as much as an eighth part. The quantity, however, is liable to much variation, depending on certain conditional states of the system. In animals of robust health it is always large, as also in those that are well fed and which undergo a fair amount of exertion and breathe a pure air. Wild animals are said to have a relatively increased quantity when compared with domesticated animals, especially such as are placed under circumstances the very opposite to those we have just named.

Dr. Carpenter, in his 'Manual of Physiology,' says that it has been ascertained that even sex has its influence over the number of the red cells—the blood of the male possessing a larger proportion than the blood of the female. He also states that, estimating 1000 parts of the blood of a male to contain 132 parts of red cells, this quantity may rise to 186, or fall to 110, without the manifestation of disease; and that in the female, taking the average at 120, it also may rise to 167, or fall to 71, without producing any untoward results. Facts of this kind are of the first importance to the pathologist, and hereafter we shall see the influence these changes have in rendering animals susceptible to diseases which specially affect the blood; and that, while they point to the means which ought to be adopted for the prevention of disease, they render distinct also those which should be had recourse to for the restoration of animals afflicted therewith.

Important as the red cells may be in maintaining the health of an animal, they are evidently in so doing more immediately connected with respiration than with nutrition, and hence they are sometimes spoken of as the *respiratory element* of the blood. Their chief use is thus shown to be that of preserving the heat of the body. It is well known that all mammalian animals possess a power of maintaining a heat of their own, equal to about 99° of Fahrenheit, independent of external influences by which they are surrounded: hence the term "warm-blooded" animals. This heat is evolved in every part of the organism, and is chiefly due to the union which is effected between the oxygen of the atmospheric air and the carbon of the system, leading to combustion, with its necessary evolution of heat and the formation of carbonic acid gas. A second cause of animal heat is to be found in the union of oxygen with the hydrogen of the system, forming watery vapour. By some it is likewise considered that electricity plays a not unimportant part in the production of the heat of the body, while others have attributed a portion of it to the changes which are ever taking place in the conversion of the fluids into solids in the building up the frame. The latter, however, would appear to be quite equalised by the reconversion of the solids into fluids, which is as continuously going on.

The red cells are the chief conductors of oxygen into the system, as they are also the conveyors of the carbonic acid out of it; and in order to perform these essential offices, it is first necessary that they be brought into tolerably close contact with the atmospheric air, which is effected by the passage of the blood through the lungs. By the act of inspiration the atmospheric air is conveyed by the windpipe and bronchial tubes into the air-cells of the lungs, where it is only separated from the blood itself by the thin walls of the air-cells, and those of the capilliary vessels which ramify upon them. The capillaries are arranged upon the air-cells after the form of a minute network, and they are so closely placed to each other, that although the vessels themselves do not exceed the 1-3000th part of an inch in diameter, the spaces between them are considerably less than this. Thus the blood may be said to be spread out after the manner of a thin film, and every portion of it to be brought freely into contact with the atmospheric air; the delicate intervening tissues offering no real impediment to this taking place. The oxygen, being seized upon by the red cells of the passing current, is by the onward flow and further distribution of the blood carried throughout the entire body, and thus reaching the capillaries of the several organs and tissues, it here unites with the carbon of the system, evolving heat, as has been previously explained.

In the expiratory act the carbonic acid gas—formed by the union of the oxygen and carbon—and the watery vapour—the product of the oxygen and hydrogen—are expelled from the system, by which means the blood, being first depurated and then *re*oxygenated by a fresh inspiration of atmospheric air, is again fitted for the purposes of life.

With these interchanges of gases, the blood is likewise well known to become altered in its colour, being rendered of a bright red hue by the absorption of oxygen while circulating through the capillaries of the lungs, and of a dark Modena red by that of carbonic acid while in its onward movement through the capillaries of the general system. Scarlet-coloured blood is commonly called *arterial*, as arteries supply all parts with the fluid for their support; and dark red blood is designated *venous*, being found within the veins after it has served its several purposes.

In order to explain the phenomenon of this change of colour, it is necessary to state that the red matter of the cells is contained in their interior, and is designated *hæmatine.* Mixed with this is another fluid, called *globuline,* which is closely allied to albumen in its chemical composition. With the *hæmato-globuline* are found the salts of iron—to the extent of about 6 per cent.—proper to the blood; so that the contents of the cells may be said to be very complex in their nature.

The alteration of the colour of the blood was until lately believed to be due to a chemical change wrought in the *iron of the hæmato-globuline* by the successive influences of oxygen and carbonic acid—this existing in the form of a *per*-oxide in arterial and a *prot*-oxide in venous blood. More recent investigations have, however, disproved this, which is known as the Liebigian theory, by showing that when the hæmato-globuline is liberated from the cells, it does not change its shades of hue by an exposure to the gases in question; and further, that after all the iron is removed, its red colour still remains.

The absorption both of oxygen and carbonic acid by the blood is found to produce a *physical* change in the condition of the red cells. Thus by the influence of the first-named, the cell-walls are contracted or shrivelled, while by the latter they are dilated or expanded. These alterations in form necessarily lead to an alteration in the refraction of the rays of light, and it is now thought, that the bright-red colour of arterial and the dark hue of venous blood are mainly due to this simple cause. The action also of carbonic acid on the salts of blood contained within the serum is said to have an influence in producing the Modena-red colour.

