THE

VETERINARY RECORD,

AND

TRANSACTIONS

OF THE

VETERINARY MEDICAL ASSOCIATION.

EDITED BY

PROFESSORS SPOONER, SIMONDS, AND MORTON,

ROYAL VETERINARY COLLEGE.

VOLUME I.

ILLUSTRATED BY ENGRAVINGS AND WOODCUTS.

"PRÆSTAT IN OMNIBUS EXPERIENTIAM STRICTÈ PREMERE; UT ET, NATURÆ ORDINEM SEQUI."

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THE

VETERINARY RECORD, &c.

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ROYAL VETERINARY COLLEGE.

THE Medical Session commenced at this Institution on Monday, November 11th, 1844. The Introductory Address was delivered by Mr. Morton. The theatre was unusually full, and many practitioners of veterinary medicine were present.

The lecturer, after offering some admonitory advice to the student, and placing before him the course of study to be adopted, proceeded cursorily to review the so-called elements of the ancients,—fire, air, earth, and water. After describing the constituents of the three last named, and exhibiting their characteristic properties, he shewed how they exist in organic substances, making up the varied principles found both in vegetables and animals, the atmosphere being the mysterious bond that connects the two kingdoms of nature, the organic and inorganic; one of the links of the chain that binds Prometheus to the rock. From the air plants derive their sustenance and support; on these the herbivora feed, which become food for the carnivora, and thus the animal organism generates not a single principle. The elementary substances are first absorbed and assimilated by vegetables, whence result certain compound bodies designated proximate principles; and among these *proteine* and its compounds occupy a prominent place.

According to Professor Mulder, its discoverer, proteine is found in various parts of plants—in the roots, stems, leaves, and fruit, and also the sap; and in three different conditions, one soluble in water, the other insoluble in this menstruum, and the third soluble in alcohol. Its empirical formula is

$$C_{40}, H_{62}, N_{10}, O_{12}.$$

Thus shewing what a large number of atoms are congregated to-

gether to form a single proximate principle, and how disposed the same is to undergo chemical change when certain conditional circumstances are removed; whence result new compounds, most of them being binary in their nature.

Rarely is it the case that proteine exists pure in vegetables: it is united with phosphorus and sulphur, but the manner of combination is ill understood. The compounds there formed are, vegetable albumen, vegetable fibrine, and vegetable caseine, with gluten. The analogies of these in the animal are, animal fibrine, albumen, and caseine; and the difference between the principles are very minute proportions of sulphur and phosphorus.

These principles or compounds of proteine being found in the blood, it might be anticipated that other parts of the frame would be constituted of them, and it has been ascertained that animal fibre is a proteine compound: in the brain, liver, kidneys, and many other organs, the same compound is also met with under the form of albumen; and we find a similar one to exist in horns, nails, hairs, and cuticle. These principles are, in fact, the bases of the nitrogenized constituents of the animal frame; the *neutral quaternary organic principles* of Dumas and Boussingault.

In contradistinction to these, in the vegetable are met with what are designated *ternary compounds;* and under this head are placed woody fibre, starch, or dextrine, and the varieties of sugar, with certain bodies obtained from these; all of which are made up of carbon, hydrogen, and oxygen, varying not very considerably in the quantities of each, yet, their molecules being differently arranged, dissimilar compounds are formed; still they are easily convertible the one into the other.

These are partaken of by animals, and either undergo combustion within the living organism, to keep up the heat of the body, which is essential to life; or their elements are deposited in the form of fat, the supply of oxygen not being sufficient for the first named purpose, or nature not requiring it.

"The stall fed animal," says Liebig, "eats, and reposes merely for digestion. It devours, in the shape of nitrogenized compounds, far more food than is required for reproduction or the supply of waste alone; and, at the same time, it eats far more of substances devoid of nitrogen than is necessary merely to support respiration, and to keep up animal heat. Want of exercise and

diminished cooling are equivalent to a deficient supply of oxygen; for when these circumstances occur, the animal absorbs much less oxygen than is required to convert into carbonic acid the carbon of the substances destined for respiration. Only a small part of the excess of carbon thus occasioned is expelled from the body of the horse and ox in the form of hippuric acid; and all the remainder is employed in the production of a substance which, in a normal state, only occurs in small quantity, as a constituent of the nerves and brain: this substance is *fat*."

Again, he says, "It is evident that the formation of fat in the animal body is the result of a want of due proportion between the food taken into the stomach and the oxygen absorbed by the lungs and skin."

This has led him to divide all alimentary substances into two classes, under the heads of *Elements of Nutrition*, and *Elements of Respiration*.

On the other hand, Dumas asserts, that fat, like all other animal principles, is generated by vegetables; "that they pass ready formed from them into the bodies of animals, that there they may either be burnt immediately, in order to supply the heat which the animal requires, or that they may be laid up in the tissues more or less modified, to serve as a reserve for respiration. With a view to verify this idea, we instituted many experiments, which all led us to recognise in the food of the herbivorous animals subjected to experiment, quantities of fatty matter superior to those found in the milk of the milch-cow, for example, or stored up in the tissues of the ox put up to fatten. By keeping an account of the fatty matter contained in the dung, and adding it to the quantity fixed, the sum obtained is still inferior to the quantity of fat which analysis discovers in the food of the animal. With these facts before us, it appeared to us natural to admit that animals assimilated directly the fatty substances of vegetables without modifying them at all, or modifying them but little."

The truth is, the formation of fat in animals has awakened a controversy between the two great chemists of Germany and France,—Liebig and Dumas. Liebig is of opinion, as has been already stated, that graminivorous animals *produce* fat from the elements of starch or sugar partaken of by them, these NOT being burnt up by the oxygen taken in during respiration; while Dumas,

with whom is associated Boussingault, considers it a fixed rule that animals produce neither fat nor any other substance capable of ministering to nutrition, but that every principle exists ready formed in the vegetables on which the animals feed: and certainly the multiplied and delicate analysis they have made of hay, maize, and other provender given to fatten cattle, fowls, &c., prove the existence of a substance closely resembling fat, as one of their constituents.

They contend that the fatty matters are elaborated in the leaves of plants in the form of a waxy principle, which, passing into the bodies of the hebivora, undergoes a partial oxidation, whence result the stearic and oleic acids met with in tallow. In carnivorous animals these are oxidised anew, and margaric acid is formed, which characterises their fat. Lastly, by a still higher oxidation, the volatile fat acids are formed which appear in the blood and perspiration.

This difference of opinion appears likely to be set at rest by a discovery lately made by Pelouge and Gelis, which is, that butyric acid—an acid hitherto derived from animal fat—may be formed by modifying the fermentation of sugar. This particular result is brought about by the presence of caseine in the matter undergoing the process of fermentation, and "the change of sugar into butyric acid takes place without any considerable increase of temperature, and without the presence of those energetic substances which could destroy the equilibrium or affect the vitality of the animal tissues; while this transformation is effected under very simple conditions, and in substances employed by Nature herself."

Now, if we associate with this the fact, that farinaceous matters undergo a ready conversion into a saccharine principle, we have a clue to explain how it is that these substances become so fattening to animals as it is well known they do.

The lecturer next proceeded to shew how digestion and other functions carried on in the animal economy receive elucidation by an application of chemical laws; also the formation of the various secretions, with their uses, particularly referring to bile and urine. Of the first of these he remarked:—

The use of bile in the living organism has been the subject of

much inquiry. That it is of considerable importance viewed as a secretion from the blood, by which this fluid becomes depurated, and also from the part it subsequently performs in the animal economy, since it has not been met with in the egesta, is unquestionable.

It has been found, that, when bile has been prevented flowing into the bowels by the formation of a fistula opening outwards, animals have become emaciated, and ultimately died. On the other hand, when the function of the liver is interfered with in a peculiar way, that fat in an undue quantity is deposited. This is seen in the enlarged liver of geese, for making the *pâté de fois gras*, and in the first stages of *rot* in sheep. It is evident, therefore, that the presence or non-presence of bile has something to do with the production of fat.

Dr. Kemp has lately advanced some ingenious views on this subject. He concurs with Liebig, that animal fat is formed by the assimilation of the non-nitrogenized portions of the food, of which starch may be taken as the type. It is, however, he says, obscure, since the composition of starch and fat is not the same, there being a large excess of oxygen in the first named when compared with the last; this element, therefore, must enter into combination in a manner as yet not understood. If the whole of the assimilated portion of the food pass through the thoracic duct into the system, it is evident that, in the chyle, we must have all that is necessary for the fresh deposit continually going on in the frame, whether of tissues or fat. Now the analysis of this fluid by Marcet and Macaire proves its elements to be so proportioned as to represent *proteine* in combination with another body capable of forming fats, and legitimately expressed by an empirical formula containing the elements of starch and *bile*. The presence of this last-named fluid appears to be necessary, otherwise the starch would be split up into binary forms, as carbonic oxide and acid, or carburetted hydrogen, as seen in hoven; or it would form sugar, as in diabetes.

It hence follows, that if proteine be withdrawn—that which constitutes the basis of the nitrogenized parts of the frame—the other principle must be employed for the formation of fat. Dr. Kemp concludes, "that in graminivorous animals, the bile, during the digestive operation, is deprived of its nitrogen in the form of

ammonia, absorbs oxygen, then enters into combination with the amylaceous parts of the food, and is thus absorbed, together with the proteine compounds. Further, that the object of the amylaceous portion of the food is not immediately to form fat, but, by combination with bile, to produce a compound containing the elements of fat, with an excess of oxygen for cartilage, gelatine, and other allied structures, which may be represented by proteine plus oxygen."

A clue is thus obtained to the oft repeated assertion, that the liver has to do with the deposition of fat in the body; and we may perhaps trace the formation of the fatty acids in butter and the production of milk to the same cause.

In reference to urine, he observed, that this fluid may be said to contain the soluble constituents of the ashes of the elements, the fæces the insoluble. This secretion in man has an acid reaction, the cause of which is still disputed. In the horse and cow it is alkaline, depending on the presence of the hippurate, benzoate, or carbonate of soda or potash. And we need not be at any loss to account for the alkalinity of this fluid in those animals, if we only bear in mind the character of the food they eat, it abounding with the carbonate of soda or potash.

In the urine of the herbivora the phosphates are seldom met with; but in the graminivora they may be present, as the soluble phosphates exist in grain; and these, too, have an alkaline reaction.

Thus we trace the character of the secretions to the nature of the food of animals.

According to Liebig, the organic acids in the urine of man and the carnivora are the *uric* and *hippuric*, with another nitrogenous matter (probably the colouring principle of urine), which latter substance, upon the access of air, resolves itself into acetic acid and a substance resembling resin.

The hippuric acid he considers a product of the organism, to the formation of which the elements of the nitrogenous aliments give birth. By decomposition it is resolved into benzoic acid; and the same metamorphosis takes place when the horse or cow is exercised or put to labour, since in both of these animals this acid is found.

Hippuric acid requires about 400 times its weight of cold water to cause it to undergo solution; it therefore cannot find its way

into the urine in any quantity, unless combined with a base; and this, in the majority of instances, is soda.

The proportion of this acid to the uric, in the urine of the human subject, has been supposed, by Liebig, to be equal. Others have doubted this, finding only one-third hippuric acid; but as this acid is formed from the nitrogenized constituents of the food, it is very likely to vary in quantity.

From the large quantity of carbon existing in hippuric acid, it has been thought that, besides its being the medium by which nitrogen is eliminated from the system, it also aids in the excretion of carbon, and thus compensates for the liver when its functions are impaired. The composition of dry hippuric acid, and the analysis, by Dr. Kemp, of the organic constituent of human bile, when placed in juxta-position, may render this clearer.

	Bile.	Hippuric Acid.
Carbon -	- 68·40	63·93
Nitrogen -	- 3·44	8·21
Hydrogen -	- 10·13	4·64
Oxygen -	- 18·03	23·22
	100	100

May not this throw some light on the disease designated red-water, or black-water, in cattle? In its first stages it is manifestedly connected with derangement of the digestive organs; and the liver soon becomes involved, proved by the fact that we have diarrhœa present. The urine now becomes dark-coloured, possessing a porter-like appearance; and then it is that the kidneys become *functionally* deranged, from their having to separate more than their natural quantity of carbon from the blood—this arising from the liver being no longer able to play its part; and at length they are *organically* diseased, and the impure blood, in an almost unchanged form, is allowed to pass through them.

When urine has become excreted, it quickly undergoes change, and the salts of ammonia are formed. This accounts for the ammonia met with in ill-ventilated stables; and its production is assigned to the urea, which, combining with the elements of water, forms the carbonate of ammonia disengaged.

This change is the result of decomposition by contact or catalysis. With the urea is excreted an albuminous or mucous substance, which, the moment it comes into contact with the air, undergoes a change, and becomes a ferment.

The following arrangement will render this more clear:—

1 Urea	-	-	-	-	C_2, N_2, O_2, H_4=60
2 Water	-	-	-	-	O_2, H_2=18
2 Carbonate of ammonia				-	C_2, N_2, O_4, H_6=78

It is true this compound of ammonia is not an energetic poison, but it may serve to render other deleterious compounds more volatile, while, at any rate, its presence in the atmosphere, to any amount, cannot be salutary. It has been assigned as the cause of ophthalmia by some persons, and others have gone so far as to attribute glanders to its existence.

Mr. Morton then went on to shew how the origin of certain diseases may be traced to chemical changes which take place; adducing more especially those involving the digestive apparatus, the urinary organs, &c., and how necessary a knowledge of chemistry is to combat them. Also how indispensable its principles are in the combination of therapeutic substances; in the counteracting of the effects of poisons, or the employment of antidotes, and also for the detection of the particular agent that has been the cause of death. Further, that they are essential to the veterinary surgeon in the purchase of the drugs and chemicals he employs, so as to prevent imposition and disappointment.

The lecture was closed by an attempt to remove an erroneous impression, that, to acquire a knowledge of the principles of chemistry, elaborate and expensive apparatus is necessary; and an earnest appeal was made to the student to acquire habits of industry, and a love of persevering research, the spring-time of life being the period when these are both most profitably and most easily acquired. "For 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."

The bust of Professor Spooner, in marble, was now brought into the theatre. Its execution reflects great credit on the artist, and the likeness is an admirable one. The pedestal bore the following inscription —

PRESENTED TO
CHARLES SPOONER, Esq.
PROFESSOR OF ANATOMY AND PHYSIOLOGY
AT THE ROYAL VETERINARY COLLEGE,
BY HIS PUPILS.

A TESTIMONIAL IN ADMIRATION OF HIS TALENTS,
A MARK OF THEIR ESTEEM AND REGARD,
AND A GRATEFUL ACKNOWLEDGMENT
OF HIS UNWEARIED ASSIDUITY.

SESSION 1843-4.

The presentation of it devolved on Mr. Robb, one of the senior students, who nobly performed his task. There was a warmth and a sincerity in his address which impressed every one present, and caused it to be received with repeated acclamations.

After some congratulatory and introductory observations referring to the numerous auditory with which he was surrounded, Mr. Robb proceeded nearly as follows :—

Gentlemen,—The honour of representing the body of students on this occasion has been conferred on me, and I assure you it is a duty which is highly gratifying and agreeable to me. Nevertheless, I could have wished that it had been reserved for those who gave the first impulse to the desire of tendering to Professor Spooner our most grateful acknowledgments for the important assistance we have received from him. I state but the truth when I assert, that every student exhibited a disposition to carry out the intention of the suggesters as soon as communicated, and it was transmitted from one to another like the electric fluid traversing the elements of matter. It was proposed and responded to almost in the same moment of time by all—by those of you who are so happy as to be Englishmen—by those who love their own blue mountains of Scotland—and by the sons of green Erin.

It is most fortunate for me that you are all well acquainted with Professor Spooner's high qualifications, with our deep obligations to him, and more especially with the indefatigable yet unwearied exertions made by him for our benefit during the last session. It

may be said, that the proficiency of the student redounds greatly to the honour of the teacher: granted. But this kind of reasoning may be adopted with regard to every good and benevolent action. He is truly a fortunate man, and an excellent member of society, whose own interests are so intimately connected with the good of others. Without fear of contradiction I state, that Professor Spooner, as a teacher, is much and deeply interested in the onward progress of his students, both in and out of the lecture-room. Nor must I pass by in silence, nor suffer malignant forgetfulness to lose sight of the readiness with which he at all times communicates information. Who among us has ever in vain applied to him? Do we not all know that the most simple, the most trifling question connected with our studies here, is sufficient at any time to arrest his attention, and to cause him to stand still amid groups of listening students, and to traverse, over and over again, the same ground he has so often gone over before? His high professional attainments, and the facility he has of communicating to others the knowledge he himself possesses, are well known to us, and to the great body of the profession. Even descriptive anatomy—that dry subject—is rendered fascinating by his manner of treating it; and by a clear and spontaneous flow of language, and by numerous allusions to physiology and pathology, he adds beauty and interest to the edifice, while he strictly preserves its stability by the clearness and precision of his demonstrations.

These, Gentlemen, are some of Professor Spooner's accomplishments, which are of inestimable value to us and to this school. Nor are they less so, when we consider, that many come here for instruction who have but very crude and imperfect ideas of that assemblage or bundle of qualities which constitute what we call a horse, and who, notwithstanding all their anxious desires, may find some difficulty in applying the principles of medicine to the treatment of an animal with whom they are so indifferently acquainted. And they are no mean accomplishments, when we remember, that many resort to this profession whose minds have not been trained and inured to habits of hard study and of deep reflection, and who sometimes venture not beyond these walls for that information which is absolutely necessary to the successful practice of their profession. I wish, Gentlemen, I could recount to you his private virtues, for I know they are many.

Nor let it be considered as any detraction from what I have said of him, that much that I have stated is applicable likewise to his honourable and talented colleagues who now surround him.

The winter campaign has been opened, and our teachers are about to resume their arduous duties. Let us do our duty to them. Let them not contemplate, as often does the industrious and disappointed husbandman, his labours wasted on a barren soil; nor let the good seed now about to be sown be choaked by a profusion of noxious weeds. Our talented professor of chemistry has this day ably and eloquently delivered the introductory lecture. He has shewn us the ground—he has exhibited to us a bird's-eye view of the battle-field, and of the position and strength of the enemy with which we have to contend; and, like some ancient warrior in front of his army, knowing full well the important time when to harangue his soldiers, he urges us on to deeds of noble daring for the promotion of science. Nor has he been unmindful of that essential branch of natural philosophy which it is his peculiar province to teach, and which, doubtless, he would do with even greater advantage to us, and certainly more satisfaction and ease to himself, but for the want of certain arrangements and conveniences with which he will, probably, be furnished at no very remote period; when chemistry shall be more highly appreciated, and the light it is shedding on physiology and pathology more generally acknowledged.

And now, Sir—Professor Spooner—having been delegated by my fellow-students to present to you this marble bust, in their name I most respectfully beg your acceptance of it—to be kept by you and your successors for ever, as a memorial that one, at least, of your family, in times gone by, stood high and pre-eminently distinguished in that position in life which he had been destined to fill, and was esteemed and admired for his high talents and attainments by those who had been placed in a most intimate and important connexion with him. This bust, Sir, is not made of any very precious material; it is, in fact, constituted of very common ingredients. We regret that it is not of greater intrinsic value; but, Sir, you will remember, that the blessings of the Gods were not so effectually secured by costly as by pure oblations;—that the crown of rosemary and of myrtle, with consecrated cake and crackling salt, are not less acceptable than a great slaughter

of sheep, if but an innocent hand touches the altar; and we know, Sir, that you will take into consideration the *animus* with which this offering has been presented.

Mr. Spooner, in a comparatively few but well chosen and expressive words, acknowledged the high compliment that had been conferred on him by his pupils. It was to him a proud day, when he was assured, in the handsome manner he had been, that his endeavours to assist the student in the acquirement of knowledge had been successful, and were so much appreciated. Mr. Robb had been pleased, as the representative of the class, to express himself in most glowing and flattering language; yet, although he confessed he felt at the present moment exceedingly gratified, indeed, so much so that his feelings were not to be expressed by words, still he could not believe that he merited all the encomiums that had been passed on him. He had but done his duty; his future efforts, however, should give proof how highly he estimated the presentation, which had been made to him, and, as it was in a material that is imperishable, so should be his gratitude.

Professor Sewell then stated, that the disease *rabies canina*, erroneously called hydrophobia in the lower animals, had for a long time been a subject of more than ordinary interest and inquiry with him; and with a view to further the investigation of the malady, more especially for the finding out a means of cure, he would readily give the sum of FIFTY GUINEAS, or a GOLD MEDAL of that value, to any qualified graduate of the Royal College of Veterinary Surgeons who proved successful in the cure of a well-attested case of this disease in any animal by the following process of transfusion:—

Take away from any vein, which the restless state of the animal renders most convenient to open, as much blood (by measurement) as it can bear short of causing death; then return, by transfusion, one-half of the quantity, or less rather than more (so as to avoid the consequences of repletion), of the blood of a healthy animal of the *same* species; then secure the vein by ligature or other means, and leave the animal undisturbed, watching the result.

Horses, cattle, and sheep, are preferable subjects for this ex-

periment; sheep especially so, from their being more easily controlled and secured by the fewest number of assistants.

The operation is simple, and easily performed, should the animal not make continued and violent struggles to release itself from confinement, as is sometimes the case when under any other operation. In ordinary cases, it is no more trouble than the withdrawing of blood from the jugular vein; and it has been done in a standing position on several occasions; in some instances with a view to eradicate disease, and in others to ascertain if the blood of a diseased animal would produce the same malady in another.

Any veterinary surgeon knowing an animal or animals to have been bitten by a rabid dog, and desirous of trying the experiment, shall have the transfusion apparatus sent to him, so that it may be in readiness when the disease manifests itself.

Mr. Sewell said, that he had communicated his wishes to the council of the Royal English Agricultural Society, so as to obtain the co-operation of its members in carrying out this inquiry; and he would willingly pay every expense connected with sending up to the College, from any part of the country, such sheep, lambs, or calves, as may, unfortunately, have been bitten by a rabid dog.

He mentioned small ruminating animals, only as being more easily managed when labouring under the worst or more violent symptoms of the disease than horses, cows, or bullocks, which under such circumstances are not only almost unmanageable, but highly dangerous; and when such were intended to be sent to him, he would feel favoured by a previous notice by letter. The animals thus requested might be conveyed in the ordinary railway trucks or cars, or sent by canal boats. A sheep or two might be put into a crate used for earthenware, and the expense of engaging an entire car be thus obviated; while the animals would be less annoying to the railway servants. Should the disease shew itself on the journey, the animals should be tied by the legs, and be well littered with straw. Net muzzles might be worn, or sent along with the animals in order to be in readiness. Mr. Sewell has, however, never had any fear of rabies being produced by the bite of any animals but those of a carnivorous kind, including swine as such. Of all the numerous cases of canine madness he had seen in horses and other animals, he had not observed a single instance in which they were unable or unwilling to drink water

freely. He had always found the disease commence (with a single exception) from the third to the sixth week after the bite had been inflicted. If, therefore, it should not manifest itself in the stock sent to him by that time, he would return the animals to their respective owners, free of expense, if requested to do so.

In the evening of the same day the Eighth Anniversary Meeting of the Veterinary Medical Association was holden at the Freemasons' Tavern.

The President, Professor Spooner, presided.

Among the visitors were J. Curtis, E. Nursey, R. Orton, J. Quick, J. Reddish, and Erasmus Wilson, Esquires.

The veterinary surgeons present were Messrs. G. Balls, W. W. Barth, E. Charles, W. Ernes, W. Field, J. Field, R. L. Hunt, G. A. Lepper, F. W. Moss, C. T. Shorten, W. Smith, J. Turner, W. Youatt, and the Treasurer and Secretary. A large number of students was also present.

The Secretary read the following

REPORT FOR THE EIGHTH SESSION, 1843-4.

It is an ancient and time-honoured act to offer with the return of the anniversary of an institution a retrospective address. It shews what onward progress has been made; or, should the reverse have obtained, it excites to the seeking out of the cause of retrocession, and the adoption of such measures as will prevent its continuance.

In my last I urged the necessity of perseverance; and did I not do well?

> "There is no remedy for time misspent,
> No healing for the waste of idleness,
> Whose very languor is a punishment
> Heavier than active souls can feel or guess."

The similarity of these addresses may, perhaps, have rendered them insipid, and awakened a wish that another pen were called into requisition to indite them. The performance of his duty is the only apology the writer has to offer for thus obtruding himself; and at once, without further preface, he proceeds to give a review of the past, adopting the like divisions, and in the same order, as have

been usually made; feeling assured that, at the close, it will be found that the past session of the Veterinary Medical Association has not been less fruitful than any which has preceded it.

Essays.

The pages of *The Transactions* have been enriched by an elaborate Essay on the Skin, by Mr. Erasmus Wilson, read on the previous session; but press of matter prevented its introduction in a volume much enlarged beyond its prescribed limits. To him we are likewise indebted for an account of the supposed manner in which pus becomes concreted and compressed into forms, when imprisoned and retained within a cavity. It had reference to a case by Mr. Hunt, that appeared in a previous volume of *The Transactions*.

Next in importance will come the Prize Thesis, by Mr. Pearson Ferguson, on the Anatomy and Physiology of the Eye of the Horse. He is much to be commended for his praiseworthy zeal, the large silver medal having been borne off by him during two consecutive sessions; while it affords a proof of the ardour with which he pursues his professional avocation, from which both profit and honour cannot fail to redound to him.

This was succeeded by the completion of the Secretary's Essay on Calculous Concretions in our domesticated Animals, which, if it contained nothing new, may at least lay claim to this,—it concentrates many highly interesting and valuable illustrative cases scattered throughout the pages both of the *Proceedings* and *Transactions of the Association*; and he thus publicly acknowledges the many communications he received from members of the profession, by which the worth of the thesis was considerably enhanced.

It is gratifying to know, that an important division of the education of the veterinary student, namely, the diseases of cattle, sheep, &c., which at one time found no place, and but little esteem, now assumes a prominent position. The early part of the session witnessed the introduction of Essays on Blackwater in Cattle, by Mr. J. A. Hughes, and Mammitis in the Cow, by Mr. A. Lepper. These were followed by papers on Hepatitis in the Horse, by Mr. W. Johnson; on Pneumonia, by Mr. J. H. Hill; on Diseases of the Kidneys, by Mr. W. S. Harris; on Broken

KNEES, by Mr. A. B. Henderson; ON DISEASES OF THE MOUTH, by Mr. H. Wheeler; ON OPEN JOINTS, by Mr. H. Emms; ON THE ACTION OF CALOMEL, by Mr. T. Leech; and ON QUITTOR, by Mr. W. Ernes, who, after ably reviewing the different modes had recourse to, both by continental and English practitioners, for effecting a cure of this too frequently annoying and protracted disease, advocated, in extreme or severe cases, the entire ablation of the cartilage, lucidly detailing the method by which it may be extirpated, and adducing several successful cases confirmative of his views. To Mr. Ernes we are likewise indebted for the translation of several interesting articles from *La Clinique* and *Recueil de Vétérinaire*. This division embraces a larger amount than has been usually ranged under this head, and in which there is much variety of subject, if no novelty.

The Council have to regret the fewness of the competitors for the prizes. From practitioners only one essay has been received, subject "The Minute Anatomy of the several Tissues which form the connecting Medium between the Coffin-bone and the Crust—their Elasticity or Non-Elasticity, &c. to be especially considered." The author, although in the anatomical description clear, full, and correct, lost sight of several important physiological particulars, and by no means met the wishes and intentions of the propounder of the theme. It was, therefore, resolved that the same subject should be given for the present session, the author of the received essay being at liberty to make any alterations or additions he might please.

Two essays were received from students. One was most unfortunately and as unaccountably lost; the other having been carefully perused by the Council, was unanimously deemed worthy of the silver medal. On opening the sealed envelope, its author was ascertained to be Mr. J. K. Lord.

COMMUNICATIONS.

Mr. BATCHELDER communicated the history of a case of lameness, the cause of which was obscure, but arising, as he conceived, from a branch of the metacarpal artery taking a spiral course over the posterior part of the perforatus tendon: its extirpation, at any rate, was followed by a removal of the pain and lameness.

The cases of hypertrophy, with stricture of the œsophagus, by Mr. W. Smith, and of atrophy of the same tube, with loss of power of the muscles of the larynx, by Mr. W. Stanley, may be associated together, being rare deviations from normal condition. The inhumation of a horse for sixteen days, by Mr. J. J. Hughes, and the fracture of both femurs during an operation, by M. Desfarges, are also both unusual occurrences. The recital of the last-named case elicited from Mr. Ferguson an instance of the head of the femur being broken off, and the neck of the bone entering the acetabulum, which occurred in the practice of M. Leblanc.

The case of rupture of the bladder and stomach of a race-horse, by Mr. J. Markham, was likewise most extraordinary.

The cases of poisoning of horses by arsenical fumes, by Mr. H. Rickard; of a horse by savin, by Mr. R. Hutton; of four bullocks by yew, by Mr. R. Read, with his view of the manner in which this vegetable poison acts; and of three greyhounds by nux vomica, or its alcaloid, strychnia, by Mr. J. F. Sewell, are replete with instruction.

The instances of pericarditis, and the pulmonary epizootic in oxen, by Mr. W. Robinson, with those of abscesses in the pulmonary vein and kidneys of a heifer, by Mr. R. Hudson; of ventral hernia in a cow, by Mr. Williamson; of long fœtal retention, by Mr. W. P. Toll; and of ascites in the same animal, by Mr. Chase, are proofs of the assistance pathology is receiving from this division of veterinary medicine, and how much has been lost from the long neglect it has experienced. Nor must the more than ordinarily interesting case of fatty liver in the ox, by Mr. R. Read, be forgotten; nor the instance of the like lardaceous deposit in the same gland of a sheep, by Mr. W. Thacker; from whom was also received an account of the mere insertion of a seton in the elbow for a tumour creating so much irritative fever as to cause death.

The cases of ruptured colon, by Mr. T. Taylor, and of intussusception, by Mr. A. Howarth, are by no means unusual lesions, yet occasional introduction of such may prove of service. But under the same category we cannot place the case of tuberculated liver with abscesses in the stomach and spleen, by Mr. W. Robinson; nor of a pedunculated tumour in the duodenum; nor the perfora-

tion of the palate by the elongation of a tooth, by Mr. J. Climenson, these being more rarely met with.

The instance of tetanus induced in a foal by retention of urine, as related by Mr. A. Green; of the operation for umbilical hernia being productive of the same disease, as stated by Mr. Simonds; of fracture of the sacrum also causing it, as communicated by Mr. Crawford; with two instances of contusions giving rise to it, as recorded by Mr. T. Darby and Mr. J. G. Webb, and the different modes of treatment advocated, serve to shew how many lesions may become a cause of this dreaded nervous affection, and how the *vis medicatrix* occasionally resists its fatal termination.

The action of the proximate principles of vegetables on the nervous system, as experimentally ascertained by Mr. Gresswell, although not strictly applicable to the horse, is not without interest.

A few of the "valuable contributions to veterinary pathology" by Mr. Purves, of the Honourable East India Company's Service, room has been found for, but a goodly number yet remains in reserve.

PATHOLOGICAL CONTRIBUTIONS.

Again, our friends did not forget us during the recess; and, at the commencement of our labours, we were enabled to place on the tables several most interesting morbid specimens, and during the session many additions were made to them.

From Mr. T. D. Broad was received the flattened trachea of a pony, which, during life, had manifested no inconvenience from this abnormal deviation. Likewise, a cow's tongue, considerably enlarged and indurated. Subsequently he forwarded a portion of the medulla spinalis of a colt, the theca of which was in a highly diseased state, and had been the cause of paralysis.

Mr. Woodger furnished several singularly disorganised parts. The trachea from which he had removed a portion, and in which the inflammation supervening had resulted in the formation of a large ossific tumour, is of somewhat rare occurrence. Allied to this were the small ossific tumours existing on the plexus cho-

roides of the brain, giving rise to phrenitis. The changes which had taken place in the larynx of a horse, and the strange rupture that occurred in the ileum of another, a similar one being exhibited at the same time by Mr. Tegg, are all deserving of notice.

From Mr. J. Tombs was received a portion of a softened and ruptured liver of a horse, accompanying the history of the case. Also the diseased bronchial glands of a cow. From Mr. T. A. Nobbs, a mass of carcinomatous tumours taken from the abdomen of a cow.

From Mr. W. Cox, a foal, whose urachus remained open, and although he endeavoured to close it, the little animal died from marasmus. A *post-mortem examination* shewed the kidneys to be much enlarged and in a highly diseased state.

From Mr. T. Harris, the heart of a horse in a strangely diseased state.

From Mr. Balls, a mass of disorganised viscera, taken from an animal which, during life, had shewn no indications of these changes taking place. The instance of atrophy of the postea spinatis muscle by him, and of extensive laceration of the same muscle by Mr. Howarth, may be classed together.

To Mr. J. Wells we are indebted for a specimen of ruptured stomach, and extensively diseased mesenteric glands, occurring in a cart-horse.

The case of irreducible ventral hernia in a mare, by Mr. J. Hutton, is instructive, since it shews how necessary a knowledge of anatomy is to the pathologist. The lesion that had taken place was described by Mr. Barth, and received further elucidation from several cases related by Mr. Simonds.

The acute and quickly fatal cases of laryngitis, communicated by Mr. G. Bainbridge, might well alarm the owners of the animals, since the aid of medicine was rendered nugatory by the severity of the attack.

Among the aids the veterinary surgeon receives in his endeavours to minister to "the ills that flesh is heir to"—the tools with which he works—should be first mentioned, the new form of tracheotomy tube, invented by the President, with a pair of cutting compasses to remove circular pieces of the trachea during the operation of tracheotomy.

The horse-hair seton, advocated and long used by Mr. Dickins, suggested an improvement in the seton-needle, so as more easily to carry the cord, by the Secretary; who also proposed a dilator for the urethra, when extracting a calculus from the bladder either by lithrotity or entire.

A buckle, to prevent the return of the uterus in cases of its inversion, was exhibited by Mr. T. Taylor.

The firing-iron has undergone a modification in its form, which is thought an improvement by the suggester, Mr. A. Green. Mr. Arnold, instrument-maker, presented a portable seton needle, and Mr. Read exhibited a lengthened elastic tube, which, he anticipated, would prove available in cases of fæcal accumulation in the larger intestines, or of distention by gaseous elimination. Some experiments being instituted with it by the President, they negatived his expectations.

Mr. W. G. Taylor proposed the dried amnion of the cow as a substitute for bladder, a material likely to prove available; and Mr. J. Lord has given an improved form for the neurotomy knife.

Our President, Mr. Spooner, has contributed largely during the session. The morbid parts brought before the members from time to time were described by him in his usual lucid manner, thus supplying any deficiency that may have been felt from a more detailed account not having been furnished by the contributors. The cases of glanders which occurred in the College Infirmary drew from him some terse and pointed observations on this fatal malady; as did the instance of strangulated mesenteric hernia, and other cases. In the debates, too, he frequently took part, and both elicited and communicated much practical and valuable information.

Nor has our Treasurer, Mr. Simonds, been slow in lending his valuable assistance. Many very interesting cases which occurred in his private practice were related by him: especially may reference be made to several instances of hernia occurring in the horse, cow, and pig; to cases of fracture, the result of muscular contraction, and to diseases of the teeth giving rise to symptoms similating glanders; while his removal of a cystic calculus by lithectasy is, it is believed, the first placed on the records of veterinary medicine. The lesions that had taken place in diseased parts taken

from animals, more particularly his province to dwell upon, were usually described by him.

The closing meeting of the session was a CONVERSAZIONE, held with a view more cordially and frequently to bring together the elder members of the profession and the students; one of the leading objects had in view at the formation of the Association, but never yet attained. The writer of this report has often pressed this subject, and solicited attention to it, at the same time almost fearing his motives would be misconstrued. But very few practitioners have ever deemed the hebdomadal meetings worthy their countenance and support: the reason is not known, since the reverse of this could not have failed to have profitted our common cause. At the meeting, now being referred to, although it was largely attended, yet the absence of many friends was regretted. It will, indeed, be long before its remembrance is effaced; and although it was the first attempt made, such was the success attending it, that its repetition is anticipated. The admirable description of the mange insect, so kindly and ably given by Mr. Erasmus Wilson, will ever distinguish it; while the readiness with which Mr. Ellis illustrated his ingenious mode of detecting arsenious acid in cases of poisoning by that mineral substance, and the assistance afforded by several other scientific friends, rendered it both an instructive and a pleasing termination to the session; the meeting possessing all the charm of novelty, while utility was neither sacrificed nor lost sight of.

To the LIBRARY many works have been presented, and it is extremely gratifying to report, that the editors of the "Recueil de Veterinaire" and "La Clinique Veterinaire" have solicited an exchange of journals. It was most gladly received, and as readily acquiesced in. Union by such bonds as these it will ever be the desire of the Council to strengthen and increase.

A large accession of members has taken place during the session, and certificates have been awarded to 45. Of fellowship, certificates have been presented to 10; and of these the Council have considered Mr. A. Lepper for his essay on Mammitis, Mr. W. Johnson for an essay on Hepatitis, and Mr. H. Emms' paper on Open Joints, deserving of the especial thanks of the Association, by which they rank as honorary fellows.

Since our last Anniversary the following of our members have

entered the lists with man's insatiate enemy, death, and have fallen in the unequal contest:—

Mr. J. Frampton, late of Swindon
Mr. J. A. Godwin, late of Birmingham
Mr. W. S. Harris, late of Bermuda
Mr. M. W. Lloyd, late of Madras
Mr. A. Sewell, late of London.

We, too, shall soon be called on to resign

"This earthly load of death,
Called life, which us from life doth sever."

May we, then——But I will let serious thought and meditation fill up the aspiration.

It has been said that "our life is a continual combat, in which we are successively conquerors and conquered, executioners and victims, frequently unjust, but more commonly oppressed; and all our intelligence, all our acts, and all our activity, have no other object but to dispute with that which surrounds us, and guard this frail existence, which is threatened at every step. Sometimes this war is with the elements; at others with the temperature, which is too hot or too cold; with the tempest, which crushes us beneath its force, or consumes us as a piece of chaff; with the monsters of the deep, which surprise us on the waters; with the beasts of the forest, which prowl about our dwellings; or with the insect, so small that it might be crushed beneath the nail, but so powerful in its invisible labour, that it works our blood into a state of fever, and consumes us with an intolerable itching: lastly, with our irregularities, our excesses, and our own suicidal acts.

"Like bubbles on the sea of matter borne,
They rise, they break, and to that sea return."

And is this all? Can reason do no more? Is this the whole of being? Is there no hereafter? Then is man most miserable. But—

"Whence this pleasing hope, this fond desire,
This longing after immortality?
Or whence this secret dread and inward horror
Of falling into nought? Why shrinks the soul
Back on herself, and startles at destruction?
'Tis the Divinity that stirs within us;
'Tis Heaven itself that points out an hereafter,
And intimates eternity to man."

And who can estimate the value of a soul immortal?

> "Behold this midnight glory; worlds on worlds;
> Amazing pomp! Redouble this amaze:
> Ten thousand add, and twice ten thousand more;
> Then weigh the whole; one soul outweighs them all,
> And calls th' astonishing magnificence
> Of unintelligent creation poor."

The Treasurer's accounts, which are appended, present a far more favourable appearance than they did at the close of the last session. Every outstanding liability has been disbursed, and a small balance remains on the year, besides many subscriptions being still due for the TRANSACTIONS.

In conclusion, it only remains for me to express my fervent hope, in which I feel assured I shall be joined by all present, that, with each returning Anniversary of the Veterinary Medical Association, reports of its continued and increasing progress towards the attainment of that for which it was established may be laid before you. Science should always be progressive; and, at the present day, each and every division is making most rapid advancement; and, surely, our's must not be permitted to stand still. All required to perfect what has been so nobly commenced is, a cordial co-operation amongst us. Let us, then, not slacken in well doing, but continue to emulate each other; being convinced that that which has truth for its end and object cannot ultimately fail of accomplishment. The diffusion of knowledge, like mercy, is twice blessed;

> "It blesses him that gives and him that takes;"

and who would not participate in so beneficent and so ennobling an act?

I have only to add, that the subjects chosen by the Council for the prize theses for the present session are, for Practitioners,

"*The Minute Anatomy of the several Tissues which form the connecting Medium between the Coffin-bone and the Crust; their* ELASTICITY *or* NON-ELASTICITY *to be especially considered; together with the varied* MOVEMENTS *resulting from that bond of union in the Foot of an*

adult Horse, BOTH AT HIS WORK AND DURING REST IN THE STABLE, *under all circumstances of sustaining the superincumbent weight, and otherwise."*

For Students,

The Anatomy, general and minute, of the Stomachs of the Ruminants; with the Physiology of Digestion.

W. J. T. MORTON,
Secretary.

THE TREASURER'S GENERAL ACCOUNT FOR THE EIGHTH SESSION, 1843-4.