In concluding this part of our subject we may incidentally direct attention to the fact, that the inhalation of ether, chloroform, and other similar anæsthetic agents produces a dark-coloured blood, which is found under such circumstances to be flowing, not merely through the veins, but the arteries also, and of necessity but imperfectly supporting the various functions of organization and life.

We come now to speak of the only remaining constituent of the circulating fluid, which it is necessary to direct special attention to, *namely*—

The White Corpuscles.—These bodies, although exceedingly numerous, are considerably less so than the red. It has been computed that about one white to fifty red cells exists in a healthy state of the system, and in almost every other respect the white cells differ from the coloured. In size they exceed them; for while the average dimension of the red cell is about the 1-3500th of an inch, the white measures as much as the 1-2500th. Their form also is different, the white being globular-shaped bodies, and not flattened discs. Again, their contents are found to be granular when viewed with a microscope, which gives them a dark dotted-like appearance totally unlike the red cells.

Physiological anatomists are not agreed as to the origin and use of the white cells; but by most they are regarded as identical with the cells which are met with in the chyle before this fluid is mingled with the blood proper; and certainly they would appear not to be essentially different from chyle-cells when microscopically examined. Some have considered them as ministering directly to nutrition, by the setting at liberty of their contents, which are then found to have a tendency to fibrillation; while others have thought that they were the elaborators of the albumen into fibrine. Others, again, consider that they originate the red cells by a higher degree of development, and this probably is their chief use.

The circulation of the white cells through the vessels is slower than that of the red; and as they are often found close to the sides of the interior of the capillaries, as if adhering thereto, and out of the principal force of the passing current, this circumstance has given support to the view of their ministering immediately to nutrition. The opinion receives some further confirmation from the fact that wherever active development is going on, there is always found a relatively greater number of these cells.

The blood of plethoric animals is rich in white cells: besides which these bodies seem to have a remarkable tendency both to increase in number and to accumulate in the vessels when diseases of an inflammatory nature supervene on such a state of system. In that abnormal state of the blood, also, which is ordinarily termed buffy-blood, and which belongs especially to many inflammatory affections, the white cells help in a great degree to make up the so-called sizy or buffy crust of the blood. We thus see that variation in their number and also in their comportment within the vessels takes place when disease exists, showing that they, in common with every other constituent of the blood, undergo important changes under such untoward circumstances.

We must not, however, anticipate that which has to be stated with reference to blood-diseases; and, therefore, having now described the chief constituents of the circulating fluid, and shown the several important offices which each fulfils in the promotion of health and development, we purpose to conclude the present paper, intending in our next to speak of the circulation of the blood and the phenomena connected therewith, with an especial view of explaining the pulse, and the changes it undergoes both in frequency and character, depending on certain morbid states of the system. Besides this, it is our intention to direct attention to some of the maladies which have their origin in a changed condition of the blood itself.—*Journal of the Royal Agricultural Society*, vol. xxi, part i.

COMPARATIVE DANGER OF ETHER AND CHLOROFORM.

In a recent discussion which took place on this subject at the New York Academy, the eminent physiologist, Dr. Dalton, stated that, in his opinion, the cause of death in fatal cases of death from inhalation of chloroform is paralysis of the heart. He has been led to this conclusion by observing the effects of ether and chloroform on animals. If inhalation is carried to a moderate extent and the chest of the animal is then opened as quickly as possible, the heart will continue to beat for a considerable time. If, however, it be pursued until respiration is stopped, though the heart may still be found beating, its movements will be very feeble. If the anæsthesia be carried only to the stoppage of respiration, the animal usually recovers; but if, when the respiration ceases, the heart is also still, it never does so. Although fatal results have occurred in Dr. Dalton's hands, in experimenting on animals, with both ether and chloroform, when inhalation has been pushed to an extreme, he has been obliged to take a great deal of pains to produce this effect with ether, whereas death often follows the use of chloroform, notwithstanding the best precautions. "I think I may say," he remarks, "without exaggeration, that I am thoroughly convinced that there is a radical difference in the danger following the administration of these two substances. I am sure that chloroform is more dangerous to animals, at least." He is of opinion that chloroform should be abandoned in favour of ether.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF THE COUNCIL, held October 31, 1860.

Present:—The President, Messrs. Barrow, Braby, Broderick, Burley, Ernes, Field, Gamgee, Harpley, Hunt, Jex, Lawson, Legrew, Moon, Pritchard, Robinson, Secker, Wallace, Withers, Professors Spooner, Simonds, and Varnell, and the Secretary.

J. Wilkinson, Esq., the President, in the chair.

The minutes of the preceding meeting were read and signed.

The Registrar's report was read. It announced that five deaths had been reported during the past quarter:—J. Ball, Royal Artillery, diploma dated May 5th, 1852; J. T. Cochrane, Royal Artillery, diploma dated April 27th, 1848; T. Overton, Merthyr Tydvil, diploma dated May 21st, 1845; W. Adamson, Aycliffe, diploma dated April 16th, 1831; and John Carless, jun., Tamworth, diploma dated April 30th, 1851.

The quarterly balance sheet was read; it showed that the balance in hand, after deducting the expenses of the quarter, was £505 6*s.* 7*d.* On the motion of *Mr. Burley,* seconded by *Mr. Legrew,* the report was adopted.