Cr.	£	s.	d.
By Sale of *Transactions*	152	16	0
Members' Fees	111	6	0
Members' Fines....	3	19	6
Balance on Dinner..	0	2	0
	£268	3	6

Dr.	£	s.	d.
To Printing *Transactions*, &c.	106	12	0
Reporter (with balance of last year).....	60	0	0
Engraver.....	16	3	6
Postages, Bookings, &c.....	19	5	9
Books and Periodicals	10	2	6
—— binding of....	3	19	8
Prize Medal.....	3	3	0
Committee Meeting..	1	10	0
Carriage of Specimens	2	9	11
Gratuity to Porter (two years).....	4	4	0
Printing Certificates, &c.	4	5	0
Stationery	1	0	11
Salary to Secretary for 1843 and 44.....	20	0	0
Ditto, Librarian, ditto	10	0	0
Subs. for *Transactions* not paid last session	3	10	0
Balance on session ..	1	17	3
	£268	3	6

The President having presented the silver medal, and certificates of merit, to the successful competitors or their representatives, J. B. SIMONDS, Esq., delivered the following

ORATION.

Gentlemen,—The founders, and those who shielded the Veterinary Medical Association during its infancy, wisely determined that, at the commencement of each returning year of its existence, an address, to celebrate its natal day, should be delivered by one of its members, and that task has now devolved on me. When it was announced at the last annual meeting that I was to give the next oration, I will confess to you that I felt much gratification from the high honour which was thus conferred upon me, and I hesitated not to comply with the request. If, however, feelings of, I hope not, unjustifiable pride did then occupy my mind, how have they been subdued by the recollection, that those who preceded me did so much delight us by the eloquence with which their lucid addresses teemed! Anxious as I am, I still feel unable to imitate these bright examples, at least, with sufficient effect, even to cause their lustre to be made more apparent by the little light reflected from this feeble attempt; for, as in the natural system of the universe, amid the galaxy of luminous bodies above us, how insignificant appears the twinkling of a distant solitary star! And let it not be forgotten by those who may succeed me in the performance of this duty, that their difficulty, like my own, is rendered not the less by being surrounded by men eminent as members of our own profession, and also by those whose talents and attainments do honour to the science of human medicine. At a meeting like the present, when the members of a scientific institution are met to commemorate its formation, and to congratulate each other upon the success which has attended its proceedings, it is customary for a retrospective account of its acts for the past year to be given: such details, however, do not belong to an address of this kind; therefore I shall not attempt to introduce them, nor intrude further on your time with this subject, but refer you to the particulars contained in the able Report of our zealous

and indefatigable Secretary. I may, however, congratulate you as members of a society established for the advancement of science, that the time has again arrived when, like giants refreshed with new wine, each is found ready to buckle on his armour, and again prepare himself to battle with the empiricism, ignorance, and superstition, which still clog the wheels and prevent the onward progress of the veterinary art.

Let us then inquire, without more especially alluding to the benefits which we all hope to see derived from the weekly meetings and discussions that are about to commence, whether, on looking back upon the workings of the Association, we do not there observe assurances that the coming year will, like those that have preceded it, contribute towards the attainment of our objects, and, at its close, be crowned by the honour of having, by the diffusion of knowledge, been the means of assisting Science in her never-ceasing efforts to advance.

We have now entered upon the ninth year of the Society's existence, and we find that it has been gradually growing in strength as it has advanced in years: who therefore can apprehend danger now its childhood has passed and its manhood arrived? Or who, I would ask, will be bold enough to gainsay the assertion, that no similar society in this or any other country has contributed more to assist Veterinary Science in her efforts to alleviate the diseases of our domesticated animals? The ninth year, did I say? Ay, eight years have passed away, and now the ominous number nine is come. Why, here's the curse of Scotland!—be it so!—We have, however, no gloomy reflections; or, did we need the power of the talisman to remove the curse and give us pleasing hopes, like him we would call doggrel poetry to our aid, and say—

> The year which is come, will, as those gone before,
> Prove there's luck in odd numbers, O! Rory O'More.

But to return: — Firmly established as is this Society, rapid as have been the advances of the veterinary art, elevated as it now is to a legalized profession, and extended as are the opportunities for its votaries to obtain a knowledge of the maladies of our different animals, those only can hope to occupy an exalted

position, who, having embarked in this good cause, conduct themselves as though the success attendant on these advantages depended altogether upon their individual exertions. If we do not advance, we must retrograde; the latter is a disgrace, the former an honour. And who among us would wish to fall back into the thraldom of ignorance and empiricism from which we have emerged? Surely no one who claims membership with our body, and who is desirous to assist in the onward progress of his profession.

I must not, however, dwell too long on this topic, interesting as it is, but proceed to the consideration of that which I have selected as the theme of this Oration, namely, the importance to be attached to, and the advantages which will be derived from, the veterinary surgeon becoming conversant with a knowledge of the diseases of our flocks and our herds, so that he may apply his information to the alleviation and removal of their several maladies. In considering this subject, you must excuse the remark that, as Englishmen, we are all far too apt to take a pound-shillings-and-pence view of every question, and to act so that we may not be losers by a speculation, when such is the project, or to incur what at first sight appears to be too expensive a plan for managing our affairs: hence, probably, one of the causes why our cattle and our sheep have so long been entrusted to the care of uneducated pretenders and village smiths, and that at the time when disease is making sad havoc among them, and death daily increasing the number of his victims. These men can and do proffer their services, and exercise what little skill they may chance to possess, for such a remuneration as the properly educated veterinary surgeon cannot possibly do. How often does the cattle proprietor or agriculturist who takes this narrow view of the subject imagine that he is adopting a frugal method; but how great the errors which attend the carrying out his impressions, and how many the losses which entirely depend upon this wrongly conceived plan of economy! Death sweeps off many animals that superior skill would have saved; and even with those that rally, their recovery is too often prolonged, and frequently they are rendered valueless by the blunders and conceit of the would-be veterinary surgeon. I cannot, therefore, refrain from calling upon all owners of cattle to abandon

those ill-judged notions of parsimony, since such are not only detrimental to their own interests, but also highly injurious to the prosperity of the community. We learn, from well-founded calculations, that the worth of our cattle and sheep is little if any thing below 120 millions sterling; and all who have endeavoured by their writings to effect a reformation in the manner of treating diseased cattle have loudly complained of the immense value of British property which is thus placed at stake. Among others, the learned author of the Works on Cattle and Sheep, in the Library of Useful Knowledge, after having furnished us with the details whence these deductions of their value are drawn, observes, with much force and truth, that there are two great sources of the mortality of cattle and sheep and the loss of agricultural property; and that it is difficult to say which is the worst,—the ignorance and obstinacy of the servant and the cowleech, or the ignorance and supineness of the owner. But powerful as may have been, and even now are, these sadly to be regretted causes, we nevertheless cannot lose sight of the fact, that until of late years few efforts were made in this country to place the education of the veterinary student on such a footing that he should go forth from his professional seminary fully conversant with the importance of this subject, and well informed on the nature and treatment of the diseases of cattle. so that science might be brought to grapple with the empiricism of the cowleech and the carelessness of the agriculturist. It however becomes me not to dwell on these matters, nor to speak at greater length upon the contrast exhibited by the present state of things, further than to observe, that strong efforts have been made, and some advantages are gained, which induce me to cherish the hope that the base of a superstructure is laid which will hereafter do honour to this great nation, and be the means of saving much of her now sacrificed wealth.

It is generally admitted, that, in this country, veterinary medicine, as applied to the horse, stands in so proud a position, that it will scarcely allow of a comparison with its neglected and degraded state prior to the establishment of our alma mater. To the inquiry, as to what causes have been chiefly instrumental in advancing our acquaintance with the diseases of the horse; it must be answered, the inculcation of pathological principles, founded upon an inti-

mate knowledge of the structure and functions of the several organs of his frame. Who therefore can doubt, now that a proper share of attention is given to the anatomy and physiology of other domesticated animals, that the veterinary surgeon will possess less knowledge of *their* complex and various diseases?

Our cattle and our sheep ought long since to have received more of our attention, as among them we find epizootic affections to be more common than with other animals that are rendered subservient to our wants and uses. At this moment England is having her numbers daily thinned by one of these sad visitations; but fatal as has been this disease, uncontrollable as appear to be its effects, can any one doubt that its victims would have been multiplied to a fearful extent had no attempts of a scientific nature been made to ascertain its true character, and to stay its devastating influence?

However much we may regret this great destruction of property, serious as has been this loss to the agricultural community, we would fain indulge a hope that good may result from it, by its proving a powerful means to shew the value of veterinary science; for, surely, conviction can never have been carried so home to the proprietors of cattle of the inefficiency of the boasted skill and loudly proclaimed knowledge of the cowleech and quack. We may here see that empiricism has received another check. Let us add to this the advantages derivable from extended information on the part of the veterinarian, and no one will doubt that our fervent wishes will be thereby realized. Allusion has just been made to the frequency and destructive character of epizootic diseases, and it will be both interesting and instructive to inquire into the history of these affections; but my limits will not allow of more than a hurried sketch. The most ancient records of both Scripture and Pagan history make frequent mention of them; and, in the time of Moses, we first learn that Egypt had her cattle swept off by the "murrain," a term frequently employed to designate this class of maladies. The cause of this dreadful scourge was the disobedience of Pharaoh to God's commands, in detaining the children of Israel; and we learn that all kinds of animals fell victims to the visitation. "The Lord did that thing on the morrow, and all the cattle of Egypt died." Are we to look upon this as a just punishment to sinful man, employed on a specific occasion, and to cease for ever afterwards? Or,

rather, may we not venture to opine that here was the beginning of those maladies which governed by, to us, certain unknown laws, were destined, from time to time, to lay low the flocks and herds of other nations, sparing not even man himself? However much their origin or causes may be beyond our ken, we have positive proof of their effects; and, since that period, epizootic diseases have been so frequent, as to attract the attention of historians in all ages and countries. To the early poets of Greece and Rome we are indebted for accounts of some of these; frequent allusions being made to them in the writings of Homer, who flourished about 900 years before the Christian era. And, alluring as it is to follow the flights of a poetic genius in his powerful narration of sad events, we must still receive it with some degree of caution, as truth too often is sacrificed to the poet's vivid ideas and figurative imagery.

Virgil and Ovid are also among the poets of Rome whose graphic descriptions of these direful maladies are preserved to us. A quotation from each might be thought necessary, but I shall content myself by introducing a passage or two from Virgil.

Here, from the vicious air and sickly skies,
A plague did on the dumb creation rise:
During the autumnal heats the infection grew,
Tame cattle and the beasts of nature slew.

* * * *

The steer, who to the yoke was made to bow,
(Studious of tillage and the crooked plough)
Falls down and dies; and, dying, spews a flood
Of foamy madness, mixed with clotted blood.

* * * *

Tisiphone, let loose from under ground,
Majestically pale, now treads the round.

* * * *

The rivers and the banks and hills around
With lowings and with dying bleats resound.
At length she strikes an universal blow;
To death at once whole herds of cattle go—
Sheep, oxen, horses, fall; and heaped on high
The diff'ring species in confusion lie.

Such is Virgil's account of one of these epizootics, as it raged among the Alps, probably not less than 2000 years since. We also learn from Plutarch that, in the days of Romulus, or about the time Rome was founded, 750 years before Christ, a great plague, after destroying the fruits of the earth and the cattle, swept off many of the people. And Livy, the great Roman historian, adds, "The consuls had the greater difficulty to raise their recruits, because the plague, which the year before had raged among horned cattle, was then broke out upon men." We find that Varro and others, the earliest writers on husbandry, are nearly silent on these affections. Columella, the author of one of the most valuable works on Roman agriculture, and who flourished shortly after the birth of Christ, views them as contagious diseases, and has handed down to us some instructions for their cure. It is not until the fourth century, when they are again mentioned by Vegetius, that we gather much information upon these pestiferous outbreaks. This early veterinary writer, after describing several varieties of the distemper or plague, goes on to observe:—"All these diseases are full of contagion, and if they seize an animal they pass immediately to all; and so they bring destruction sometimes either upon whole herds, or upon all those that are tame and broke for labour. Therefore the animals which have been once attacked must, with all diligence and care, be separated from the herd, and put apart by themselves, and sent to those places where no animal is pastured, lest, by their contagion, they endanger all the rest, and the negligence of the owner be imputed, as is usually done by fools, to the Divine displeasure." To appease divine wrath, and to stay the sad havocs made by these visitations, Cardinal Baronius informs us that, in the year 376, when the cattle died of the plague all over Europe, none escaped but such as were marked on the forehead with the sign of the cross, by which miracle many people were converted to Christianity. I must not, however, detain you by proceeding thus, step by step, through these early histories; but mention must be made of one of the most fatal kind, which appeared in the year 810, when not only every head of cattle was destroyed in the Emperor Charlemagne's army, who founded at this period the empire of Germany, called the Western Empire, but also throughout his dominions. The dark ages now succeeded, and for centuries all knowledge appears to have been

hidden in and confined to the monasteries; it would, therefore, be useless, on an occasion like the present, to attempt to trace out the history of epidemics during this interval. The fourteenth century saw those causes of ignorance dissipated, those bonds of mental darkness burst: in their place the arts, sciences, and literature arose, taking their stand in fair Italy's clime, thence to spread their blessings far and wide. In the sixteenth century we are informed of various outbreaks of malignant diseases among cattle; and Rammazini records that the Venetian states suffered greatly in 1514 and 1599, when "all beef and veal, and likewise milk, were forbidden by the senate to be eaten." He also says, that at Modena, in 1690, the season was cold and moist; and the distemper of that year attacked all the people who lived in the country, and spread itself indiscriminately amongst all kinds of animals, of which great numbers died. And the following year the sheep suffered so severely, that the breed was almost destroyed. In 1693, we learn that Hesse saw her herds carried off by "pulmonary phthisis."

Of late years the progress of these distempers has been regularly traced in Europe; and the one from which the cattle of Italy, Germany, France, Holland, and Great Britain, suffered in 1711-12, came from Hungary, being imported by some oxen into the neighbourhood of Padua. The infection seems to have been communicated by the saliva, for, say the historians, "when this is dropped on the grass, and sound animals immediately placed on the same pasture, they contract the disorder." The British islands were again visited by a great destruction of cattle in 1745; and on this occasion the infection is supposed to have been brought from Holland by some calves imported into the vicinity of London by a farmer for the purpose of crossing the breed; while others assert that the lucrative views of an English tanner, who bought a parcel of distempered hides in Zealand which were forbidden to be sold, was the cause. Be this as it may, the loss of agricultural property was immense, tens of thousands of our cattle falling a sacrifice in the course of a year or two. It is yet fresh in the memories of all, that, in 1839, a disease of an epizootic character broke out suddenly and simultaneously in the dairies of London and the marshy districts of Norfolk. This affection is too well known to need any particular description, but it is worthy of notice, as preceding a malady as

destructive to our cattle as the murrain of old, which at this moment rages almost unchecked by the power of medicine. I shall have occasion to revert to this for the purpose of combatting an opinion respecting it, which to me appears to be erroneous; and, therefore, in this place I will offer a few remarks on the supposed causes of these affections.

The partaking of bad provender or stagnant water, together with contagion, are viewed by many as the chief causes, while others look to a vitiated state of the atmosphere to account for them; but whether this consists of a mingling with it of mephitic vapours or deleterious gases, arising from either animal or vegetable decompositions, or from an excess of humidity or dryness affecting its electrical condition, is but conjecture; and perhaps it is wisely ordained that the true causes should be for ever hidden.

In the days of Homer the effects were attributed to the offended gods; but whether his account is or is not mythological of a vitiated air, we shall make no attempt to prove, as the antiquity of such opinion is otherwise shewn, being held in the time of Virgil. Ovid also viewed the atmosphere as the chief cause, and, when speaking of the destruction of the island of Ægina, he observes,

> "With deadly blasts the fatal south wind blew,
> Infected all the air, and poisoned as it flew."

Livy also, in his account of an outbreak in his time, imputes the pestilence to the air.

Pliny, who wrote a few years afterwards, proves to us that these opinions were not general, and that the quality of the food was considered dangerous, more especially the "rust of grass. The Holy Scriptures, says he, speak of it as an effect of God's wrath; and therefore it was that Numa Pompilius, the successor of Romulus, instituted festivals called the Rubigalia Festa, to avert its effects: these were celebrated in April, because this disease of the vegetables usually began in that month."—Animal decompositions, although not the sole causes of many destructive epidemics, cannot but be regarded as highly detrimental to life: hence, no doubt, the practice of burning or burying the dead, and it is much to be wished that the latter was altogether forbidden amid the residences of the living, and that the depositories provided for this

purpose at a distance from towns should be alone used. Numberless writers have shewn the calamities which clearly arise from this cause; and bearing on it, I may give you a quotation from Tusser, an epic poet and agricultural author of the time of Henry VIII, who has been sometimes called the British Varro :—

> "Whatever thing dieth, go bury or burn;
> For tainting of ground, or a worser ill turn,
> Such pestilent smell of a carrenly thing
> To cattle and people great peril may bring."

To conclude this division; whatever the combination of causes may be which produce these diseases, certain it is that very many of them assume an infectious nature, otherwise we could not account for animals separated and kept apart from diseased ones frequently and sometimes altogether escaping, while such are sure to become early victims that are allowed to pasture or live with the affected; besides, we can often succeed in producing the malady by inoculating healthy animals, thus shewing how closely it is allied to contagion or infection. The fact, however, of healthy animals contracting a disease when placed with affected ones of the same kind as they are suffering from, is the best proof of the infectious nature of a complaint; for an animal escaping an attack, when diseases of this character are raging in the locality in which it is placed, may arise from a variety of causes, as non-susceptibility, and also the possibility of the exciting agents never having been brought within its sphere of imbibition; for although each new victim to a destructive epidemic may be considered as adding new seeds or fresh energy to the malady by the exhalations arising from its body, we must not lose sight of the circumstance that very many infectious diseases assume an endemic type, whilst others which are spread over a vast extent of country are often observed to follow a particular direction. There are, however, those which appear to be guided by no determined rules, breaking out again and again in the same neighbourhood; but even here we may suppose, with some good reason, that the deleterious atmosphere floats, as it were, in nebula, and is driven hither and thither by the currents, sacrificing fresh victims which are placed in the course of its passage.

Although, then, as it has been tritely observed, "that one swallow does not make a summer," still we must not forget that one

positive or affirmative proof of the communication of disease from animal to animal should render us very cautious, and much influence the opinions we may give on so important a point. Judging, then, from what I have seen, and also from the facts related, I have too much reason to fear that the present epizootic affecting cattle is of a contagious nature: thus much for the causes of these maladies.

I intend now to offer a few brief remarks upon the existing disease, as my object is chiefly to direct your attention to that which I consider erroneous respecting it. It may, however, be first observed, that various terms have been employed to designate these affections, all of which have reference either to their supposed causes or their nature, as shewn by their effects on the animal frame, or frequently to the variety or kind of animal attacked. Thus we hear of the epidemic, the epizootic, and the zymotic disease, while, almost by common consent, we are contented to call the one I have alluded to pleuro-pneumonia; a name somewhat expressive of the ravages of the malady, but by no means the best which might have been selected. Many persons are of opinion that this affection is to be considered as a sequela of the eczematous epizootic which shewed itself among our flocks and herds in 1839; but it appears to me that these maladies are essentially different in their nature, in the parts selected for the attack, in duration, in consequences, and also in the kind of animal chosen as their victims; for, speaking generally, we may remark, in the one instance, the disease is ushered in suddenly and unexpectedly, selecting animals in apparent health, and running its course in a few days. It can also be produced by inoculation, and is recognised by the existence of vesicles containing a limpid fluid situated on the tongue and other parts of the body: and when shewing itself on a farm, affects indiscriminately both oxen, sheep, pigs, and poultry, without regard to their ages or the circumstances under which they are living. We also observe, that the patient is left apparently little the worse from the attack in the majority of instances, while, in a few exceptions to this, the unfavourable sequelæ which we notice are principally confined to the udder or the feet, producing, in the one case, inflammation of its secreting glands, and, in the other, destruction to the vascular and connecting parts between the sensible and horny portions of these

organs. Occasionally an extension of the disease takes place to deeper seated structures of the body, followed by the formation of abscesses in the cellular tissue, but in no cases do we see the parenchyma of the lungs affected with that peculiar morbid change which characterises the prevailing epizootic. How, then, can pleuro-pneumonia be viewed as a necessary consequence of this affection? Besides, have we not in it an insidious disease, attacking most important organs, proceeding gradually through its several stages, resisting almost every attempt at cure, and terminating only, in by far the larger majority of cases, with the life of the patient? But, independently of these differences, there are three other facts which clearly prove the non-identity of these maladies: First, both are found on the same premises at the same time, existing altogether independent of each other. Secondly, oxen and cows are most commonly the victims of pleuro-pneumonia, although not always. Thirdly, pleuro-pneumonia has swept off many animals that never were the subjects of an attack of eczema. Much might be said respecting the different views entertained on the precise character of the morbid change in the lungs; this, however, is a subject unfitted for the present occasion. And as I have dwelt on that which I considered an error regarding it, I shall, in conclusion, content myself by merely observing, that never did a disease demand from us stricter investigation, both as it regards its true nature, and also the means that ought to be adopted to stay its destructive effects.

In the preceding observations, with the brief history of epidemics that has been given, we hope that the great necessity which exists for the diseases of cattle to be well understood has been clearly shewn, and the importance of the subject received some elucidation: and as the advantages accruing to the community by an extended cultivation of this knowledge have been commented on in the earlier part of this address, we trust that we may now venture to offer a few concluding remarks to those of the profession who, in the present order of things, are chiefly looked to for effectually carrying out the good work which is begun. To you, students,—our rising hopes,—you are yet young in your attachments to scientific pursuits: let me impress on your minds that

energy, honest devotion to your studies, industry, and gentlemanly demeanour, are the sure means by which you will obtain both fame, honour, and fortune, in the exercise of your calling. Cultivate these, and your reward is certain. The advantages you possess over those that have gone before you are great: that you are persuaded of this, no other proof need be adduced, than for me to point to those splendid testimonials which you, in common with your elder brethren, have this day presented to your teachers, Professors Spooner and Morton. One of these is exclusively your act; the merit belongs entirely to you; and it shews, more forcibly than language can express, that you appreciate the value derivable from an extension of your instructions and the talents of your teachers. It is this conviction which you have not hesitated to record in imperishable marble.

May every success in life attend you! May your reputation increase proportionate to your exertions to assist in the onward progress of your profession!—and that you will honestly devote yourselves to it, no one can doubt, after the assurance which has this day been given.

And now, gentlemen, allow me to offer you my sincere thanks for the kind attention I have received during the delivery of this imperfect address: I know its faults are many. I may, however, congratulate you on coming events; for when we again assemble to celebrate another Anniversary, we shall be listening with eager delight to the eloquence of our friend Mr. Spooner, of Southampton, who has kindly promised to give the next Oration.

The dinner being now announced, a most excellent repast was partaken of, and the utmost cordiality and good feeling prevailed throughout the evening. After the removal of the cloth, and the national and a few other toasts had been given, the Chairman, Professor Spooner, presented to Mr. Morton, in the name and on the behalf of the subscribers to the *Veterinary Medical Transactions*, a very handsome Silver Coffee and Tea Service, with other plate. The principal piece bore the following inscription:—

THIS SERVICE OF PLATE IS
PRESENTED TO
W. J. T. MORTON, Esq.
LECTURER ON CHEMISTRY AND THERAPEUTICKS
IN THE ROYAL VETERINARY COLLEGE OF LONDON,
AS A TOKEN OF
REGARD AND ESTEEM,
AND AS A TESTIMONY OF THE TALENT AND ZEAL
WITH WHICH HE HAS PERFORMED THE
DUTIES OF EDITOR
OF THE
VETERINARY MEDICAL TRANSACTIONS,
BY THE SUBSCRIBERS TO THAT WORK.
1844.

Mr. Morton, after stating that the feelings he was then impressed with were of no ordinary kind, and so intense were they that he could not give utterance to them, assured all present that he felt most sincerely grateful for the very high honour they had been pleased that evening to confer upon him, by presenting to him so splendid a testimonial of their "regard and esteem;" and he trusted that while it conferred on him a good name, which he hoped he should be able to maintain untarnished, it would also act as an incentive to continued and increased endeavours satisfactorily to fulfil the duties of the station in which he had been placed. The feelings of pride that arose in his breast were checked by the consciousness of the little he had done, and how largely he had been rewarded by the exuberant liberality of his friends. But, said he, it may not be misplaced if this event is traced up to its cause, and he would promise not to detain them long.

When a mighty river is seen emptying itself into the mightier ocean, the mind reverts to its source, and reflects that once it was but a small brook struggling to force its waters over its pebbly bed; and so small may have been its beginning, that a stone could have turned it aside, or the foot of the mountain shepherd boy stopped it. Or, if we observed a stately oak spreading its majestic branches, and affording shelter to the beasts of the field and the fowls of the air, we remember that it was once but a tiny acorn which chanced to fall upon that spot, but, nurtured by the air and

soil and the dews of heaven, it germinated, and continued to grow till it attained its present size and value. Thus it is that things of note may frequently be traced to very small beginnings.

The Veterinary Medical Association had its origin in a series of events, recorded in the archives of veterinary medicine, which charity could wish were blotted out for ever. They constitute a dark era in our history, and one in which malignant feelings were allowed to obtain the mastery; nevertheless, no little good has followed the committal of the evil. Our beginnings, too, were feeble, while much opposition had to be contended with, and many obstacles were thrown in our way. The contest will be long remembered, yet the victory was certain almost from the onset, when two went forth—your President and myself—who had yielded but were not overcome; full of regret, but not in despair; and although possessing but little influence, we were strong in the justness of our cause. We met with the kindest reception from all members of the profession on whom we called; they were those who had taken cognizance of what had been going on, and, in common with ourselves, deplored the wreck that had been made. They promised their support, and fulfilled that promise. Backed by them, an application was made to the Governors of the Veterinary College to be permitted to form another medical society, in which care should be taken that the same errors should not again find place, by means being adopted to prevent a recurrence of similar scenes—scenes alike disgraceful to the profession, and derogatory to its best interests. Then was our triumph secure, and the Association has continued to acquire both strength and importance ever since.

Much of the estimation in which it is now held arose from the valuable assistance it obtained from Mr. Youatt, who was one of its earliest supporters, and who volunteered to communicate to the public our proceedings through *The Veterinarian*, for we were not ashamed of what we had done, or were about to do. Had a doubt remained on the mind of any one, it was now for ever dissipated. Thus we continued yearly adding to our numbers, and increasing in the estimation of those who had carefully scrutinized our acts, and who ultimately approved of them. At length it was said that the journal with which the Association was allied was becoming depreciated by the junction; and a feeling was abroad

that the public was being made too familiar with facts appertaining to veterinary medicine, thus injuring the profession. How correct this view is, or was, I will not take upon myself to say; but this I will assert, that there was not the remotest wish to continue a junction which was proving injurious to a long-established journal. About the same period, several letters were received from members of high standing in the profession, stating that an exclusive periodical—that is, one the sale of which was restricted to those who had graduated as veterinary surgeons—would be in consonance with the wishes of the body, and it was determined that such should be attempted. There were those among us who considered it impolitic, and others feared that sufficient matter would not be furnished to supply two journals. This, I confess, I never apprehended: perhaps I had better opportunities of forming an opinion, and the result has proved its correctness, for both have had enough, and to spare.

A great responsibility, however, was now thrown on the Council, and, in complying with the wishes expressed by so many, their first act was to appoint an editor to the new journal, an act which demanded much careful consideration. In an unfortunate moment, I fear, for veterinary science, but fortunate for himself, the humble individual who addresses you was selected. He felt his incompetency for the task, and his inefficiency perfectly to perform the duties thereof. It was an untrodden field to him; yet he was willing to try what he could do in it. He essayed, and his attempt was approved of. You may judge how gratified he felt; and it is somewhat satisfactory to him to know that the plan he at first laid down has not been departed from, except to restrain him a little in the wildness of his course; although, doubtlessly, it is capable of being much improved upon. As year has succeeded year, the subscribers to the work have increased; but never has the demand for it been such as to leave any surplus fund. Now, I do not hesitate to say that the amount of labour connected with the Journal has been very great; and had I foreseen all this, I should, perhaps, have declined the proffered honour: but I was not aware of it, and, having once put my hand to the plough, I did not feel inclined to withdraw it. Thus, then, it was that I became the Editor of the *Transactions of the Veterinary Medical Association*. How

my duties have been performed, it does not become me to say. I fear but imperfectly; and well do I know that others could have accomplished them much more effectually, as well as more advantageously to science.

And now, gentlemen, it is my duty to inform you that the two facts to which I have alluded; namely, the absence of any surplus fund, and the amount of labour called into requisition, without any hope of future recompence to him who may perform it, have induced the Council to propose that the *Transactions of the Veterinary Medical Association* shall, for the future, be an open journal, published quarterly, as before: not confined to the Report of the proceedings of the Association merely, but embracing those divisions of science which appertain to veterinary medicine, and courting the countenance and support of those who may deem the Journal worthy of it. The editorship also will no longer devolve on one person; but my colleagues, Messrs. Spooner and Simonds, have consented to co-operate with me in this department. We are associated in interests, and also in desire for the continued onward progress of veterinary science. We make no profession beyond this,—that it will ever be our earnest endeavour to manifest a christian spirit, to act impartially, and to avoid all personalities. These have been too often indulged in. They add nothing to a just cause, nay, often injure it; while they create dissensions in the body, and pamper to a low and malignant spirit.

Our circle of correspondents is now somewhat large. We have them in India, in America, in France, Germany, and Italy. With many veterinary societies on the continent we exchange Journals; and translations of articles of interest from them will continue to be given by Mr. Ernes, to whom we are already so much indebted. To these will be added reviews of works in or connected with veterinary science, extracts from scientific periodicals, and all matters affecting the interests of the veterinary profession.

We know that there are some who will withdraw their wonted support from us, because they object to the free communication of knowledge; but an exclusive Journal has been tried for three years, and it has not met with the anticipated encouragement: certainly not more than one-fourth of the profession have become subscribers to it; and thus has been demonstrated the feeling that

the *majority* are not in favour of exclusiveness. I, for one, confess I am not sorry for this; for who shall set limits to science, and say to it, "thus far shalt thou go, and no farther?" Indeed, it appears to me to be altogether opposed to the state of the public mind at the present day. We hear of no other division of science courting secresy: then why should veterinary science? Is it fearful to be brought before the light of truth, and to have its worth tested by public opinion? Then it has done that for which it has cause to be ashamed, or neglected to make those advances which it ought to have done; and I cannot for a moment think that it is likely to be screened by the flimsy mantle of secresy and exclusiveness.

And now, a word or two in behalf of the Association, if an institution can be said to need it in which exist both the elements and every prospect of continued success. I know it has been said that it is but a "pupil's concern." I hope this is not unkindly meant. But why should it be so? (allowing the validity of the assertion). It was not originally intended to be such; and every effort has been tried to render it otherwise. Solicitations have been made, and plans devised to bring about a more intimate and cordial union of the practitioner and the student; and ready and willing are we still to receive any proposition to accomplish so desirable an end.

It has been said, "the boy is father to the man;" and we know that "as the twig is bent so grows the tree." Of whom will the next generation of the profession consist? Why, of those who are now pupils; and to them we must look for the carrying on and perfecting of the reform and improvements now being made in our common art; to them at all times, then, ought the right hand of fellowship and support be held out.

Besides which, all wisdom is not concentrated in gray hairs. There is the forgetfulness as well as the apathy of senility; ay, and one thing more, there is the love of ease that creeps over the mind as we become old, and a disinclination to give up long-cherished views, although the advance of science may have rendered them no longer tenable: in other words, there is a great disinclination on our parts to go to school again.

How desirable, then, is it that such an Association as ours should

exist! It is as beneficial to the older as the younger member of the profession, and by it our common art or science—call it which you will—cannot fail to be benefitted.

I do not hesitate to say—and permission will be given to speak of myself—that as a teacher I have often there been taught, and have frequently found the weekly meetings to be productive of the greatest good to me, not only because they have been the means of refreshing the memory with records of the past, which might else have been effaced, but they have also stimulated to fresh exertions, and caused me to institute new inquiries, thus carrying me onwards in the pursuit of science. Besides all this, the mind of youth is naturally and laudably inquisitive, and questions are often propounded which, perchance, the sage may be unable to reply to; yet they are not always fruitless, since they awaken thought and consideration; and the mind is led to take a more correct view of its powers, and its limits too, and man is thus taught, that, after all his boasted knowledge, he knows but little and has yet much to learn.

It is no wonder, then, that I have devoted myself somewhat to the furtherance of its objects; and I deserve no thanks for it, since it may be said I have been actuated by selfish motives; but I hope not mercenary ones. I do, then, most earnestly hope, that I shall yet see the time when a greater cordiality and unity of purpose shall exist between the established practitioner and the student of veterinary medicine, and I firmly believe the Veterinary Medical Association might be made the most effectual means for bringing this about.

TUESDAY, NOVEMBER 19, 1844.

THE first business meeting for the session was held in the Theatre of the Royal Veterinary College this evening.

The Treasurer, Mr. J. B. SIMONDS, in the chair.

The Secretary having communicated explicitly and in full the resolutions of the Council of the Association holden on the 4th instant, and especially the following,

"Moved by Mr. W. Ernes, seconded by Mr. W. W. Barth, and carried unanimously, 'That for the future the *Transactions of the Veterinary Medical Association* be published quarterly as an open journal; and that the editorial department be conducted by Messrs. Spooner, Simonds, and Morton:'" they were unanimously confirmed by the members.

The rules and regulations of the Association having been read, the following officers were chosen for the session:—

President.—Professor SPOONER.

Vice-Presidents.

Mr. J. TURNER.	Mr. G. ROBB.
Mr. T. TURNER.	Mr. J. GREGSON.
Mr. W. FIELD.	Mr. A. CROOK.
Mr. W. ERNES.	Mr. W. C. CRABB.
Mr. J. NICE.	Mr. W. SHIRLEY.
Mr. E. BRABY.	Mr. J. BROAD.

Treasurer.—Mr. J. B. SIMONDS.

Secretary and Librarian.—Mr. W. J. T. MORTON.

ON THE ANATOMY OF THE FAUCES, AND THE PHYSIOLOGY OF THE VOICE AND DEGLUTITION.

A PRIZE THESIS.

By Mr. J. K. LORD.

THE larynx or organ of the voice is situated at the superior part of the trachea. It is composed of cartilages, muscles, ligaments, bloodvessels, and nerves, and internally it is lined by a mucous membrane.

The cartilages are five in number; namely, the thyroid, cricoid, two arytenoid, and the epiglottis.

The *Thyroid Cartilage* is so named from a supposition that it acts as a shield to the parts placed within it. In size it is by far the most considerable. It may be described as formed of two wing-like portions, of an irregular triangular figure, united anteriorly, and the inferior angle of each is known as the posterior cornua: the superior angles constitute the anterior cornua, which are attached to the edges of the alæ by a dense ligamentous substance. Anteriorly they form synovial articulations with the spur-like process of the os hyoides.

The *Cricoid Cartilage* is so called from its ring-like figure. It is posteriorly placed, and united to the first ring of the trachea. Inferiorly it is narrow and constricted; whence, gradually expanding, it presents, superiorly, a considerable extent of surface, which is divided in its centre by a prominent ridge. On the exterior of the superior surface is a protuberance, the anterior of which is indented by a glenoid cavity, for the reception of the posterior cornua of the thyroid cartilage, and on its anterior angle is an extensive surface, forming a synovial articulation with the arytenoid cartilages.

The *Arytenoid* (a pair) are named from their fanciful resemblance to the lip of a ewer or pitcher. They occupy the supero-anterior part of the larynx. To aid description, they may be said to have three angles and three surfaces. The superior surface is broad and concave, for the reception of the arytenoid muscles, and terminates posteriorly in a rounded projection

(the posterior angle), which affords attachment to the crico-arytenoideus posticus muscle. The internal surface, smooth to articulate with its fellow, terminates in what may be described as the descending angle; to which is attached the thyro-arytenoidean ligament, or chorde vocales. The anterior angle slants in a backward direction, presenting a convex edge anteriorly, which will be found to contain numerous mucous glands, embedded in the substance of the cartilage.

The Epiglottis is so called from its laying on the base of the tongue. When not in use, it rests on the velum palati. It is attached to the thyroid cartilage by a highly elastic material. In shape it resembles a rose-leaf, consequently may be said to have a base and an apex. From its base or point of attachment, on either side, arise two processes of cartilage, which may be described as its *cornua* (by some they have been represented as separate cartilages): they are of an irregular figure, and take a divergent course, terminating beneath the descending angles of the arytenoid cartilages. The anterior surface of the leaf-like portion is smooth and slightly serrated at its edges, beautifully fitting, when depressed, the glottal opening. The posterior surface presents a curved form, ridged in its centre. Both these surfaces are thickly studded with small mucous glands, but more especially at the base and origin of the cornua.

These five cartilages are kept in their relative situations, and firmly held together, by the *ligaments*, which are numerous, and rather complicated.

Beginning with the joints, we shall find *six* capsular ligaments: two between the cricoid and thyroid cartilages; two between the cricoid and arytenoid cartilages; and two between the spur-like process of the os hyoides and anterior cornua of the thyroid cartilages, making six. These joints, being lined with synovial membrane, and lubricated by synovia, are evidently intended to move freely on each other. All the remainder, except two, although called ligaments, are of a highly elastic nature. The ligaments attaching the cricoid and arytenoid cartilages to each other are three in number—a pair (which are the true ligaments) and a single one. The pair, situated immediately beneath the surfaces of articulation, are short and strong, holding the two cartilages firmly to each other.

The third, a single one, fills up the space left between the posterior edges of the arytenoid and anterior edge of the cricoid.

The superior Crico-Arytenoidean Ligament.—Between the cricoid and thyroid cartilages is a ligament, situated on the inferior part of the larynx, and filling up the space left between the alæ and the thyroid, and also attached to a slight convexity on the antero-inferior edge of the cricoid.

The Crico-Thyroidean Ligament.—Between the thyroid cartilage and os hyoides is a broad expansion of elastic material, filling up that space left between the anterior angle of the thyroid and the hollow of the spur-like process.

The Thyro-Hyoidean Ligament, attaching the epiglottis to the thyroid cartilages, is a mass of the same elastic material.

The Thyro-Epiglottidean Ligament.—Running obliquely from the descending angle of the arytenoid cartilages to a depression in the anterior angle of the thyroid are two elastic bands or ligaments; these are generally described as the chorde vocales, or vocal chords: they are properly the *thyro-arytenoidean ligaments.*

As I have before stated, it must be evident, on the most superficial observation, that, from the nature of the articulations and the beautifully yielding material by which the cartilages are connected with each other, nature intended them to enjoy a freedom of motion; and the agents by which these motions are accomplished are the muscles of the larynx, consisting of seven pairs and a single muscle.

The first of those which may be considered as external muscles are:—

Crico-Arytenoidei postici.—A pair of muscles, filling up the superior expanded portion of the cricoid cartilage, and separated from each other by the median ridge, to both of which they are firmly attached; their fibres converge anteriorly, and become inserted into the posterior angles of the arytenoid cartilages.

Arytenoidei.—A pair of muscles, filling up the hollow on the superior surfaces of the arytenoid cartilages, being attached to each other, in the median line, by tendinous fibres.

Thyro-Hyoidei.—A pair of muscles, taking their origin from the infero-lateral part of the thyroid cartilage, increasing in width as they proceed forward, being inserted into the postero-inferior edge of the spur-like process of the os hyoides.

Crico-Thyroidei.—A pair of muscles, occupying the groove before described, on the lateral portion of the cricoid cartilage; being also attached to its posterior edge, having their insertion into the posterior edges of the alæ of the thyroid.

The internal muscles, or those placed between the cartilages, are:—

Crico-Arytenoidei lateralis.—A pair of muscles situated between the posterior cornua of the thyroid and anterior part of the cricoid cartilages. They arise from the edge of the cricoid, and are inserted into the posterior angle of the arytenoid cartilage.

Thyro-Arytenoidei postici.—A pair of muscles situated anterior to the preceding ones, and placed between the alæ of the thyroid cartilage and the mucous membrane lining the cavity. They have generally been described as divisible into several portions, and these considered as distinct muscles; but as such divisions are completely at the discretion of the dissector, I have given them as being one pair of muscles, not in any way directly adherent to the thyroid cartilage, but firmly attached to that portion of the lining membrane over which they pass, being inserted into the extero-lateral part of the arytenoid cartilages: they arise from the crico-thyroidean ligament.

Thyro-Arytenoidei antici.—A pair of muscles still more anteriorly placed than the former, taking an oblique direction forward. They arise from the infero-anterior part of the thyroid cartilage, the former arising from the ligament. This difference of origin, I think, shews them to be distinct muscles: they are inserted into the superior edge of the arytenoid cartilages, their fibres being continuous with the arytenoidei muscles.

Hyo-Epiglottideus.—A single muscle, intersected and mixed up with a considerable quantity of elastic material, and situated at the back of the epiglottis. It arises from the base of the appendix on the superior part of the spur process of the os hyoides, being inserted into the ridge developed on the back of the cartilage by a tendon.

Actions of the Muscles.

A slight reference to these muscles will shew us that those intended for the dilatation of the glottis are far more numerous and powerful than those for closing it; that being considerably

aided by the highly elastic substance before described, which is placed between the arytenoid cartilages.