The Treasurer reported that, in accordance with the order of Council at the last meeting, the accounts had been transferred in the Bank of London from his own name to that of the Royal College of Veterinary Surgeons, and that in future cheques only would be paid, if signed by the President, Treasurer, and Secretary. He further stated that, his responsibility having thus ceased, he would prefer resigning his office; but, as it appeared to be the general wish of the Council, he would still retain it.

On the motion of *Professor Spooner*, seconded by *Mr. Secker*, it was decided that £300 be placed to the deposit account in the Bank of London.

The election of an examiner in the place of the late Mr. James Turner was then proceeded with. Two gentlemen were named and seconded; *Mr. W. Mavor,* jun., of London, by *Professor Spooner* and *Mr. Robinson;* and *Mr. Legrew,* of the 2d Life Guards, by *Mr. Jex* and *Mr. Gamgee.* On the ballot being taken, *Mr. W. Mavor* was declared duly elected.

In accordance with a notice of motion made by *Mr. Gabriel* at the last meeting, it was moved by *Professor Spooner,* and seconded by *Mr. Gamgee,* and carried, "that the Scotch portion of the Board of Examiners be dissolved, and the Council do proceed to re-organise the same." The following six gentlemen were then proposed and seconded as Veterinary Members of the Scotch Board, viz., Messrs. J. Cowie, B. Cartledge, J. Lawson, W. Cockburn, W. Robertson, and L. Secker; and on the ballot being taken, they were declared duly elected.

Five gentlemen were then named and seconded as the Medical Members of the same board—Professor Miller, Drs. Dunsmore, Begbie, Struthers, and Watson; and on the ballot being taken, the first four gentlemen were declared duly elected.

Cheques were ordered for the current expenses of the quarter.

E. N. GABRIEL,
Secretary.

VETERINARY MEDICAL ASSOCIATION.

THE ACTING-SECRETARY'S REPORT,

For the Twenty-fourth Session, 1859-60.

Mr. President and Gentlemen,—The close of another session has rendered it necessary for me, as your acting secretary, to lay before you a brief report of the transactions of the Association during the past year. We see in the success attending our proceedings many causes of congratulation, not the least of these being an addition of twenty-six new members to our body ; a fact which speaks sufficiently for itself, that the institution is in a prosperous condition.

It is quite unnecessary for me to refer at any length to the particular essays which have been read, but, nevertheless, it is right to observe that very many of them did great credit to their authors for the amount of practical information which they contained. On looking over the minutes of our meetings, I also perceive that there have been three more essays brought before us this session than in the one immediately preceding it.

I may likewise remark that several of the essays were of unusual length, occupying for their reading and discussion no less than three meetings. And when we look to the number brought before us, and the clearness with which many were written, I think you will agree with me in saying that there has been no lack of talent displayed by the pupils of this session.

At our first meeting in October, the following gentlemen were chosen as vice-presidents:

Mr. Noakes,	Mr. Tailby,
„ Marsden,	„ Ison,
„ Crowhurst,	„ Woodger ;

and I was likewise honoured by being elected your acting secretary.

No prize being awarded last session for the best essay of the year, as a necessary consequence, the time of the second meeting was not occupied as usual, but Mr. Noakes supplied an excellent substitute by reading the history of an interesting case of *purpura hæmorrhagica* which came under his notice during the summer vacation. Subsequently to this meeting, the following essays were brought before us, namely—

On Anatomy, Physiology, and Pathology of the Foot of the Horse. By Mr. Crowhurst.

Influenza of the Horse. By Mr. Noakes.

Pleuro-pneumonia in Cattle. By Mr. Marsden.

Structure of the Mammary Gland of the Cow. By Mr. Coe.

Spavin and Physiology of the Hock. By Mr. Tailby.

Colic and Enteritis in the Horse. By Mr. Dollar.

Anatomy and Physiology of the Kidney, and Nephritis. By Mr. Sharp.

Farcy and Glanders. By Mr. Woodger.

Anatomy and Physiology of the Lungs and Pneumonia. By Mr. Withers.

Chemistry in relation to Health and Disease. By Mr. Berry.

Anatomy, Physiology, and Pathology of the Fore Extremity. By Mr. Barclay.

Comparative Anatomy. By Mr. Howell.

Navicular disease. By Mr. Ison.

In addition to these, a communication was received from Mr. Cave, of Nottingham, on strangulation of the intestine by a fatty tumour, which was accompanied by the morbid specimen, and led to an interesting discussion.

Our friends in the country have not been so liberal as in former years, in sending us morbid specimens of unusual diseases, but I trust that such may not be the case in the future. Many of you ere long will have acquired the standing of qualified veterinary surgeons, and I would desire to remind you that, although you may be placed at considerable distance from the college, you will still be members of the *Veterinary Medical Association.* Bear in mind that if each of you contribute only an occasional case, you are doing much to promote the best interests of the profession, by lending a helping hand to others in imparting practical instruction to its future members. It is a source of much pleasure to be enabled to state that the discussions throughout the entire year have been conducted in the most peaceful and gentlemanly manner, but still a sufficient spirit has always been thrown into the argument to call forth all the energy and eloquence of the respective speakers, and to make these meetings our most pleasurable as well as profitable *reunions*.