Crico-Arytenoideus.—Acts from the cricoid cartilage upon the arytenoid, the former being partially fixed, and the latter possessing a considerable extent of motion: it draws them upward and backward, and thus dilates the glottis.

Crico-Arytenoid lateralis is also a dilator of the glottis, but more so of the postero-internal edges of the arytenoid cartilages than of the lips of the glottis.

Crico-Thyroideus.—Draws back the thyroid upon the cricoid cartilage, in which it is aided by the crico-thyroidean ligament, and thus indirectly assists in dilating the glottis.

Thyro-Arytenoideus posticus.—Appears to me to possess a double action: when, by the preceding muscles, the glottis is dilated, a fixed point will be gained for either end of this muscle, which, consequently, will draw outward the membrane I have described it as passing over and being attached to; and thus the cavity of the larynx becomes enlarged. But when the preceding muscles are relaxed, then this muscle, acting upon the arytenoid cartilage, assists in constricting the glottal opening.

Thyro-Arytenoideus Anticus.—May also slightly assist in constricting the glottis; but its principal action I believe to be upon the ventricles, as a dilator to those cavities, acting upon them in the same manner as the preceding muscle does upon the mucous membrane.

Thyro-Hyoideus.—Possesses a double action; it either, when the os hyoides is fixed, as in deglutition, swings upon the larynx between its cornua, or, when the larynx is fixed, draws back the spur process upon the cartilage.

The Arytenoidei.—These muscles, I am inclined to think, are constrictors of the glottal opening, their fixed points being their median line; and, acting from that upon the posterior angles of the cartilages, they will approximate them, aided by the elastic material described as the single crico-thyroidean ligament.

The *Epiglottideus* draws back the epiglottis.

The mucous membrane lining the larynx is an extension of the same mucous membrane as that investing the mouth and pharynx, which, in fact, may be said to reach from the lips to the anus, through the medium of the pharynx, œsophagus, and alimentary

canal, being also continued through the larynx and trachea to the minutest ramifications of the bronchial tubes. Nature has wisely and beautifully adapted this membrane to the various parts it has to cover, according to the different functions each organ has to perform. In the one now under consideration (the larynx) it is highly vascular, and plentifully studded with mucous follicles, the secretion from which constantly bedews the membrane; added to this, it is well supplied with nerves rendering it acutely sensible to all tactile impressions.

After investing the epiglottis, it is reflected across from that cartilage to the arytenoid, forming what has been described as the aryteno-epiglottidean ligament, but which is simply a double reflexion of mucous membrane. At the posterior part also of the epiglottis is a loose reflexion of this membrane, covering the hyo-epiglottidean muscle, and continuous with the base of the tongue, described as the frænum epiglottideus.

At the anterior part of the larynx, between the aryteno thyroidean ligaments (or vocal cords) and alæ of the thyroid cartilage, and just at the base of the epiglottis are two pouch-like cavities, described as the ventricles of the larynx: they are formed by an inflection of the mucous membrane, and are of considerable size, reaching as high up as the superior edge of the thyroid cartilage. Their use I shall endeavour to point out when treating on the physiology of the voice.

The larynx is supplied with blood principally from the laryngeal artery, a branch of the thyroideal: its veins empty themselves into the submaxillary vein.

The nerves principally distributed to the larynx are the superior laryngeal, and inferior or recurrent laryngeal, both branches from the eighth pair. The superior nerve crosses over the muscles of the pharynx, to reach and enter the foramen before described on the edge of the thyroid cartilage, and is more especially distributed to the lining mucous membrane; while the inferior or recurrent, being a motor nerve, supplies the muscles.

The Trachea may be said to take its rise from the posterior edge of the cricoid cartilage, and from thence extends into the chest, where, on reaching the lungs, it divides into the right and left bronchi.

Situation.—At its origin, it is situated immediately under the

first and second cervical vertebræ; but in its descent it slightly inclines to the left side, entering the chest between the two first ribs. It is principally composed of a number of cartilaginous rings, varying in number in accordance with the length of the neck, being disconnected at their posterior parts, where they overlap each other. They are connected together by a highly elastic material, which enables them freely to contract, dilate, or become separated from each other, and thus to elongate the trachea when the animal stretches out the head. It is lined throughout by a mucous membrane, a continuation of that lining the larynx, which is very vascular and sensitive, and thickly studded with small mucous crypts, which constantly bedew it with a secretion. Between this mucous coat and the elastic material connecting the rings is a layer of muscular fibre, more markedly developed at the posterior part, where it is stretched across the overlapping edges of the cartilages, but yet clearly traceable over the whole of the interior surface of the trachea, and probably extending even to the air-cells.

There are two opinions as to the action of this muscle;—one, that it dilates the trachea—the other, that it diminishes it. I incline to the former view, although I would scarcely go so far as to say it enlarges the caliber of the tube: yet it appears to me, that, if you render an ellipsis a circle, you give a much greater facility for the transmission of an elastic medium, and such must be the action of this muscle.

Physiology of the Voice.

On entering upon the consideration of the physiology of the voice, I feel conscious of my utter inability to render plain so important and interesting a subject; it being one that has occupied the time and talents of the first comparative anatomists and physiologists, both of ancient and modern times, in endeavouring to ascertain its nature and to develop the machinery in operation for its production; and each varies more or less in his opinions, as to the manner in which the wheels of the machine (if I may be allowed the simile) are operating to produce the sound we call voice. It will therefore be conceded that I, who in the field of science hold about the same relative position that the lowest

organized zoophite does in the mighty chain of nature, can add but little in the way of elucidation to what has been already written on the subject; nevertheless, by extracting from authors that which may be applicable to the horse, and adding what little of my own I have gleaned from observation, I trust I shall be enabled to render tolerably perspicuous the mode by which the air becomes vocalized, so as to constitute the voice, and to describe the active agents concerned in its production.

The voice of the horse is that sound produced at the will of the animal through the medium of the air in its passage to and from the lungs, in common parlance *neighing*. This is chiefly effected by the larynx, which may truly be called the organ of voice, although it is regulated in intensity and variously modulated in tone by other parts, which I shall notice as I proceed. Very eminent physiologists have, as I before remarked, entertained contrary opinions as to its production. Some have described the larynx as being analogous to a *reed* instrument, while others have likened it to a horn or trumpet; and a third party steps in and says, it is neither the one nor the other of these, but it is a *stringed* instrument. The limits of this thesis, however, preclude the possibility of my entering upon a consideration of these differences; neither do I believe it is of the slightest practical importance; for, with all our philosophy and sage deductions, who, I would ask, could tell by any act of reasoning, simply from investigating the larynx of a *sheep*, an *ass*, or a *horse*, that the one would *bleat*, the other *bray*, and the third *neigh*: or, in a word, could they, from an inspection of the dead animal, form any idea of the sound it could produce whilst it lived? We hear the horse produce the sound we call neighing, and experience tells us that it is expressive sometimes of pain, at others of pleasure; it is also indicative of anger, and it is the call by which the mother attracts her offspring. Having ascertained this, we naturally turn to an investigation of the parts or organ producing it, and we find this to be accomplished by the larynx. Practically I believe this is all we ever need know; yet, in a physiological description, it will be requisite that I should go more into detail, and endeavour to shew the use of the different parts of this organ. In order to accomplish this, it will be requisite to take a brief survey of the various arrangements we meet with in the different species of mammalia. Now the horse and the ass are

most remarkable as breathing exclusively through their nostrils: not so the ruminant nor pig tribe; they respire but partially through the nostrils, all excited or increased respiratory action being accomplished by the mouth. The sound we call the voice is mainly the result of the rapid vibration of the aryteno-thyroidean ligaments, or *vocal cords*, as the air passes over them in its transit to and from the lungs. During tranquil respiration no sound is produced, for then the larynx slowly and equably adapts itself to the current of air traversing it; but at the will of the animal he dilates his nostrils; and takes a deep and prolonged inspiration; the dilator muscles contract, enlarging the glottal opening to its greatest extent, and by that means rendering tense the vocal cords; the ventricles at the same time become filled with air, and, if I may use the term, the vocal cords are isolated, and allowed to vibrate freely and rapidly as the air passes over them. But, during the act of expiration for the production of voice, I do not think the ventricles are called at all, or if at all but little, into action; the abdominal muscles forcibly contracting, aided by the natural resiliency of the lungs, expel the air with considerable rapidity. The dilator muscles, as in inspiration, contract and dilate the glottis; but this dilatation is further increased by the volume of air in its rapid passage through the larynx. The air abuts against, or rather is impeded by, the posterior projecting edges of the vocal cords and arytenoid cartilages, and thus renders these cords tense and free to vibrate.

I do not think we require a clearer proof that the dilator muscles are actively called into requisition for the purpose of rendering tense these cords and enlarging the glottis to produce sound, than the experiment of Majendie, who divided the recurrent nerves, which, as I have stated in the anatomy, principally supply these muscles, and the consequence was a total loss of voice.

I have stated that the ventricles are principally, if not solely, called into use during inspiration; and, in order to support this opinion, we must take a short survey of some of the other mammalia, and see if analogical reasoning will bear our position out.

Suppose we could find an animal whose voice was only produced during expiration. If my position is a valid one, the ventricles would then be of no service; and as Nature gives nothing in vain, we should expect to find them absent. Now turn we to the rumi-

nant, an animal, as I have previously asserted, breathing principally during excitement through the mouth, and the production of whose voice is solely expiratory: What do we find here? A large and capacious larynx, evidently capable of considerable alteration in size and capacity; the muscles well developed, the epiglottis comparatively short and obtuse, the glottal opening consequently more rounded than in the horse, the vocal cords shorter and thicker, but *no* ventricles; Nature not having placed them where they would have been superfluous. The bullock, when it, in common parlance, bellows, stretches out the head and elevates the nose, bringing, as nearly as it possibly can, the mouth, larynx, and trachea, in a straight line: the air is then forcibly expelled through these parts, which may be likened to a continuous tube, the sound being produced in an analogous manner to blowing through a *horn* or *trumpet*, by the vibration and resonance of the air against the sides of the tube. Again, in the feline tribe, we find an absence of the ventricles; animals, also, whose voice is an expiratory function.

But is there no other animal capable of producing long and continued sound, both during inspiration and expiration, beside the horse and ass? Few are there, I believe, who are not fully aware of the vast capability possessed by the pig tribe in the production of a most intense, long, and continuous sound: indeed, it has become a saying amounting to a proverb. In this animal we find the larynx admirably and beautifully adapted for the accomplishment of this: the cartilages are enabled, by the interposition of a quantity of highly elastic material, to yield readily to the contraction of the muscles on the force of the air passing through the larynx: the muscles are well developed and powerful; the vocal cords large and most obliquely placed, and that at the posterior part of the organ; the ventricles holding the same relative position as in other animals with regard to the vocal cords, but situated with them at the posterior part of the larynx: they are of a considerable size, and so placed as almost to preclude the possibility of air entering them, except during inspiration.

Now these are all incontrovertible facts; and is it not, I ask, fair and reasonable to conclude that the ventricles are mainly, if not solely, called into requisition during inspiration, when in the horse, ass, mule, and pig, animals which our daily observation must convince us produce their voice both during inspiration and

expiration; and their equally certain absence in the ruminantia, whose voice is an expiratory act? It may possibly be started as an objection, that they are in some way connected with nasal respiration, and hence we do not meet with them in the ruminant. But, in refutation of such an opinion, I have only to refer to the pig, an animal breathing principally through the mouth, whose nostrils are particularly small, and quite inadequate alone to the performance of respiration, but whose ventricles are peculiarly well developed.

The voice is variously altered in tone and regulated as to intensity by the other parts of the respiratory organs through which the air passes. In the first place, the bronchial tubes and trachea have, I am inclined to believe, much to do with the tone of the voice. The latter, I have shewn in its anatomy, is capable of readily and easily altering its caliber, by which means it regulates the current of air, and adapts it to the degree of dilatation which the larynx may at that time be in. Again, it can be lengthened and shortened at the volition of the animal, and by that means, in some measure, its tone is governed. Anterior to the larynx, the sound or voice is considerably increased in tone as it passes through the fauces and nostrils. It has been contended by some writers, that the fluttering of the velum palati, and the eustachian cavities are the principal producers of the voice; but, I think, most erroneously, since, during respiration, the velum palati is held firmly down in its position, both mechanically and vitally. Again, how such a thick glandular mass is to flutter like a flag in the breeze, even supposing it was free, requires more credence than I can tacitly yield. The eustachian pouches are also, in my humble opinion, equally unconcerned. From the valvular form of their inlet, air could scarcely enter them; and as to their vibrating, if it can be shewn that a bladder, inflated and put into a box that it exactly fits, is capable of rapid vibrations, then it will be easy to conceive a similar process to take place in these pouches, for such, figuratively, is their position. In taking a general survey of the vertebrata, we shall find, in every instance where the power of vocalizing the air in its passage to and from the lungs is present, that co-existent with that power is the development of a larynx, widely differing, I grant, in structure and arrangement in the lower classes of the vertebrata, yet still typical of, and closely

allied, in the principles of its construction, to the higher orders of mammalia. If, then, it be true that the velum palati and eustachian pouches are essential to the production of voice, analogical induction would lead us to infer the universality of their presence also. Now, if we turn to the bird tribe, some species of which are enabled to produce and modulate the voice to a degree of richness and variety far surpassing any of the mammalia, we shall find the larynx placed, generally, at the inferior part of the trachea, close to the sternum, but not a trace or vestige of either the velum palati or eustachian pouches to exist. The tone of the voice also differs much in the male and female; castration also makes a material alteration in its tone. Why it should so differ, it is beyond my power to assign a reason: possibly it may arise from the vast alteration the animal undergoes consequent upon the operation. In the entire animal the parts are more fully developed, the voice of deeper tone, and the sonorous vibrations much more intense.

The sinuses and nasal cavities I am inclined to view as the great and most important assistants in increasing and keeping up the vibrations after the production of sound in the larynx of the young animal, where the voice is weak and shrill, although this is in some measure dependent on the small size of the, as yet, imperfectly developed larynx and trachea; but still more so upon the small and imperfectly formed sinuses, for as these quickly become enlarged and perfectly ossified, from the peculiar mode of growth in flat bones (beautifully illustrated in the head, viz. from the centre to the circumference), so does the voice increase in power and depth of tone; and it requires no great stretch of the imagination to render this in accordance with our ideas of sound. There are but few who are not aware of the fact, that our voice sounds considerably louder when uttered in a vaulted cavern than in open space. Again, if we put a tuning-fork into a state of vibration, and in that state hold it under the mouth of an inverted bottle, its sound will be materially augmented. These phenomena are to be accounted for on the principle of a well known law in dynamics, viz., that all bodies in a state of motion are capable of imparting that motion to other bodies with which they come in contact. The impulse given by the sounding body in the former case, the air in the latter—the tuning-fork—to the

quiescent particles of the elastic medium in immediate contact with them is propagated from particle to particle in all directions; hence sound must of necessity be materially weakened in intensity by being diffused over an extensive sphere of particles; and the converse obtains: it is vastly increased by being concentrated in a small space, and reflected, as it were, from side to side. Just such a part as this do the large and extensive frontal and maxillary sinuses play: the vibratory impulse is communicated to the confined air contained in them, and, if I may use the comparison, echoed and reverberated from side to side, increasing and giving depth of tone to the voice. Thus does nature beautifully turn all to good account: in the first place, by these sinuses rendering the skull light and less liable to the effects of concussion, and making them, secondarily, useful adjuncts in the production of voice. If we now advert to the nasal cavities, here again we shall find other wise provisions for increasing and keeping up the vibrations. At the anterior part of the inferior turbinated bone is a small elastic ligament, which becomes attached to the cartilage forming the alæ of the false nostril, similar in construction to the vocal ligaments: this I am inclined to look upon as a material assistant in keeping up vibration, and principally so during inspiration, giving the first impulse to sonorous undulations: the fluttering of the nostrils also aid in giving intensity to the sound.

Having now dwelt as long upon this subject as the limits of an essay will permit, and having, I trust, rendered the leading principles sufficiently plain, so as to be readily understood, I proceed to a consideration of the remaining portions of my thesis.

The Œsophagus.

This tube commences by a funnel-like opening immediately over the cricoid cartilage, passes for a short distance over the superior portion of the trachea, and then inclines to the left side, which it reaches a short way down the neck, and continues so situated to enter the chest with the trachea, between the two first ribs, passing on the right side of the aorta, through the inferior mediastinum, to reach the stomach.

Externally the œsophagus is covered by a rather dense cellular

membrane, although but loosely attaching it to the contiguous muscles, &c., so that it enjoys perfect independent action.

The muscular coat is composed of two orders of muscular fibres; an external or longitudinal, and an internal or spiral. By the former it is shortened, and possibly slightly dilated; by the latter the peculiar vermicular motion is effected for the transmission of food into the stomach. It is lined with a continuation of the mucous membrane covering the mouth, fauces, &c.; but much altered in character, so much so as generally to be described as a cuticular coat. It is so loosely attached to the muscular coat as to be easily drawn out if a section be made of the œsophagus; and it evidently possesses—as does the tube itself—a perfectly free and independent action, and, in the relaxed state of the tube, is thrown into a number of longitudinal plicæ or folds. I am rather inclined to think that this mucous or cuticular coat has a certain amount of inherent contractility. I would just passingly remark the peculiar arrangement of the muscular fibres of this tube at its cardiac extremity, where it joins the stomach: they there form a kind of double loop, so that, on contracting, they constitute a perfect sphincter. I shall be able to point out a somewhat analogous arrangement when I speak of the anatomy of the fauces.

The Fauces.

The fauces may be said to be that space or cavity intervening between the posterior part of the tongue and entrance to the larynx and pharynx. It is a sort of vestibule, or hall, communicating with which there are several openings, and much importance seems to have been attached to the number of these openings; why or for what reason I know not. They may be said to be six; two with the eustachian tubes, one with the nostrils, one for the larynx, one for the pharynx, and one for the mouth. The boundaries of the fauces are, super-anteriorly, the nasal opening; infero-anteriorly, the base of the tongue, and velum palati; and postero-superiorly, the guttural pouches, larynx, and pharynx. It is lined throughout with mucous membrane, continuous with the various openings into it.

The guttural pouches are two circumscribed mucous sacs, situ-

ated above the pharynx, extending as high up as the base of the ear, beneath the parotid gland, and, as before described, bounding the fauces postero-superiorly. To give an idea of their size, I should say they would each contain, at least, a pint of fluid. They open into the fauces by the same openings as the eustachian tubes, the cartilaginous terminations of which tubes form a complete valvular orifice. The use of these sacs appears to me to be that of giving great freedom of motion to the pharynx, in order that it may accommodate itself to the size of the pellet deglutated; and in this opinion I think I am, in some measure, borne out by a reference to the ruminant, an animal which not only swallows its food in pellets of considerable size, but returns the food for a second mastication; and we cannot suppose these are invariably of the same size. Now, in this class of animals we find these pouches much more developed than in the horse. Had the pharynx been bounded by a solid unyielding structure, instead of these flaccid sacs, there would have been a much greater liability to choaking.

The velum palati, or soft palate, is a dense ligamentous structure attached to the arch of the palate bones, terminating in a free edge, which rests during respiration upon the base of the tongue. It is covered on its antero-inferior surface, or that surface continuous with the bony palate, by a large gland, which appears to me in every respect to resemble a salivary gland. Its ducts empty themselves by numerous openings: its posterior surface is covered by a mucous membrane.

The velum palati has but one pair of muscles, which directly act upon it,—the tensor palati, or, more properly, the levator palati. Most writers on this subject describe a single muscle also; but it is an error.

This pair of muscles (the tensor palati) arise from the styloid process of the petrous portion of the temporal bone, runs along the edge of the eustachian tube, becomes tendinous as it reaches the pterygoid bone, round which it forms a remarkable pulley-like arrangement, then turns back, and is inserted by a tendinous expansion into the velum palati, near its free edge. Having as briefly as possible given an outline of the fauces and its boundaries, I now come to the

Pharynx.

The Pharynx may be best described as a musculo-membranous bag, situated between the larynx and guttural pouches, antero-inferiorly opening into the fauces, postero-superiorly continuous with the esophagus.

Hitherto the pharynx has generally been described as consisting of three pairs of constrictor muscles and three pairs of dilator muscles; but I think I shall be able to shew that such an arrangement is not correct. The three pairs of dilator muscles usually given are the hyo-pharyngeus, stylo-pharyngeus, and palato-pharyngeus; but, on a careful dissection, it will be found that the arrangement and action of these muscles are widely different from that which has generally been taught. In order to render the subject intelligible, and to facilitate description, I have given a rough diagram; but ere I refer to it, perhaps I had better give the origin and insertion of the different muscles belonging especially to the pharynx.

Dilators, two pairs. The *Hyo-Pharingeus* arises from about the middle of the internal side of the greater cornua of the os hyoides, takes a slanting direction downward and forward, and is inserted into the superior edge of the mouth of the pharynx.

The *Palato-Pharyngeus* (improperly named) is a mass of disgregated muscular fibres, spread over the anterior part of the membrane lining the fauces. Some of the fibres are slightly attached to the free edge of the velum palati; the remaining portion of the muscle blends with its fellow of the opposite side: there is also a small portion extending backward beneath the anterior constrictor muscle of the pharynx.

The Constrictor Muscles. Of these there are three pairs; and those more particularly contribute to form the pharynx:—

The *Constrictor Anticus* arises from the spur-like process of the os hyoides, covering its articulation with the thyroid cartilage. The muscle then unites with its fellow of the opposite side by a ligamentous line.

The *Constrictor Medius* arises from the alæ of the thyroid cartilage, and this muscle unites with its fellow as the preceding.

The *Constrictor Posticus* arises from the edge and lateral protuberance of the cricoid cartilage, and, as the former muscles,

unites with its fellow of the opposite side, likewise blending its fibres with the superior portion of the esophagus.

I shall enter upon the action of these muscles more particularly when I come to the physiology of deglutition.

There are yet two pairs of muscles left to speak of; and these I do not believe have any thing to do with either the contraction or dilatation of the pharynx: so that, truly, there are only five pairs of muscles directly acting upon, or strictly belonging to, the pharynx.

The two pairs of muscles I am about to describe are generally known as the stylo-pharyngeus, which I propose calling the CONSTRICTOR FAUCES ANTICUS; and the pterygo-pharyngeus, generally described as a part of the palato-pharyngeus; this I propose to call the CONSTRICTOR FAUCES POSTICUS.

The *Stylo Pharingeus*, or *Constrictor Fauces Anticus*, arises from the styloid process of the petrous temporal bone; runs along the edge of the eustachian tube, to which it is attached; passes over the anterior part of the fauces, and there unites with its fellow of the opposite side. (*See woodcut, fig.* 9.)

The *Pterygo Pharyngeus*, or *Constrictor Fauces posticus*, arises from the arch or hollow of the pterygoid bone, slants obliquely backwards over the posterior part of the fauces, and also unites with its fellow of the opposite side. (*See woodcut, fig.* 8.)

The action of these I shall also be better able to illustrate when considering the physiology of deglutition.

The pharynx receives its nerves by branches given off from the pneumo-gastric, glosso-pharyngeus, and sympathetic.

Its arteries are principally derived from the sub-maxillary artery, and its veins empty themselves into the sub-maxillary veins.

Having now hastily glanced at the anatomy of the pharynx and fauces, I will proceed to the consideration of the physiology of deglutition. The subjoined sketch, however, may serve to elucidate that which might otherwise appear complicated.

1 Constrictor pharyngis anterior.
2 ..... medius.
3 ..... posterior.
4 Œsophagus.
5 Thyro hyoideus.
6 Palato pharyngeus reflected back.
7 Hyo pharyngeus.
8 Pterygo pharyngeus.
9, 9, 9, Stylo pharyngeus.
10 Tensor palati reflected back.

a Tuberosity of the superior maxillary bone.
b Posterior molar tooth.
c Ligamentous portion of the velum palati.
d Dorsum of the tongue.
e Portion of the superior cornu of the os hyoides.
i Styloid process of the petrous temporal bone.
m Left guttural sac.
n Inferior maxillary branch of the 5th nerve divided.
o The antero inferior extremity of the pterygoid bone, shewing the groove in which the tendon of the tensor palati plays.

Physiology of Deglutition.

In passing in review the various and complicated movements dependent on, or which are called into activity by, the process of deglutition, or, in other words, the transit of food from the mouth to the stomach, it will be easy to perceive that the limits of a thesis like the present will, of necessity, preclude the possibility of my entering upon a detailed illustration of the individual action of each particular part: indeed, it would involve the consideration of a most numerous and intricate complication of muscles; and, even had I time and space, ability to unravel so tangled a net-work of junctions would, I fear, be wanting; therefore I shall only at-

tempt an outline of the process, referring those who may wish to complete the picture to some of the popular physiological works.

Deglutition is the act of transferring any substance from the mouth to the stomach; but my remarks now are to be taken as relating to the transmission of food after mastication and insalivation. The former of these operations consists in the mechanical reduction of the food to a proper consistence; the latter, the commingling of it with a liquid called saliva, secreted by glands especially appropriated to that function.

The process of deglutating the mass so prepared may be divided into four distinct periods or actions; the first comprehending its passage over the tongue to the fauces, the second from the fauces into the pharynx, the third from the pharynx into the esophagus, and the fourth from the esophagus into the stomach. The first of these is purely an act of volition, it being accomplished solely in accordance with the will of the animal. The food, when sufficiently masticated, is collected from all parts of the mouth, and placed on the surface of the tongue: the apex or tip of the tongue is now raised against the palate, and by its peculiar movements, aided by the bars (which readily allow the food to pass upwards and backwards, but offer a considerable obstacle to its return towards the lips), the food is conveyed to the summit of the dorsum of the tongue, just about the termination of the bony palate. Here it is the second action commences: this, I should say, is partly voluntary, and partly involuntary; in fact, a mixed action: and it must be obvious that a very different arrangement must now be made, in order to propel the palate forwards, there being no hard unyielding substance for the tongue to press against, or bars to prevent its falling down towards the lips. A slight inspection of the diagram (*letter a*) will shew, much more clearly than mere description can, that the tongue, posterior to that part I have called its summit, forms an inclined plane into the fauces, being roofed over (if I may use the term) by the velum palati. This velum palati is, as I have before said, covered with a large glandular mass: whether the secretion from it be a salivary or a mucous one, I know not; but, be it what it may, the pressure of the pellet squeezes out its contents, and by that means the pellet is rendered smooth, and thus glides down over this inclined plane into the fauces. Co-existent with this gliding down of

the pellet, the larynx is raised or swung up between the os hyoides, and also drawn slightly forward, the tongue at the same time being drawn slightly backward: the epiglottis is now shut down upon the glottal opening (which closure I am inclined to think is accomplished partly by the mutual approach of the larynx towards the tongue and the tongue towards the larynx, and partly by the mechanical pressure of the food against the epiglottis). We have now to see how the pellet is prevented from entering the nostrils, there being a free communication between the nose and the fauces; and here again I must refer you to the sketch. *Fig.* 8 and 9 are the two muscles I have proposed to call the anterior and posterior constrictors of the fauces, and whose actions I have said I should be able to demonstrate. Their use must now be obvious. When the pellet has reached the bottom of this inclined plane, these muscles, contracting, approximate the sides of the fauces, which their peculiar crucial arrangement, as seen in the sketch, admirably adapts them for effecting: in fact, the action of these muscles is precisely analogous to the peculiar species of sphincter muscle found at the cardiac extremity of the stomach.

It would be scarcely possible to conceive that these muscles would completely close the orifice as an orbicular muscle would; but this is provided for and accomplished by the elevation of the velum plati, or rather its free edge, which is raised by the contraction of the tensor palati muscles, the singular arrangement of which has already been pointed out; so that by the contraction of these muscles, aided by the velum palati, the pellet of food is effectually and beautifully prevented from entering the nostrils. The only passage now left for this pellet of food is that of the pharynx, the entrance of which is held open by two pairs of muscles already described. *(See sketch, fig.* 6, 7.*)* There it is immediately grasped by the anterior constrictor *(fig.* 1), which muscle by the slightest tactile impression is instantly stimulated to powerful contraction, as indeed are all the muscles strictly belonging to the fauces and pharynx. We cannot will that we would swallow; there must be a something of sufficient substance to stimulate or touch these muscles, or the act of deglutition could not be excited. This brings me to the third action, which must obviously be a purely involuntary one, viz. that act by which the food is conveyed through the pharynx into the esophagus. As soon as the pellet of food has

been grasped by the anterior constrictor muscles, the larynx is drawn downward and backward by the sterno-thyroidei and sterno-hyoidei muscles, so that the constrictor muscles by that means gain a fixed point to act from; the pellet being gradually propelled from the anterior to the posterior part of the pharynx by the alternate contractions of these constrictor muscles. Having reached the posterior part of the pharynx, it is pushed into, or rather it is seized by, the funnel-like commencement of the œsophagus, which seizure is the beginning of the fourth action, viz. the propulsion of the pellet of food through the œsophagus into the stomach. This is admirably accomplished by the peculiar vermicular motion of this tube, which motion it is well adapted for effecting from the remarkable arrangement of its muscular fibres, the two orders of which, as well as their relative situations with regard to each other, I have endeavoured to point out when speaking of its anatomy. Gravity has nothing whatever to do with the transmission of food through it, as by far the greater quantity is swallowed contrary to gravity when an animal is grazing. These vermicular contractions can only be excited by direct tactile impressions, as the muscles of the pharynx and fauces are excited. Hence it will be seen how essential it is that the œsophagus should possess a perfectly independent action.

The act of drinking, or the swallowing of fluids, is accomplished precisely in the same way as that of food or any other solid material after it has reached the summit of the tongue or beginning of the inclined plane; the difference being in the way by which the fluid is brought into the mouth. The animal applies its lips to the surface, say, for instance, of a pond of water; the mouth is then, at the will of the animal, exhausted, or rather a partial vacuum is formed, when the pressure of the atmosphere upon the surface of the fluid forces it up into the mouth, and, having forced it up to the summit of the tongue, the same actions take place which I have endeavoured to describe when speaking of the deglutition of food.

It would have afforded me much pleasure to have gone more minutely than I have done into a subject so replete with interest; but I find I have already exceeded the usual limits of an essay. I trust, however, I have rendered the subject sufficiently plain to

be easily understood. My aim has been to divest it as much as I consistently could of all technicalities, thus rendering it of greater practical utility; yet it was not possible to avoid the introduction of anatomical terms.

TUESDAY, NOVEMBER 26, 1844.

The PRESIDENT, Professor Spooner, took the Chair, and acknowledged his re-election to office.

The following were elected members:—

Mr. N. F. Clarkson, senior veterinary surgeon Hon. E. I. Co.'s Service; Mr. J. Aked, V.S., Bury; and Messrs. L. E. T. Vicary, J. Mannington, C. Hawes, W. Burrowes, J. Rose, R. Skelton, W. Chapman, H. Fishwick, W. Kent, J. Sargisson, W. Phillips, J. Shepperson, and T. Bass, students.

The following works were presented to the Library:—

By the Patron—"Gilchrist on the History and Treatment of the Diseases of the Elephant."

By the Treasurer—"Burdon's Farrier," 1837.

By Mr. W. Field—"Posthumous Extracts from the Veterinary Records of the late John Field."

By Mr. J. J. G. Wilkinson (translated by him)—Vol. II. "Swenderborg's Animal Kingdom."

By M. U. Leblanc—"La Clinique Vétérinaire."

By Mr. G. Gamgee—"Due Righe sopra un Cervello ossificato in un Animale sano, dal dottore Luigi Patellani."

By Mr. J. S. Gamgee—A translation of the above pamphlet. [This will appear in a subsequent number of the *Record and Transactions*.]

Mr. Ernes stated that he was commissioned by the Veterinary Society of Brussels to request that an exchange of Journals might

take place; and, as a proof of their sincerity, they had forwarded by him the volume published by them during the last year.

On the table were placed many of the morbid specimens forwarded during the vacation, with samples of drugs received from India. Also a cast of a horse's foot from which the hoof had been torn off, hereafter to be particularized; and a large cystic calculus.

The Secretary.—The samples of drugs before you have been presented to the Association by Mr. T. Aston, of the Hon. E. I. Co.'s Service, who received them from Mr. Haggar, V.S., Madras Presidency. They consist of aloes, native sulphate of copper, and betel-nuts.

Respecting the aloes, the appearance presented is that of a mixture of the Cape extract, as met with in the shops, and the Mocha. It exists in small masses, the largest not exceeding a hen's egg in size. The fracture of some pieces is clean and resinous, of others less so; but the odour of these is more aromatic. One or two portions strongly resemble the socotrine extract. It might, therefore, be inferred that this sample is not the produce of an individual plant, but of many plants, the larger quantity being made from the aloë spicata; or, if obtained from one plant, the differences arise from preparation. The dose, according to Mr. Aston, is about four drachms; who informs me that the extract is made in all parts throughout the interior of India, some kinds being much better than others. It is the opinion of some writers on materia medica that the *socotrine*, the *mocha*, and the true *hepatic aloes*, are but varieties of the same species of aloe plant.

In a letter lately received by Mr. Aston from Mr. Hagger, the latter says, "You should not forget to take home to England with you some betel-nuts, as my friend Morton would, I am sure, be glad to try the effects of them on dogs and horses. No one here ever thinks of giving any thing to a dog, having worms, but the betel-nut. The natives invariably use them. I have not given a horse calomel for worms since 1832. Whenever the indications of these parasites are manifested, such as staring coat, impaired condition, loss of appetite, &c., I withhold half the dose of aloes, and substitute one or two drachms of the betel-nut in

powder, adding a little more ginger, and it turns out the worms like a 'broom in a gutter.' I think the betel-nut has only to be known in England to come into general use. Its charcoal has long been extolled for making the best tooth powder known.

"Now for a recipe, which, among many others, has lately come to my knowledge from the native Indians. Get a horse that has a whacking big old splent—whether fired or not—one as big as an orange, and that renders him useless; cut a sheep's kidney in two, put a thick layer of coarse salt on it, and, having trimmed the hair off, apply the kidney to the splent, bandaging it down with a piece of oiled silk. When the kidney begins to smell a little, apply a fresh one; and when it has made a good large hole, or half a hundred little ones, from which a copious discharge takes place, apply a plaister of camphorated mercurial ointment for a few days afterwards; and in three weeks the horse will have neither splent nor blemish! There's a recipe for you, worth a year's pay!"

According to Sir Richard Phillips, the betel belongs to the same tribe of plants as the peppers. It is a climbing plant, the leaf in shape and appearance resembling ivy, but more tender and full of juice. He adds, "there is an incredible consumption of betel leaf throughout the east. The inhabitants chew it almost incessantly, and in such quantity that their lips become quite red, and their teeth black, a colour greatly preferred by them to whiteness. They carry it in little white boxes about their persons, and present it to each other, by way of compliment and civility, in the same manner as Europeans do snuff. This is done by the women as well as the men; and it would be considered an offence if those to whom it is offered should refuse to accept and chew it. The leaves are sometimes used alone, but much more commonly when covered with a kind of lime made of sea shell, and wrapped round slices of the areca nut, the fruit of the areca palm, which is of the size of a small egg, and resembles a nutmeg deprived of its husk."

Professor Burnett says, "there are several species of areca, the best known of which is the A. catechu, as it affords the betel-nut, so much resorted to for its intoxicating and narcotic powers. This is almost the only palm which does not yield sago; but from its fruit an astringent extract is procured, that is brought into the market as an inferior sort of catechu. Slices of the betel-nut

wrapped in a leaf of the betel pepper is a favourite masticatory in southern Asia. A little shell lime is added to keep the taste and odour longer in the mouth. It gives the saliva a red hue like that of blood, and by constant use the teeth become blackened; it allays hunger, and is hence chewed, as tobacco is in Europe, to appease the appetite; and it is said to be the height of rudeness in the East to speak to a superior without having *a quid* of betel in the mouth. It produces intoxication when first chewed, but this effect is soon got over, and the natives say that it is a tonic, and moderates profuse perspiration."

The drug I now exhibit is the resinous extract of the wild hemp (*cannabis sativa*). The following note was transmitted with it:—

My dear Sir,

Be pleased to accept the accompanying drug, which I have brought from India. I do not know whether it is generally known in this country: the Indian name for it is "churrus;" it is a resinous extract obtained from the wild hemp. I have seen several cases of tetanus cured by it in India. The dose I have given is one scruple, in the form of tincture, every four hours, the patient having been first copiously bled, and the bowels frequently acted on by aloes. It has also been used by human surgeons for the cure of cholera with great success; in fact, there are few cases but have yielded to it, when taken in time. Perhaps you are already acquainted with it; if so, pardon the liberty I take in sending it to you, since I do so under the impression that it may not be generally known. The natives of India use it to smoke in their hookas, combined with spices and tobacco, and with it they perfectly stupify themselves; and when they recover from its effects say they have had heavenly dreams. It is much similar to opium in its narcotic effects, but differs from that drug by not producing the same amount of debility subsequently.

Believe me, my dear Sir,

Your's very truly and obliged,

J. W. Hoey.

To Mr. Morton.

I believe the hemp plant has been long known from its possessing narcotic properties, and yielding an intoxicating liquor. "In

India," says Professor Burnett, "hemp is cultivated as a luxury, and used solely as an excitant. It possesses peculiar intoxicating powers, and produces luxurious dreams and trances. The leaves are sometimes chewed, and sometimes smoked as tobacco. A stupifying liquor is also prepared from them; and they enter, with opium, betel-nut, sugar, &c. into various narcotic preparations. Prepared hemp is called by the Arabs *Hashish*, by the Hindoos *Banghie*, by the Turks *Malach*, and by the Hottentots, who get drunk with it, like more civilized communities, *Dacha*. Hemp seems to owe its narcotic powers to a gum resin, obtainable in a separate state from at least one variety and which is called in Nipal *Cheris*."

M. Landerer, speaking of the "Hadshy" of the Turks, says, "this beverage is derived from *Cannabis sativa*. The relations of climate, however, produce a far more considerable development of the narcotic principle.

"The mode of preparing the hadshy is as follows:—When the hemp plants have blossomed, and have begun to form fruit, the delicate shoots, leaves, and unripe fruit are pressed, and set into vinous fermentation by means of a syrup from sweet fruits, or rather are thrown into the fermenting liquid. The fermented liquid is poured into flasks, and frequently coloured red with *Coccus Cacti*, or *Coccus Ilicis*, and then used as a spirit."—*(Medical Times.)*

I know nothing of the action of this agent on the horse, never having given it. But, a short time since, an account of its effects on the human subject appeared in the medical periodicals, communicated chiefly by Dr. Clendinning, who had been induced to make a trial of this extract of hemp through the recommendation of Dr. O'Shaughnessy, of Calcutta, who preferred it to opium.

Dr. Clendinning found it "lessen neuralgic pains, relieve the irritation and spasms of chronic bronchitis, rheumatism, &c.; to subdue sleeplessness or disturbed rest; to be highly useful in checking cough in phthisis, and cramp and irritation in the limbs, &c., without any interference with the digestive processes or intestinal action or secretions, yet with an anodyne and hypnotic effect not less uniform than opium. He gave it trial, also, in several cases of low fever, characterised by spots, tremors, and delirious restlessness, and with very good effects. It repressed delirium and conciliated repose, and thus secured that tranquillity and refresh-

ment, the proper effects of sleep. He reported, also, some instances of the successful use of hemp extract as a pure anodyne to secure sleep, by suppressing pain arising in one case from a cut, in another from a violent purgative, and in a third from rheumatic irritation of the meninges."

Mr. Ley, in a paper read before the Medico-Botanical Society, says that, "Although the hemp is rejected from our officinal preparations in England, it is, and has been for a long series of years, in constant use as a popular remedy throughout the east. It exhales a powerful narcotic odour, and the branches are gelatinous to the touch, with a resinous secretion, which is collected when the seed is found (as the plant is then in the greatest perfection), and is sold under the name of *churrus*: the shoots from which the resin has *not* been collected are cut, dried, and sold as gunjah. Although hemp is no longer used medicinally in England, there is an old Act of Henry the Eighth yet in force, by which it is forbidden to be soaked in ponds or running streams where cattle drink. The older writers speak of it as a violent poison, and state that the water in which it has been soaked produces its effects as soon as drunk. The resin of the *cannabis Indica* is in general use as an intoxicating agent, from the furthermost confines of India to Algiers. If this resin be swallowed, almost invariably the inebriation is of the most cheerful kind, causing the person to sing and dance, to eat food with great relish, and to seek aphrodisiac enjoyment. The intoxication lasts about three hours, when sleep supervenes; it is not followed by nausea or sickness, nor by any symptoms, except slight giddiness, worth recording. These effects are much modified in this country, and much less marked, possibly from the length of the voyage rendering the article deteriorated in value. The subsequent effects are depression of spirits, and relaxation of the muscles in a marked degree; yet the lightness attending that relaxation, the free perspiration on the skin, and the increase of appetite, have made some old rheumatic persons speak of it as the elasticity of youth."—*(Lancet.)*

In the *Edinburgh Monthly Journal* are recorded a series of experiments with Indian Hemp, by Dr. Laurie, and the conclusions to which he comes respecting it are less favourable than those I have adduced: the following are the principal ones:—

"1. It seems to belong to that class of narcotics which rapidly induce excitement and intoxication, followed by sleep, neither sound nor refreshing.