(Signed) W. Good.

SPECIAL MEETING OF COUNCIL.

A meeting of the Council was held in the board-room of the college, on the evening of June the 25th, 1860.

Present:—The Treasurer, Assistant-Professor Varnell, J. D. Broad, Esq., and Professor Morton.

Professor Simonds in the chair.

The minutes of the council meeting held October 6, 1859, were read and confirmed.

Communications were read from Mr. Stevens, apologising for his absence, and Mr. Stickney, acknowledging the receipt of his silver medal.

The Acting Secretary's report for the past session was read and approved of.

The accounts were audited and found correct; the total balance in hand of the Treasurer, all outstanding liabilities being disbursed, was stated to be £63 14*s*.

The Hon. Secretary stated that he had received two essays in competition for the silver medal, which he had handed to the President, Professor Spooner, for his perusal.

The anatomical preparation, "showing the distribution of the pneumogastric, superior laryngeal, and recurrent nerves of an adult subject," was laid on the table.

The members of the council, having examined it, unanimously awarded to the dissector thereof the silver medal.

The dissector was announced to be Mr. P. S. Dollar, student.

Messrs. Broad, Woodger, and Batt were appointed a committee to examine the essays discussed during the past session, as to their merits for the distinction of Honorary Fellows, to be conferred on the authors.

The Honorary Secretary then resigned his office, briefly reviewing the progress of the Society since its formation in 1836.—Aided by the President, they had together been instrumental in its establishment, and the encouragement it had received confirmed the opinion he had always entertained of its usefulness to the student; and he doubted not, the same support being continued, it would ever remain as an integral part of the college. With some degree of regret he parted from it, and should ever feel an interest in its well doing, which he hoped from time to time to hear of.

The Chairman, in the name and on the behalf of the Council, expressed his sincere regret at this separation, and offered to the retiring Honorary Secretary his and their best thanks for his very long services. He trusted, however, that tangibility would be given to this expression of their thanks, and he therefore proposed that the same should be emblazoned on vellum, and presented to Mr. Morton on some fitting occasion.

The motion was most cordially received and approved of. Thanks to the Chairman being moved by Mr. Broad, seconded by Mr. Woodger, and carried, the meeting broke up

W. J. T. MORTON, *Hon. Secretary.*

SESSION 1860-61.—FIRST MEETING OF THE COUNCIL.

The members of the Council of the Veterinary Medical Association met on Friday, October 19th, 1860, Professor SPOONER, *the President,* in the chair.

The minutes of the last meeting were read and confirmed.

It was proposed by *Mr. Broad,* and seconded by *Mr. Woodger,* that the awarding of the silver medal for the best essay on the "Anatomy of the Heart of the Horse, Ox, Dog, Sheep, and Pig," be postponed, and that a Sub-Committee, composed of the Professors of the College, be appointed to determine the relative merits of those which have been sent in.

The Committee appointed at the meeting of June 25th, consisting of *Messrs. Woodger, Broad,* and *Batt,* reported on the essays read during the session 1859-60. They recommended the following as worthy of receiving the thanks of the Association, *namely*—

On Spavin, with a brief description of the Anatomy of the Hock of the Horse. By Mr. M. Tailby.

On Comparative Anatomy. By Mr. D. B. Howell.

Chemistry of Health and Disease. By Mr. J. P. Berry.

Anatomy and Physiology of the Lungs of the Horse, and Pneumonia. By Mr. H. Withers.

Anatomy and Physiology of the Foot of the Horse. By Mr. C. Crowhurst.

Anatomy and Physiology of the Kidney of the Horse, and Nephritis. By Mr. F. T. Sharpe.

Farcy and Glanders. By Mr. J. Woodger.

Anatomy and Physiology of the Mammary Gland of the Cow. By Mr. J. Coe.

The motion was proposed by *Mr. Lowe,* and seconded by *Mr. Varnell,* that the respective authors of these essays be so distinguished, and carried unanimously.

It was proposed by *Mr. Varnell,* and seconded by *Mr. Broad,* that the subject for the prize essay for the ensuing session be "Animal Heat, and the various phenomena associated with its development in connection with pathology." —Carried.

It was proposed by *Mr. Woodger,* and seconded by *Mr. Batt,* that the prize anatomical preparation be "the muscles and *nerves* of the one eye, and the muscles and *arteries* of the other eye, of the horse."—Carried.

It was proposed by *Mr. Broad,* and seconded by *Mr. Batt,* that *Professor Spooner* be elected President for the ensuing year.—Carried.

The following gentlemen were elected Vice-Presidents, viz., Assistant-Professor Varnell, and Messrs. Lowe, Batt, Broad, and Woodger. Mr. Rowe was also elected a Vice-President, in the place of Mr. Stevens.

It was proposed by *Mr. Broad,* and seconded by *Mr. Lowe,* that Professor Simonds be re-elected Treasurer.—Carried.

It was proposed by *Mr. Broad,* and seconded by *Mr. Woodger,* that Professor Tuson be elected Secretary, at a salary of ten pounds *per annum.*—Carried.

It was proposed by *Mr. Batt,* and seconded by *Mr. Lowe,* that Mr. W. Pritchard be elected Librarian, at a salary of five pounds *per annum.*—Carried.