"2. In a full dose it acts powerfully on the heart, causing palpitations, and rapid, weak, intermittent pulse; and on the nervous system, producing delirium, coma, convulsions, and dilated pupils.

"3. Its effects are generally transitory. In one case, however, the intoxication and dilatation of the pupils lasted nearly forty-eight hours.

"4. It is a very uncertain agent, in some cases producing the most violent and seemingly dangerous symptoms, in others being nearly inert.

"5. It very frequently causes vomiting, which, whether it occur spontaneously or from emetics, very speedily relieves its unpleasant, and perhaps dangerous, effects.

"6. Applied around the eye, it does not dilate the pupil.

"7. It exerted little influence on the few patients to whom it was given in the form of enema.

"8. He does not think it is a valuable addition to our narcotic medicines. In very few instances did it act as an agreeable soporific and anodyne; in none did it succeed when opium had failed; and in one case only was it preferred to opium.

"9. So far from acting generally as an anodyne, its effect was so disagreeable, that the majority of those who took it once, only did so a second time on compulsion; and this is the more remarkable, as the patients on whom he experimented belong to a class to whom stimulants of all kinds are familiar, and who would greedily swallow opium and spirits to an unlimited amount.

"10. It caused an immediate craving for food, and, in a few, permanently increased the appetite."

I have collated these testimonies, having no information of my own respecting the action of this drug to communicate to the Association; but I beg to state, that, should any member of the profession be desirous of trying its effects, he shall be supplied with the agent, on application being made for it.

The following communications were then read:—

1.—Case of Filariæ Oculi in the Horse.

By Mr. N. F. Clarkson, *V.S., Hon. E. I. Co.'s Service.*

Trichinopoly, 1836.

This case was singular from there being *two* worms in one eye—the only time I have ever observed a similar instance. The subject was a small pony, belonging to Captain Butcher, of the Commissariat Department at Trichinopoly.

On first seeing the pony only one worm was visible, which was rolling about and curling itself within the eye; the cornea—as is invariably the case—being of a dense milky whiteness.

I ordered a small dose of aloes, sufficient only to create nausea, and directed cold cotton cloths to be hung loosely over the eye till the next day, when I operated and extracted the worm.

The next morning it was reported to me that another worm was to be seen. The aqueous humour by this time had been fully replaced, and the eye was as full as ever. Not, however, wishing to interfere with the newly-formed cicatrix produced by the puncture, I waited a couple of days, continuing the treatment previously stated; and then, with the same success, extracted the second worm, which was longer than the other by about half an inch. The cooling applications being carefully continued, the eye soon became clear, and did as well as could be desired, the sight being perfectly restored.

2.—Case of Filaria Medinensis in the Horse.

By the same.

Katagherry, June 1837.

This case is the only one I have met with in the horse. The subject was of the Australian breed, the property of Captain Taylor, 2d Madras Cavalry. The horse had a short time previous been driven in a buggy some fifty or sixty miles on the road from Trichinopoly to the Neilgherry Hills, but was not observed to be ailing

for a fortnight afterwards; when, on going a journey of about seventeen miles, he became lame in the off hind leg.

I soon detected a small enlargement on the lower part of the large pastern, in the centre of which, from a peculiarly irritable sore, a guinea-worm was seen hanging out, about the length of two inches. It had somewhat the appearance of a small tendon, being about the sixteenth of an inch broad and half that in thickness: the portion that had been most exposed to the air was withered and shrivelled.

On pulling gently at the worm, two inches more were drawn out; and it then became fixed.

Fomentations were directed to be used. On the next morning two inches more of the worm were readily withdrawn from the opening. In this state it continued for three days; when the worm was no longer visible, and I imagined the horsekeeper had used force and broken it. The opening however remained, and from it there was a constant serous exudation for some time; but the swelling in a day or two became less, and the horse hardly evinced any lameness. He then performed a journey of 160 miles in a week, and reached the cantonment of Trichinopoly well.

The above horse came down six weeks afterwards, breaking his knees and laying open the joints, for which he was shot. The hind leg, on post-mortem examination, shewed no trace of the parasite.

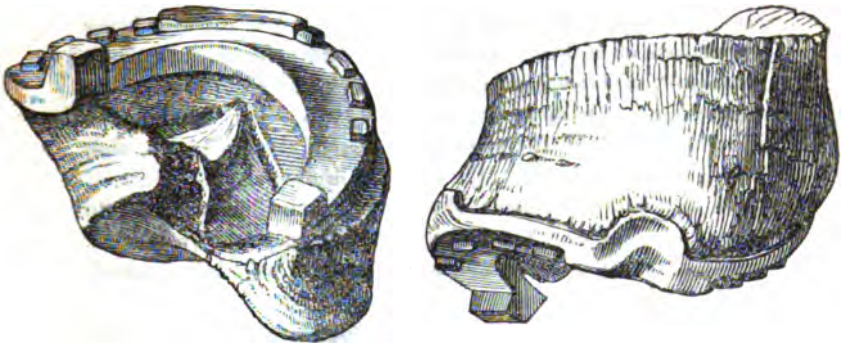
The President.—There is nothing in the character of the filaria oculi denoting it to be of solitary habits. I mean, we cannot detect, or we have hitherto failed in detecting, male and female organs of generation, which some creatures low in the scale of creation, and of known solitary habits, are observed to possess. The fact, however, is now established, that, though this worm is generally found alone, more than one may exist in the eye at the same time. There is another circumstance connected with this parasite, concerning which I am rather curious; and, as Mr. Clarkson is present, I cannot forbear inquiring, whether there is any foundation for the general belief which associates the presence of this worm with a disease known in India by the name of Kumree?

Mr. Clarkson.—I know but of one instance that bears at all upon

this point. An officer in India had two horses, both of which were attacked with kumree, and both were said to have been the subjects of worm in the eye. The fact, however, was not well established, and, for my own part, I do not believe it. I have never seen a case of kumree that in any way inclined me to adopt the generally received opinion, nor can I conceive there is any connexion between the two diseases.

3.—Case of entire Removal of the Hoof, and its Reproduction.

By Mr. B. Cartledge.



Market-street, Sheffield, July 30th, 1844.

Dear Sir,—The case I am about to give you an account of, being one of rare occurrence, I thought it would not prove uninteresting to the members of the Veterinary Medical Association. It is an instance of complete removal of the hoof by mechanical force.

Our patient was a brown mare, five years old, the property of Messrs. Crawshaw & Co., railway contractors on the Sheffield and Manchester line.

On June 20th the mare was, as usual, working on the line, drawing one of the wagons for the removal of soil from one place to another, and, as was the custom, the pace is generally increased at about the distance of from sixty to eighty yards from

where the unloading takes place, in order to add to the velocity, so that the contents of the wagons might roll down so great a precipice. It was at this increased action, when the mare was being removed from the wagon, that she stepped between the ends of two iron rails, sufficiently apart to admit the foot only, when one end of the rail inserted itself between the sole and toe of the shoe, the other at the top and in front of the crust.

The mare, finding herself fixed, endeavoured to disengage herself, and, in doing so, got in front of the wagon, which, coming at a great pace, forced her down into the pit, leaving behind the off fore hoof, which was only removed from its situation between the two rails by a large hammer, it being so firmly wedged in. The shoe and hoof were bent in a very peculiar manner, as the accompanying cast will shew, the inside heel being completely raised from above the level of the frog, not one of the nails being unclenched, or in the slightest degree having given way to so large an amount of force imposed upon them, although the toe of the shoe was raised from the sole by the rail being immediately under it. (*See woodcut.*) The mare had been shod the day before, and, having a good sound foot, the shoe was firmly put on.

Being a mile from home, she was with some difficulty made to travel that distance. On her arrival, my preceptor, Mr. Taylor, was immediately sent for, who found her, as I have before stated, with the off fore foot hoofless.

Proceeding to examine the foot, he ascertained that it had bled considerably, which, however, was stopped by bandages to the foot and a ligature round the coronet. The laminæ on one side, and a small portion of the sensitive sole, though not to any great extent, were lacerated. The coffin-bone was not all injured. The bleeding having nearly ceased, she was put into slings, the foot carefully washed with warm water, and immediately bound up with pledgets of tow saturated with the simple tincture of myrrh and tincture of opium, of each equal parts.

The dressing was ordered to be allowed to remain on all night, and on the following morning to be removed. The foot was then bathed, as before, in warm water, and the application of the tinctures repeated night and morning. The medicine internally given was castor oil, with tinct. opium, and this, in a diminished dose, was ordered the next morning. Blood was also abstracted from

the jugular vein, to the amount of six quarts, so as to allay the inflammatory fever set up. The food consisted of bran and linseed, with small portions of hay and water. The mare being in a highly excited state, and suffering such severe pain, the opinion Mr. Taylor gave was, that should she get over the first four days (which appeared quite uncertain) he had no doubt of her ultimately getting well, and also that she would have a perfect hoof formed. It was now left for the owners' consideration, whether they thought the mare worth her keep till such took place, the time mentioned by Mr. Taylor being four or five months. She was seen again the fourth day after the accident, and was then found to be perfectly tranquil, and feeding well; her pulse, which at the first visit could not be counted, was now not more than 65 beats in the minute. On removing the dressings the foot presented a very favourable appearance; the treatment therefore varied only in the application of a linseed meal poultice over the former dressings of tinctures of opium and myrrh, confining the whole in a soft leather boot. Diet as before; in addition to which give a few oats. Should the bowels become constipated, repeat the castor oil without the opium.

June 28th.—The animal was again seen, and appeared to be going on very favourably. The poultices were directed to be discontinued, and the parts dressed, every other day, with sol. sulph. cupri, as the granulations were getting rather luxuriant.

July 6th.—To-day she was found to have gone on so well, having, two days before, been removed from the slings, that it was thought justifiable to turn her out, protecting the foot with a boot, and ordering the dressings to be repeated.

July 23d.—She was seen by me, in the field, where I had the boot removed; and so much had she improved, that not less than two inches of crust, proceeding from the coronary ring, had been formed, and the foot looked remarkably healthy.

I am, your's, &c.

To Mr. Morton.

The President.—This case is so interesting and novel in its nature, and so encouraging in its results, that I cannot refrain from making a few observations with regard to it. I have both seen and heard of cases of sloughing of the hoof supervening upon

inflammation of the vascular uniting medium between the hoof and the internal structures of the foot, and where a reproduction of it has also taken place, although, perhaps, not so perfect in form as the original hoof, yet sufficiently tough and resisting to enable the horse to progress with comparative freedom and ease, thereby rendering his services available to his owner. I have also known instances where the hoof has been torn off, as in this case, by mechanical force; but in all of them such has been the extent of the laceration of the secreting surfaces, that no hope could be entertained of any thing approaching to a perfect reproduction of the horny covering, and the suffering animals have consequently been consigned to the hands of the slaughterman.

I think that this case stands alone in the records of veterinary science, and, therefore, it is the more incumbent on us to obtain all the information we can respecting it. Mr. Cartledge has given us a general history of the accident, and of the nature of the treatment pursued; but I am desirous of knowing the precise time occupied in the reproduction of the different constituent parts of the hoof and the order of their formation, and especially to be informed with reference to the development of the horn over the lacerated parts of the laminæ; I therefore propose that our Secretary be requested to solicit further information on these points.

Dear Sir, *Market-street, Sheffield, Dec. 15th*, 1844.

By referring to the history of the case I have already forwarded, you will find that the accident occurred on the 20th June, a fortnight after which time I observed the horny crust to be forming from the coronet, and the insensitive laminæ at the same time, in which, on every visit, an increase of growth was perceptible, and it soon attained a thickness exceeding that of the other hoof, but which, at the same time, presented a more upright appearance. It was not until three weeks after our first visit that any formation of new sole or frog was to be seen. The sole, of the two, was the first, being secreted by the sensitive sole, the growth proceeding from the heels. In like manner the insensible frog was being produced by the sensitive.

During the last week in October, the mare having her foot pro-

tected with a bar-shoe plated at the bottom, and so formed as to open without the necessity of removing the shoe, in order to facilitate the applications of the tinctures, was put to light work, which has since been gradually increased, and she now performs her usual labour equal to any other horse.

I send you a sketch of the present appearance of the foot. You will observe by this sketch, that the growth of the wall or crust, and insensitive laminæ is not yet quite complete; nor is the sole, there being wanting about an inch of the horny substance of it, the entire completion of which I should rather doubt, as I mentioned, in my former communication, that the sensitive laminæ and a small portion of the sole were lacerated; and it is in these parts that the imperfections exist.

I remain, dear Sir,

Your's obliged,

B. CARTLEDGE.

To Mr. Morton.

P.S.—Perhaps I should have stated, that the yet imperfectly-formed wall not admitting of the insertion of nails all around it, the shoe is held on partly by nails and partly by a strap attached to it bound round the coronet.

4.—CASE OF HYDROPHOBIA (RABIES) IN A HORSE.

By Mr. W. RADDALL.

Plymouth, May 8, 1844.

Dear Sir,—HAVING been called, a short time since, to see a very interesting case of hydrophobia in a horse, and not having seen a similar one recorded, I am induced to give you a rough sketch of it, which, if you deem it worthy, you are quite at liberty to insert in the *Transactions of the Association*. The subject was

a roan pony, twelve years of age, broken winded, and occasionally used in saddle and harness, his work, on an average, not exceeding ten miles a-day. He had been kept in the stable during the past winter, and fed on ordinary diet. He was the property of Mr. Newton, a clergyman residing about three miles from Plymouth, and his natural temper was very good. Mr. N. had a Blenheim spaniel that had been bitten by a hound about a fortnight previous to the pony shewing any symptoms of disease. The beagle being known at the time to be hydrophobic, both dogs were destroyed on the following day, and both had access to the stable in which the pony was kept; but neither of them was seen to bite the pony. On Monday, March 1st, the pony was observed to be dull and off his feed, when he was sent to Plymouth and placed under the care of a groom in a livery stable. During the whole of Monday he frequently made attempts to stale, passing small quantities of urine at a time, which was of a high colour, and a tremulous motion pervaded the muscles of the chest and shoulders. In the evening the groom bled him to the extent of three quarts, and gave him an ounce of nitrate of potash in a quart of gruel. The animal, however, would neither eat, drink, nor lie down, but stood still, and appeared very dull. On Tuesday he made several attempts to drink, but would, after sipping once or twice, desist from any further attempt to swallow, and commence rubbing his lips and mouth on the top of the pail, as though he would fain drink, but dare not attempt it. The bowels being constipated, a ball composed of four drachms of Barbadoes aloes was given him, and an injection thrown up, which brought away a few hardened fæces. On Wednesday morning the groom was particularly struck with the peculiar bright or rather wild appearance of his eyes, he knowing the general nauseating effects of the agent that had been given. The bowels not having responded, six ounces of castor oil were exhibited, and another injection thrown up. Urine of a healthy appearance was voided two or three times during the day, and much flatus passed. At eight P.M. on Wednesday, the symptoms became more urgent. He commenced jumping from one side of the stall to the other; the respiration was laboured, and he was seen frequently biting his fore legs and sides, and even bit a piece of integument, the size of a crown piece, off his near knee: all the muscles in the region of the head, neck, chest, and shoul-

ders were in a state of convulsive tremor. He was again bled to the extent of five quarts, shortly after which, as he became much worse, I was requested to see him for the first time. When I arrived, in order to prevent his biting himself, he had been muzzled. On approaching him with a light in my hand, he made a sudden dash at me, as far as his halter would allow him to jump. On watching him a short time, I pronounced him to be labouring under hydrophobia. His respiration, at times, was very laborious, which evidently came on in fits. These convulsive fits returned at intervals of about fifteen or twenty minutes, each succeeding one being more intense in its nature than the one which had preceded it. All the symptoms were aggravated by throwing open the door of the stable behind him, so as to allow a current of air to fall on him. In the violence of the paroxysms he would suddenly throw himself down with force on the pavement, bite the muzzle, and attempt to bite himself, his respiration being still much laboured; in fact, it appeared as if the glottis partook of the spasm, for he would produce that peculiar noise in respiration which is heard in the human subject when labouring under a severe attack of asthma. He continued to get worse until about two o'clock on Thursday morning, when death put an end to his sufferings, which were of the most frightful character I ever beheld. On the following day, at two o'clock, twelve hours after death, a post-mortem examination was made of the body. There was an effusion of about three ounces of serum between the membranes of the brain; but the substance of the brain and the membranes themselves were perfectly healthy. The vessels of the glottis, and pharynx, and larynx, were highly congested, and small spots of ecchymosis existed, particularly around the epiglottis; the salivary glands were considerably injected; the stomach contained a quantity of crude ingesta, such as half-masticated hay and reeds, and a slight blush of inflammation existed on the mucous coat. The abdominal viscera were all perfectly healthy; the whole of the theca vertebralis was considerably injected, as were the pleurae and peritoneum reflected over the dorsal and lumbar vertebra; but the other portions of these membranes were perfectly normal in appearance.

Hydrophobia has been raging to a fearful extent in this neighbourhood for the last six months: two or three deaths have oc-

curred in the human subject. One poor man I witnessed the death of, whose agonies I shall never forget.

I am extremely sorry that I did not inoculate an old horse or an ass with the saliva taken from the pony whose case I have just described, as it would tend to decide the question, whether hydrophobia be a disease originating in the canine and feline species, and incapable of being communicated by animals of the herbivorous and graminivorous tribes, or whether it may not be conveyed by any infected animal to animated nature throughout the whole creation.

I am,

Your's very truly.

To Mr. Morton.

The President.—The peculiar feature of this case is the rapidity with which the symptoms were developed. If the spaniel which was bitten by the rabid dog was destroyed before the disease developed itself, then, as all are agreed, that previous to such development the bite is innoxious, the same dog that bit the spaniel must also have bitten the horse. My experience convinces me that in the horse rabies is not exhibited before three weeks, nor later than seven weeks after the period of inoculation; and it is a characteristic of that disease in this animal, that it is always accompanied with violence. The dog is not always vicious. In the dumb stage of rabies his naturally affectionate disposition is increased, neither is the aversion to water in the canine species a symptom of rabies; in the horse, however, this disease sometimes calls forth the dread of fluids, which marks hydrophobia in the human subject, while at the same time it generates a malice and a violence that render every precaution on the part of the attendants necessary. So great is this violence in some cases, that I well remember an animal which I attended some years since biting at every thing around him, and with so much force that the incisor teeth—strong and powerful as they are—were by his desperate efforts actually fractured to the gums.

5.—A Case of Carcinoma in the Brain of a Horse.

By Mr. R. Barrow.

Newmarket, 15th May, 1844.

Dear Sir,—I have sent you the right lateral lobe of the cerebellum, taken from a mare, which appears to partake of a carcinomatous character. I have also sent that portion of the cranium to which the carcinomatous tumour was attached. As I consider it a case of a novel description, I should wish you to lay it before the Association. The particulars of the case I will send in a few days.

I remain,

Your's truly.

To Mr. Morton.

Newmarket, May 23, 1844.

Dear Sir,—The mare to which I alluded in a former letter was seven years old, and of a plethoric habit. She was attacked, Feb. 18, 1844, with partial paralysis: she was then almost incapable of standing, and when caused to move, threw her limbs about in a very ludicrous manner. Pulse 44, full and bounding—bowels constipated—respiration undisturbed—appetite unimpaired. I abstracted blood to the amount of ℔ xviij before I made any impression on the pulse; administered a brisk purgative, threw up frequent enemas, and limited the diet to bran mashes. Under this treatment, with the occasional exhibition of small doses of aloes, she apparently recovered. On March the 4th she had a recurrence of the attack. The same treatment was had recourse to, with the exception that the bleeding was not carried to such an extent, and she again, to all appearance, recovered; at any rate, she took her usual exercise, and was being prepared for work. On April the 16th the mare again relapsed, and was sent to our infirmary. The instability of her movements was the same as previously described, but the paralysis was confined to the off side. I now inserted setons on each side of her poll and under the jaw, and repeatedly applied blisters to the whole course of the spine, and

gave repeated doses of aloes, so as to overcome the constipation of the bowels, which had become exceedingly obstinate. But little relief being afforded, I determined on trying the effects of strichnia, and gave it in gr.ij doses twice a-day, increasing the dose until she took ten grains daily, but without any apparent effect; in fact, the instability became daily more manifest. The disease at length degenerated into a complete case of hemiplegia, attacking the off side of the body. The head and neck were drawn to the off shoulder; the eyeball was sunk deeply downwards and inwards within the orbit, occlusion of the nostril existed, and sensation was destroyed on the affected side. The case being now utterly hopeless, I recommended the owner to have her destroyed, which was accordingly done.

The *post-mortem* appearances of the abdominal and thoracic viscera were perfectly normal. There was effusion to a considerable extent within the ventricles of the brain, and likewise within the sheath of the medulla spinalis; there was, also, softening of the substance of the medulla spinalis, and carcinoma of the right lobe of the cerebellum.