Finally, it was proposed by *Mr. Broad,* and seconded by *Mr. Woodger,* that the thanks of the meeting be given to the President.

R. Tuson, *Secretary.*

Veterinary Jurisprudence.

DISEASED HOCK JOINTS.

BARKER *v.* BLENKINSOP.

An important decision was awarded at the South Shields County Court, on Thursday, October 25th, relative to a horse warranty, and which had been postponed from the last months sitting of the Court.

It appears that, at the South Shields County Court, on the 20th September, before H. Stapylton, judge, an action was brought by Mr. Thomas Bell Barker, shipowner, against Mr. John Blenkinsop, farmer, to recover the sum of £46 17s. for damage sustained by him by reason of the breach of the warranty of a chestnut horse sold to the plaintiff on the 23d of July last, and which the defendant warranted to be four years old, perfectly sound in every respect, quiet, and free from every description of vice.

Mr. Blackwell, barrister, instructed by Mr. R. Kidd, of North Shields, appeared for the plaintiff; Messrs. Hodge and Harle, of Newcastle, and C. Wawn, Jun., of South Shields, for the defendant.

Mr. Barker was called, and spoke to having, on the 23d July, purchased a chestnut horse of Mr. Blenkinsop for the sum of £70, £5 of which was to be returned. At the time he made the purchase he received from Mr. Blenkinsop the following warranty :—" *This is to certify that I have, this 23d of July,* 1860, *sold a chestnut horse to Mr. Barker for* £70. *I warrant the said horse four years old, perfectly sound in every respect, quiet, and free from every description of vice up to this day.*— John Blenkinsop."

Previous to the purchase, accompanied by Mr. Hutchinson, veterinary surgeon, he went to look at the horse. The coarseness of the hocks was pointed out by Mr. Hutchinson, and also a slight enlargement or "puff" on the off hock. Mr. Blenkinsop said, with respect to the latter, that it was merely a trifle, scarcely worth mentioning. Mr. Hutchinson said that the " puff" arose from humours, and would go down after the horse had had some physic. On the horse being sent home it was attended by Mr. Hutchinson. The enlargement gradually got worse, and the plaintiff sent a message, asking him if he had any objection to means being used to reduce the enlargement. Mr. Blenkinsop declined to have anything to do with it, and afterwards he, Mr. Barker, sent him word that the horse was unsound, and that he would return it. Defendant took no notice of this communication, and subsequently the horse was sent to Mr. Wetherilt's livery stables, of which proceeding notice was given to the defendant, with an intimation that it would remain there at his cost until sold, and that when sold an action would be commenced against him. Eventually the horse was sold at Newcastle.

James Carlisle, groom to Mr. Barker, was called and spoke to the "puff" on the horse's hock.

Mr. Hutchinson, veterinary surgeon, South Shields, said on looking at the horse he pointed out to plaintiff and defendant on two occasions that there was a slight distension on the off hock. He, however, did not consider that this would prevent the animal from performing his usual duties. This distension was not at that time, in his opinion, a "thorough-pin." When the horse was inspected there was not the slightest lameness or stiffness in its movements. He never told Mr. Barker that the horse had a "thorough-pin," or that it was unsound. He did not say that the "puffiness" referred to could be reduced in a few days by physic. The coarse hocks were also pointed out to Mr. Barker. In cross-examination, witness stated that about the eighth day after the sale the "puffiness" had much increased, and he found a good deal of heat about the joint. He thought that it had received a sprain, and he told Mr. Barker so.

Mr. Moses Pye, auctioneer, said he sold the horse for twenty-six guineas, to Mr. Robson, of Saltwell. The horse was both spavined and had a very bad "thorough-pin." Both legs were spavined, one more so than the other.

Mr. Scott and *Mr. C. Stephenson*, veterinary surgeons, gave similar evidence. They considered the horse was labouring under confirmed thorough-pin and spavin.

Mr. Hodge then laid before His Honour some arguments for the defence. He contended, first, that the horse was not unsound at the time of sale; secondly, that the horse's defects were patent defects; thirdly, that if they were not patent defects they were pointed out by Mr. Hutchinson to Mr. Barker; and fourthly, that if the unsoundness of the horse at the time of sale was thrown in doubt, the plaintiff was not entitled to recover. Numerous cases were cited in support of the above propositions.

He then called Mr. Blenkinsop, the defendant, who said that when Mr. Hutchinson came with Mr. Barker to look at the horse, he requested him if he saw any defects to point them out to the plaintiff, as he did not want any reflections afterwards. Mr. Hutchinson pointed out what was termed a "puffiness" on the hocks, and also the coarseness of the hocks. The horse had been so since he (defendant) purchased it. It was never lame while in his possession. He saw Mr. Barker twice after the purchase, and he then made no complaint. On one occasion he said that he liked the horse very much.

Cross-examined by Mr. Blackwell.—He saw the horse the morning before the sale. He thought it had a "thorough-pin." He did not tell Mr. Barker so. Never knew a "thorough-pin" lame a horse. Never saw any "spavins" about the horse.

Mr. Blackwell; Do you mean to say that he was sound in every respect? Witness: I mean to say that I could not warrant those parts which were pointed out to Mr. Barker.

The Judge.—Then why did you not except them?

Witness.—I did not say anything about the exceptions in the warranty.

The following veterinary surgeons were called on behalf of the defendant: Mr. C. J. Hubbick, of Durham, said the horse was perfectly sound. It had a "thorough-pin," but no "spavin." A "thorough-pin" would not make it less fit for the ordinary purposes of the saddle or harness.

Mr. Chas. Hunting, of South Hetton, said the horse went thoroughly sound, was not "spavined," and that "thorough-pin" was not a mark of unsoundness. He never saw a more perfect actioned horse.

Mr. George Cook, of Newcastle, stated the horse had no "spavin," neither had it a "thorough-pin," it was merely a bursal enlargement on the off hock. He considered the horse sound, and of good action.

Mr. Wilkinson, of Newcastle, who had examined the horse with the last-named professionals, at the farm of Mr. Blenkinsop, a relative of defendant, at Lobley Hill, also deposed that the horse was not "spavined," but he gave very qualified evidence with regard to the other appearance.

His Honour reserved his judgment until next court. At the court held on the 25th inst., judgment was given in the case. His Honour said that in his opinion there had been a breach of warranty. Thorough-pin was unsoundness, and at the time the contract was entered into, the horse had an incipient thorough-pin, which in the course of a few days became a complete thorough-pin. He was also inclined to the opinion that the horse at the time it was sold was spavined, although there was no lameness. He found for the plaintiff for the amount claimed, less £5, namely, two guineas for veterinary surgeons' fees for examining the horse according to Mr. Barker's directions, after it was offered to be returned, and £2 18*s.*, the expense of the keep by Mr. Barker previous to his offer to return the horse to Mr. Blenkinsop. The judgment was therefore for £41 17*s.*, and costs.

BRONCHIAL FILARIÆ IN LAMBS.—LOSS OF CONDITION AND QUESTION AS TO PAYMENT FOR THE KEEP OF THE ANIMALS.

Tried at the late Assizes for Surrey

SIDNEY STEVENS *v.* HENRY RIGDEN.

This was an action for the recovery of £42 for pasturage of a flock of 180 lambs. Mr. Lush, Q.C., and Mr. Hurrell, were counsel for the plaintiff; Mr. Prentice and Mr. Matthews for the defendant.

There was a cross action arising out of the same circumstance, in which Mr. Rigden sued Mr. Stevens for compensation for the loss of some of the lambs.

Mr. Lush having opened the case, called

Sidney Stevens, who deposed that in 1859 he was a farmer, at Hamsey Green, Warlingham, Surrey. He farmed 139 acres, and had a right also to feed on the common. The subsoil of his farm was chalk, and it laid on the south side of the common. Last summer he had about 17 acres of turnips (most of them Swedes), and plenty of other food for cattle, in the shape of clover, cinquefoil, &c. He knew Mr. Stanbridge, an agent in the sheep and lamb trade. On the 24th of August, he wrote to Mr. Stanbridge, requesting him to send some lambs for grazing, as he had plenty of feed for them, and upon terms of some sent in the previous year. Accordingly he received 177 lambs by return, and three more the next morning, which had been left at a neighbouring farm by the drover, in consequence of being in a very poor state, making a total of 180. The others were in a weakly state and very poor. He was to receive 7s. per head for seven months for all the lambs that might be sent back alive. He was to have nothing for those that might die. In about three days after they were brought to the farm the first died. They all had very bad coughs. They coughed incessantly during the nights. He drafted out the weakest and put them in the orchard, so as to be near the house. At first, he thought, he placed ten in the orchard, and the others on the farm in the usual way. They fed on the leys and stubble till the frost set in, and then he commenced feeding them upon turnips. The lambs continued to die at intervals, perhaps one or two in a week. Every attention was paid to them, and the shepherd never left them. He opened some of them, and found the lungs very much discoloured and thread-worms in them. He had never seen other than marsh lambs in such a state before. He had had about 300 before from Mr. Stanbridge, and they were marsh lambs, and 98 out of the 300 died of the same disease. He was, however, paid for them. He subsequently examined the lungs of others of the sheep, and found them even in a worse state of disease. He accordingly communicated with Mr. Stanbridge, and afterwards with Mr. Rigden. Mr. Stanbridge said he must do the best he could with them, and that he did not believe they had that disease. The sheep continued to die, and he again wrote to Mr. Stanbridge requesting him to consult with Mr. Rigden. He received a letter from Mr. Stanbridge on the 23d of November, 1859, expressing great surprise, and stating that they came from Dorking and were first-rate lambs. He again communicated with Mr. Stanbridge, and about the beginning of the present year he received a letter from Mr. Rigden, who was not able to come and see them, but recommended changing the lambs from one part of the farm to the other. He (plaintiff) did the best he could by changing their food after this letter, but without any beneficial effect. Subsequently Mr. Rigden waited upon him, when he (plaintiff) requested him to take the lambs away. The defendant treated the matter very lightly, and wanted him to take the lambs, which he (plaintiff) declined. Mr. Rigden then left without making any arrangement, except that he said he should not pay for their keep. Plaintiff afterwards let his farm to Mr. Wedgwood, of London, and left on the 1st of March. Mr. Wedgwood paid him for the keep of the lambs on the farm when he took possession, but plaintiff had afterwards been obliged to refund the money. He had consequently commenced an action in the Croydon County Court against the defendant, who had removed it to this court.

Cross-examined.—Was now a dairyman in High Street, Hoxton. Left his farm because it did not answer his purpose to keep it on. The lambs certainly would not answer the description of being the best of their kind. He did not recollect the date he first complained to either Mr. Stanbridge or Mr. Rigden about the lambs, he thought eight lambs were dead when Mr. Stanbridge first called upon him, but he could not say the date; had only seen Mr. Stanbridge three times during the seven months. Mr. Stanbridge had told him not to put the lambs too much on the common; he never complained of the lambs not having sufficient hay. Mr. Stanbridge had complained in January that he was starving the lambs, and he (plaintiff) replied that they should have whatever Mr. Stanbridge liked to recommend; the latter had never said they should have some hay; he (plaintiff) had never told his shepherd not to give the lambs any hay. Those drafted out had all the hay they liked to eat. When Mr. Rigden called upon him with a witness in January last, he found the lambs on Hamsey Common. Did not remember that he complained of their being on the common. When Mr. Rigden called in February, he (plaintiff) was not at home. The shepherd had informed him that defendant had complained of the lambs being starved. He should think fully three fourths of the lambs that died had worms. Did not know whether worms were brought on by bad feeding, or bad folding, but believed they were peculiar to those sheep bred on marshes. The number received was 180, and 120 were returned, as he heard. Had received two letters from Mr. Rigden—one directly, the other indirectly. Had received no other letter.

Thomas Field, shepherd of fifty years' standing, stated that he had for upwards of forty years been employed as shepherd at Warlington Court, and understood the management of sheep. He was employed by plaintiff last year to attend to these lambs, and continued to do so up to March last. When they came they were not in very good condition. They had bad coughs, and nine of them were obliged to be separated from the others the morning after they arrived. Most of them lingered away and died. He fed them constantly with grass and Swedes. There was plenty of keep when the lambs were first brought, and the farm was "all fresh and growing." There had been no other sheep upon it the whole of the summer. There was plenty of food, but they could not eat it. Many of them died soon after they were brought there. Some were opened, when thread-worms were found in their lungs and froth running down their windpipes. He had never seen such complaints before all the time he had been a shepherd. He had afterwards pointed out the state of the lambs to Mr. Rigden, but he turned round and would not look at them. Fifty-one of the lambs died whilst in his care, all of the same complaint. Nothing else could be done for them than he did. He attended the lambs after Mr. Stevens left, at the request of the defendant. This was after the lambs were taken from the farm.

In cross-examination the witness admitted he had told Mr. Rigden that his master would not allow him to give some of the sheep more hay. Those driven out had all the hay they wanted.

Re-examined.—They had plenty of other food, but they had "that upon them," that hay would not save their lives.

Mr. G. Wedgood stated that on the 1st March last his father took possession of "Bat's Farm," Hamsey Green, of Mr. Stevens, when his father paid plaintiff £32 for the feed of the lambs up to that time. As, however, Mr. Rigden would not pay the money afterwards, they applied to Mr. Stevens, and the money was returned. The lambs were in very poor condition at this time, and eight of them died during the month before they were taken away.

By his Lordship—There was plenty of feed for them on the farm, independent of the stack of hay mentioned.

Mr. G. Horsey, a farmer at Warlingham, was called as a witness to the bad condition of the lambs when they were on the plaintiff's farm.

Joseph Gatland, labourer, in the service of Mr. Wedgwood, Mr. G. Smith, of Warlingham Court Farm, Mr. R. Jarvis, Mr. R. W. Fuller, land surveyor and estate agent, of Croydon (who valued the stock on the farm when Mr. Stevens left). Mr. P. T. Holdsworth, Henry Cowler, labourer, William Alderson (bailiff to Mr. Thompson, at Brasted, near Sevenoaks), and John Ashton (veterinary surgeon), were called as witnesses in support of the plaintiff's case. Their evidence went to show that the lambs in question had been well managed by Mr. Stevens, that they were suffering from "the marsh disease," which Mr. Ashton (the veterinary surgeon) considered was incurable, as worms in sheep were, he thought, brought on by atmospheric causes, and did not so much depend upon the description of food given to the animals.

This was the plaintiff's case.

Mr. Prentice then addressed the jury for the defence, and called

Mr. John Stanbridge, farmer and valuer, residing at Worth, Sussex, who stated that he had for twenty years been engaged for gentlemen in the letting out of their sheep. In August last he made an agreement with plaintiff for the care of a number of lambs belonging to Mr. Rigden, which went there on the first September. He saw them on Hamsey Common, at Warlingham, in October; they then seemed to be going on well. He again saw them about five or six weeks after, when their value was much less per head. They were feeding on turnips, with much top but very little bottom to them. He then complained to the shepherd of plaintiff, that his master was killing the sheep for the benefit of his own land. The lambs were close-folded at the time, which always caused a bad cough. The land was very clayey.

His Lordship.—There is clay on one side of the road and chalk on the other, for I happen to know the district.

Witness continued.—The only fodder they had at night was oat straw, which was the worst thing they could have to eat. He complained to the shepherd about this, but Mr. Stevens was not at home; he came to Mr. Horsey's after him. Plaintiff said the sheep had the same complaint as those last year, to which witness replied, "Then the year before it was not your fault; but this year I can prove that they were sound and honest sheep." He asked witness to take them away, to which he (witness) answered that it was no use, when Mr. Stevens walked away, and said no more then. Witness also told the shepherd that the sheep ought to have some hay, but the man said his master would not allow him to give them any of it from the stack. Witness went to the farm two or three times; the last time there was only a boy with them. They had then eaten the turnips all up. He should think the lambs were then not worth more than 13*s.* or 14*s.* per head; he thought the loss of so many of the lambs and their bad condition was owing to bad management, as he had described.

Cross-examined.—Those that died the year before had "the marsh disease," or had got worms in the throat. They were in bad condition when Mr. Stevens took them, and therefore their deaths were caused by no fault of his. When he first saw the lambs of Mr. Rigden's they were on the common, and they then looked capitally. Had not examined any of the carcases, but was told that they had got worms in them.

Mr. Henry Ridgen, the defendant, stated that he farmed about 900 acres of land, near Romney Marsh, in Kent. Had during the last twenty years had plenty of lambs. Never bred less than 1000 or 1200 every year. The marsh (near where he lived) would not do for lambs in the winter, and he was in the habit of putting them out at different farmers. The lambs sent to Mr. Stevens were good, sound, and healthy lambs. Other lambs of the same kind were sent to as many as fifteen or sixteen different people. The others came back in excellent condition. The loss in each case did not exceed more than three per cent., which was very low indeed. He had seen the 180 lambs at Godstone on their way to Mr. Stevens's, and they then appeared in good condition. On the 24th of January he had seen the lambs on the common, when he told the shepherd that the lambs were starved, as if they had worms they would cough; to which Mr. Stevens answered that they coughed at night and not in the day. He told Mr. Stevens that as the lambs were of no use to him in their present state, he had better keep them himself. On the 23d of February defendant and a Mr. Bates from Romney Marsh went again to Mr. Stevens, and saw the lambs were very closely folded, and complained to the shepherd, who said he had told his master so, but he would not buy any more hurdles. That mode of treatment, in his opinion, was highly improper. The reason he did not take the lambs away then was, because he had no room for them at home. He did not see the lambs again until they came home in April following. They were in such a weakly state that some died in coming home, and the others (about 117) were the worst he ever saw in his life. They had evidently been starved. The lambs sent to the other places came home perfectly well. Some died after they came from Mr. Stevens's; he had examined them after death, and found that not one was afflicted with worms; indeed, there was no other sign than that of starvation, likely to have been the cause of death. The lambs were valued by him at £1 1*s*. each, when sent to Mr. Stevens's, and if proper care had been taken of them, by April following, if "well done," they would have been worth £2. Instead, when they came home, they were unsaleable, but he put them at 15*s*. each. He had fed them up since, and thought they might now be worth £1 5*s*.

Cross-examined.—The lambs come from two places; one near Hythe, and the other near Romney Marsh. Sheep, if kept in the Marsh constantly, were subject to diarrhœa, but graziers removed them in time, so as not to give them a chance to die. He had not put the price rather high, considering the price of mutton. He knew that many of the lambs had died when he went to Mr. Stevens, and he had seen worms in one of the carcases. He knew the lambs were on the common after they left the farm, before he took them away; that was not a right thing, but it was as good food as they had had. He had expected that the lambs were to be fed upon hay, although the price to be paid was only 7*s*. per head for the seven months, but he had written a letter to Mr. Stanbridge, to the effect that he did not confine himself to price.

W. Reuben, shepherd to Mr. Rigden, deposed that the lambs he had left at the Godstone station to go to Mr. Stevens's were all alike, and he had never seen them better than last autumn. On the 6th of April he again saw 117 of them, on Hamsey Common; they were very weak. He thought starvation was the cause of their condition. He was obliged to hire a horse and cart to convey them to the station, and was obliged to have two wagons at Ashford to convey them home.

Isaac Bates, a grazier, at Snargate, Romney Marsh, stated that he had been accustomed to the breeding of lambs for several years. He had a number of lambs put out on Mr. Horsey's farm, near the plaintiff's; and one day when he went to look at them he also looked at Mr. Rigden's at Mr. Stevens's, and he attributed their bad condition to the same canse as Mr. Rigden did.

Mr. T. Page, farmer, of Dorking, stated that on the 31st of August he received 200 lambs from Mr. Rigden to keep. He only lost four of them. They did not appear affected with any kind of disease.

Mr. R. Hobgen, farmer and grazier, and also a veterinary surgeon, in Kent, near Mr. Rigden's, stated that the lambs of the last autumn were very fine indeed; in fact, no one in the parish had so good a flock as Mr. Rigden; when they came back there was nothing but skin and wool upon them. They had no flesh at all, and had the appearance of having been starved. They were much improved since, but would now never be made into sheep.

Thomas Kingsmill, a shepherd in Mr. Rigden's employ, stated that his master's lambs last autumn were rather better than of the average quality. Those returned from the plaintiff in the spring were very poor indeed.

Mr. Prentice and *Mr. Lush* having respectively addressed the jury for their respective clients,

His Lordship summed up, and the jury found a verdict for plaintiff for £42 in the first action, and for defendant in the second. Mr. Stevens, therefore, obtained a verdict in both actions.—*North British Agriculturist.*

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