I have always understood and observed, that disease of one side of the brain generally affects the opposite side of the body; but this case is an exception. I am sorry I have not sufficient time to expatiate more fully upon this interesting case; and, therefore, must leave the members of the Association to draw their own conclusions.

I remain,

Your's sincerely.

My dear Sir, *Newmarket, May 29th*, 1844.

I regret I was not sufficiently explicit in my last communication. I, however, trust I shall be able to shew I am right, although there appears a little discrepancy. The limbs on the off or right side of the body were certainly rendered utterly powerless; for when she attempted to move she fairly pulled them after her; but the limbs on the near or left side retained their power of motion to the last. The head and neck, being drawn towards the off or right shoulder, impresses you with the idea that the paralysis was

on the near or left side: it may be so, as far as the muscles of the neck are concerned; but it was not so with the head; the eye on the right side being so depressed within the orbit that the transparent cornea was nearly hidden from view, the right nostril was also collapsed; and these symptoms, in conjunction with paralysis of the limbs on one side, warranted me, I think, in considering it a case of hemiplegia, attacking the off or right side of the body. May not that peculiarity of the neck be occasioned by the pressure of the fluid at some particular part? *Sensation, too, was destroyed on the right side only.* I think it necessary to state that she took the strychnia for the period of three weeks.

Now, I think I have answered your questions, and, I trust, to your satisfaction; but I am fearful I am giving you unnecessary trouble.

I am,

Your's most sincerely,

RICHARD BARROW.

Mr. W. J. T. Morton.

The President.—As has been stated, on reading Mr. Barrow's description of this case, which presents so many peculiarities, I could not forbear requesting further particulars; for, at first, I candidly confess I was doubtful whether, in the haste of writing, some mistake had not, unintentionally, been made. The peculiarities to which I allude are these;—the head was drawn to the *right* side, yet the *right* limbs were paralyzed. Mr. Barrow, also, in his last communication, informs us that the right eye was drawn within the orbit, while the nostril on the same side was collapsed. I can bear testimony to Mr. Barrow being a most minute observer, a gentleman of the strictest veracity, and a practitioner of unquestionable talent. There is, therefore, in my mind, no room to doubt the correctness of the description he has favoured us with. It remains only for us to endeavour to account for symptoms which, however contradictory they may appear, we may rest assured existed. In the head of the same animal we hear of spasm and of palsy too; precisely opposite conditions present at the same time. Nor is that all. In the trunk also there was spasmodic contraction of the muscles of the right side of the neck, with a loss of power and sensibility in both the extremities of the same side. It was, therefore, a

case of partial paralysis, associated with spasm, rather than one of pure hemiplegia; and in the partiality the disease manifested, as it were, for particular parts and organs, the history of the case becomes important and extraordinary. It merits our most patient investigation. The mare was first attacked in February last. The peculiarity of gait was then the leading symptom; for, although the bowels were constipated, the pulse was but 44, and the breathing not accelerated. The affection of the limbs Mr. Barrow refers to the brain, and by appropriate and active means succeeds in removing it. The animal is seemingly restored, and her owner again puts her to work. The interval of apparent health, however, was but short: a fortnight only elapsed between the date of her first seizure and the commencement of the second attack. Again Mr. Barrow's assistance is solicited, and once more his skill restores the animal to her master, seemingly cured. The mare is being prepared for work when the symptoms for the third time return, and in a more aggravated form. It is during this third attack that those peculiar and contradictory states of the same side of the body appeared. The measures resorted to for her relief present no novelty: they were, however, appropriate and energetic; but failing to produce any beneficial effect, Mr. Barrow advised the owner to have the animal destroyed. That advice was followed, and what does the *post-mortem* examination present? Fluid in the ventricles of the brain and theca vertebralis, with softening of the spinal marrow, and the tumour now before us growing from the floor of the cranium.

The surface of the tumour is marked by many vessels; and its substance consists of several lobes of unequal size held together by arteries and veins with their connecting cellular investment. It is firm, almost hard to the touch, and on cutting into it, I find it to be composed chiefly of condensed tissue, within which cells and granules can be perceived. I agree with Mr. Barrow, that it it is of a carcinomatous nature. This cancerous growth was placed between the basilar process of the occiput and the petrous temporal bone. It overlaid and obliterated the foramen lacera basis cranii, pressing against the cerebral surface of the right side of the cranium. The internal auditory meatus is filled with its substance, and Nature, striving to remedy the loss occasioned by the obliteration of the important cavity through which the eighth pair of

nerves emerges and from which the jugular vein takes its origin, has absorbed that part of the cranium which surrounds and completes the lingual foramen, seeking thereby to provide an exit for the blood, which otherwise might have produced a fatal congestion. The lingual foramen and the foramen lacera basis cranii have become, as it were, fused together, and as that part of the jugular attached to the portion of skull before us appears pervious, it is through this abnormal channel the venous blood must have flowed. Congestion, therefore, was no cause of the symptoms produced by the disease. We are deprived of this ready and acceptable source of explanation for almost every kind of cerebral disturbance.

Let us, then, reflect, and we shall perceive the disease was in the first instance limited to the cerebellum, and, being probably of a subacute inflammatory nature, yielded to treatment. It was afterwards that the surrounding parts became involved, and then the best directed and most energetic measures afforded no relief.

But, conjoined with the cerebral tumour, the post-mortem shewed the spinal marrow to be softened; and to this, I think, we must attribute the paralysis of the extremities. The softening may, perhaps, be reasonably ascribed to the general derangement produced in the nervous and vascular systems by the fluid deposited in the theca vertebralis and the cranial disease. The tumour must have caused excessive cerebral disturbance. The whole of the brain on the right side must have been, sympathetically, more or less involved; but to the parts removed from absolute pressure the effect would probably be of an exciting nature. Now, gentlemen, the motor nerves of the orbit, being placed anterior to the cerebellum, were involved, but not paralyzed. Spasm was the result of the excited actiou; and thus the globe of the eye was drawn inward. But the portio dura, which supplies the lips and face with motion, compressed by the abnormal growth, was, as it were, tied within a ligature, and utterly incapacitated from performing its function. To the pressure, therefore, of the tumour I attribute the paralysis of the lips and nostril: by the excited action or inflammation accompanying the growth, I account for the spasm of the ocular muscles, the motor nerves of which were placed beyond the reach of pressure. The compression of the medulla oblongata on the right side, on the principle of the decussation of its

fibres, satisfactorily explains the loss of resistant contractility in the muscles on the left side of the neck; while the nerves on the right side may have shared in the stimulating effect which operated on those originating in the anterior of the brain.

It is far too common a practice to associate every nervous disorder with the loss of power or sensibility. Too often is it forgotten that excess is as much a symptom of disease as diminution. Plethora and atrophy are alike symptomatic of derangement. Health is the equilibrium; and whatever sways the balance, no matter to which side the beam inclines, originates disorder. The over-nice, who picks his food and complains that all he tastes is badly flavoured,—that sensitive appetite is as much diseased as is the one who ravenously swallows every species of provender, regardless of its quality, so that it will but fill his stomach. It should not be lost sight of, that the two opposite extremes often tend to produce the same result. And in nervous pathology, excessive action—exemplified in tetanus—or loss of action, as in paralysis, are alike symptoms that demand the serious attention of the practitioner. In the one case his efforts must be directed to abate the increased energy of the vital force, which is rapidly hurrying the animal on to dissolution; and, in the other, he is required to excite and rouse the declining embers of vitality, so as, in either case, to restore that equilibrium of power between the laws of chemistry and the laws of life which we usually denominate health. It is not always in cases of cerebral injury that, even where pressure may be reasonably expected to exist, we may with certainty predict paralysis as the termination. This leads me to the consideration of an interesting case which, at the conclusion of last session, was treated in this infirmary:—A horse was admitted which had received a kick upon the forehead, by which the frontal bones were injured. Examination of the wound detected a slight fissure in the bone, inclining to the right side of the cranium. The pulse was somewhat accelerated, and the constitutional excitement was by no means great; the chief symptom being an almost incessant turning of the head towards the side, and always in the same direction. He would, also, protrude the nose and curl the lip, while the ears were laid backward; and as his gaze was not of the unconscious nature that denotes mental derangement, but indicated design, as if the animal would by the action have pointed to the seat of pain, it be-

came difficult not to believe he laboured under some abdominal affection. No one who had not seen the wound upon the forehead could, by the symptoms, have arrived at any other conclusion; a correct diagnosis, therefore, was attended with some difficulty. It is true that no lesion connected with the cranium can be so slight as not to demand attention. Nevertheless, I have removed large portions of the cerebrum in various animals, and apparently with little pain or inconvenience to them; yet we know the organ that thus permits its integrity to be interfered with by the knife, may, by the pressure of a substance so minute as to excite our wonder, be irreparably injured. Such considerations made me pay particular attention to the wound upon the forehead in this case. The surrounding integument was slightly swollen, and indicated the presence of an imprisoned fluid; I therefore enlarged the orifice, and let out a small portion of pus, which was dark in colour, and had a somewhat fœtid odour. By this operation a larger surface of the bone was exposed, which was found to be denuded of its pericranium and softened, but no depression of it was detectible. The animal was bled, an aperient administered, and constant fomentations were applied to the forehead. On the following day the bowels responded to the medicine, and the horse appeared to improve under the treatment. Still the locality of the injury, and the extent and nature of the diseased bone, made me dubious of the successful termination of the case. The patient, however, continued for several days without any material change of symptoms, other than the contraction of the edges of the wound and a diminution of the discharge. The peculiar symptom of pointing his nose to his abdomen was as frequent as ever, yet his evacuations were regular, his respiration undisturbed, and his appetite good. He would often take rest by lying down in his box, and exhibit no restlessness beyond turning his head to his side. The pulse, even now, was but little quickened, and evinced its normal force. It was thought advisable by some parties who saw the case to trephine the cranium; but several consultations being held by Professors Sewell, Simonds, and myself, as to the propriety of performing this operation, and, taking into consideration the non-existence of depression and the extent of the softened surface of bone, we could not see any thing to warrant the adoption of the proposal. Trephining the cranium is a more safe and

simple operation when performed on the human subject than it can possibly be rendered to the horse. The patient is more susceptible of control; and to jag the dura mater with the instrument, or plunge it into the substance of the cerebrum, accidents, which the struggles of an animal might easily occasion, would greatly endanger the case, and probably place the operator in no very enviable situation. The surgeon, however, should have the heart of a lion, and, had there been no other objections, I should not have hesitated. Again; the cranium of man is, in a great measure, free from muscular attachment; that of the horse is entirely covered by a muscle second to none in the whole body in vascularity, and as constantly and actively employed as any other, if we except those of organic life;—I mean the temporalis. To cut through and remove a large portion of the substance of this muscle was a proceeding which I thought required a pressing necessity for its justification, and, had it been safely effected, and the operation even successfully concluded, I could not forget that the cranial bones are never reproduced. A horse with a hole in his skull, or a cavity simply closed by skin and membrane, would seem to me to be a creature unfitted for the safe uses of his master. When we consider how frequently the head of the horse is struck, and how much it is subjected to pressure and irritation caused by the harness, it certainly appears to me that the entirety of the normal protection is not more than equal to the efficient protection of the brain. Moreover, the relative position of the veterinary and the human practitioner is very different. Let the one but save the life, even though he leave the body powerless and the mind vacant, gratitude and reward are heaped upon him: but of us it is demanded not simply to preserve existence;—the horseman does not ask us merely to prolong the life of his faithful servant, but to renew and to restore those energies that render the animal's services of value to him. We may subdue the disease, remove all danger, yet if we leave the activity or intelligence of our patient weaker than before, no matter how much we may have striven to avert those consequences, the owner looks at the bill, and, at the lessened value of his servant, adds up the two amounts, and by the total estimates the veterinary surgeon's professional labour. It is not with life then, but with pounds shillings and pence, we have to deal, and we have always to calculate how much we can

save when a case is undertaken. Thus, then, as I felt that a horse that had been trephined on the cranium, even though the operation were attended with the most successful result that could be expected from it, would be greatly lessened in value, I thought it better to watch the progress of the case, which did not at that time present any very urgent symptoms.

Six or seven days after his admission, the horse during the night became extremely violent. The watchman immediately gave the alarm, and without loss of time, though certainly at considerable hazard, he was bled from the jugular vein. How much blood was extracted I cannot say—the stream was allowed to flow until the animal fell. The orifice was then pinned up: shortly afterwards he arose, and was removed to a larger box, when the urgency of the symptoms became increased—he again fell, and was secured; but no time was afforded us to adopt any further treatment, as in a very short time he died, exhibiting the most violent symptoms of phrenzy.

The post-mortem examination exhibited the viscera of the abdomen and thorax healthy. A large extent of surface of the frontal, together with a portion of the parietal bones, inclining to the right side of the head were found softened; while upon the internal surface, both facial and cranial, of the frontal bones, there was observed an extensive osseous deposit, proving that the internal inflammation had been considerable. The dura mater was much injected, and in the substance of the cerebrum an abscess containing about two drachms of pus, in a well-defined cavity, was found. The vessels ramifying in the substance of the right hemisphere were dilated and engorged with blood, and, by comparison, it was easily perceived that the diseased side of the brain was considerably enlarged. *(See engraving, fig. 1.)*

In this case, then, pressure was present: yet it was unattended with any loss of action; indeed, action in excess was developed during the progress of the disease, phrenitis in its most acute form marking the termination of the case. The pressure had been gradual, and to this the brain had accommodated itself. It is surprising how great an extent of gradual pressure the brain can sustain without giving rise to functional disorder, and equally wonderful is the slight amount of sudden concussion which may deprive it of

vitality. In Mr. Barrow's case the pressure was endured till the growth of the tumour positively compressed the nerves; and in it we must remember relief was afforded twice by treatment, though in neither instance can we believe the means had recourse to retarded the growth of the tumour. In the case of cerebral abscess which I have just related, the pressure was of secondary importance; the spread of inflammation consequent on the suppurative action producing phrenitic symptoms in their most active and violent form.

6.—A Case of Diseased Hock.

By Mr. J. Tombs.

My dear Sir, *Pershore, Sept. 10th,* 1844.

I have sent per rail-road the off hock of a half-bred mare. It was kicked on the outside about a month ago; and there has been a copious discharge of synovia ever since. The usual remedies were resorted to, which proved ineffectual. The hock being so extensively diseased, I considered it advisable to have the animal destroyed. I have forwarded the diseased specimen, thinking it might be serviceable to some of the junior members of the Association.

I am, dear Sir,

Your's very truly.

To Mr. W. J. T. Morton.

This morbid specimen having been examined by Mr. Mayhew, he found a small opening on the exterior surface of the joint, from which there was an exudation of laudable pus. The hock was much swollen, and, on removing the skin, an extensive patch (about the size of the palm of the hand) of inflammation was observed. This patch of inflammation was of a dark colour, loose and fibrous, presenting an appearance of having contained fluid, but none was present: around this part, running between and beneath the tendon and ligaments, was a considerable quantity of

laudable pus, which, however, seemed to take no definite direction, but appeared to be indiscriminately distributed over nearly the entire joint. After the removal of the skin, the bone could be plainly felt by the probe being passed down the tube of the external orifice.

On cutting into the superior synovial sac, a large quantity of dark-coloured opaque fluid escaped; and the internal surface of the membrane was discoloured, inflamed, and in places had begun to granulate. The cartilage on the tibia and astragalus was in some parts absorbed, in others ulcerated, while in some parts it was discoloured, and shewed the inflamed bone beneath it. No fracture could be detected.

7.—Case of Ruptured Rectum.

By Mr. J. Woodger.

Sir, *Paddington, Aug.* 25, 1844.

I have sent some morbid parts, with the history of a case which I think may not be uninteresting to the members of the Veterinary Association. It is that of a ruptured rectum, which, as you perceive, was caused by a part of an oat-hair calculus that had become separated from the remaining portion lodged in the colon, and, having passed on to this intestine, it became impacted there until rupture ensued, which I think was caused by the animal's suddenly falling down.

The subject from which it was taken was an aged chestnut horse. He was brought at three o'clock, P.M., on Friday afternoon last, to my infirmary. The symptoms then present were those generally exhibited in spasmodic colic. He was attacked at seven o'clock, A.M.; but the owner neglected to send for medical assistance until the above period. Not the least hope of my patient recovering was entertained by me when I first saw him, and he died three hours after he was admitted.

Post-mortem appearances. — The abdomen was nearly full of dark-coloured fluid, which had escaped from the rupture in the

rectum, caused as I have already stated. The other portion of the calculus I found in the colon: the peritoneum, and nearly the whole of the large intestines, presented a very intense degree of inflammation.

I am, Sir,

Your humble servant.

COMMUNICATIONS AND EXTRACTS.

Case of Ossification of the Cerebellum of a Horse.

By Professor Sewell.

In the museums of the universities of Milan in Italy, and Upsal in Sweden, and in the possession of a private individual in this country, to which publicity has been given in an early number of the *Proceedings of the Veterinary Medical Association*, are specimens of ossified brains of oxen; at least these morbid growths are so designated. They appear to me to be osseous tumours proceeding from the inner table of the skull, and, as the brain is displaced by them, so they fill up the cranial cavity. The present case is altogether dissimilar to these, and it occurred in the horse.

The preparation was sent to me, several years since, by Mr. Child, V.S., when he was residing near High Wycombe.

The entire brain was forwarded; but the cerebrum and medulla oblongata were so much crushed that not any thing definite was observable, except what appeared to be granules of ossific depositions pervading their structure. The cerebellum, however, was solid; thus it preserved its form, and so dense was it, that it had been sawn through into two nearly equal portions. These have been carefully preserved by me; for I believe the specimen to be unique in this country, a similar one not being found in the museums of the college of physicians or of surgeons.

The history of the case, which accompanied the preparation, is briefly this:—The horse was observed to be extremely lethargic and inactive for some weeks, when he was placed under the care of a country practitioner. The treatment had recourse to is not

known; but the symptoms continued to increase in urgency until they indicated phrenitis. The animal appeared to be almost blind, and when moving about he would unconsciously strike his head against the walls of the place in which he was. Ultimately, he became perfectly comatose; then paralysis of the posterior half of the body and limbs supervened, which was followed by delirium and death.

It was considered a case of what is termed "mad staggers" by the older practitioners, but not of an ordinary character, on account of the length of time intervening between the commencement and termination of the disease. This led to an examination post-mortem, when the brain was found to have undergone the peculiar change already stated. Unfortunately it was removed by a person unaccustomed to anatomical investigations; it was therefore roughly handled, and, being shewn to Mr. Child as a curiosity, he obtained it, and kindly transmitted it to me.

Having forwarded a small portion of the abnormal deposit to Dr. Prout, I am indebted to him for the following communication:—

Sackville-street, 24th Oct., 1844.

Dear Sir,—I have examined the small fragment of the tumour you sent me, and find the earthy portion of the mass (amounting to about one-half of the whole by estimation) to consist of bone earth, or phosphate of lime. The rest is animal matter, to which I cannot venture to give a name, except that a small portion of it appears to be fat. When burnt, the earthy matter retained the shape of the original fragment, and, on examination with a magnifier, appeared to have a structure somewhat analogous to bone.

I remain, dear Sir,

Your's very truly,

WM. PROUT.

To W. Sewell, Esq.

This case appearing to us to be one of considerable interest, as well as one of most unusual occurrence, we have been induced to solicit Mr. Erasmus Wilson to subject a portion of the cere-

bellum to microscopical examination; which he has most obligingly done, and, in addition, he has given us drawings of the same, which we have made a part of the engraved plate, and to which, with the explanations, we refer our readers. *(See plate, fig. 3.)* In reference to the structure of the cerebral tumour, Mr. Wilson remarks, "I think it not unlikely that the cells represented in *figure* 3 are nerve cells, with altered contents. The tumour offered some little resistance to the knife, and when dried was brittle and light. In order to ascertain the nature and proportion of the calcareous matter contained in the cells, I requested my friend, Mr. Charles Swaisland, to submit a portion of it to chemical analysis, and he finds it to consist of—

Animal matter	6
Phosphate of lime	1

Iron, a trace."

Case of large Cystic Calculus voided entire by a Mare.

By Mr. J. R. Jackson.

52, *Coleshill-street, Eaton-square, 17th Oct.*, 1844.

Sir,—Permit me to present to the museum of the Royal Veterinary College the accompanying urinary calculus, which was some years since voided by a beautiful mare in my presence.

The mare had been ill for some time, and passed her urine with pain and difficulty. Being one day in the stable with her owner, we were witnesses to the violent efforts of the poor animal, whose straining was painful to behold: after waiting two or three minutes, out flew a calculus, striking the stable door with some force. Its exit was followed by a very copious discharge of urine and blood. It is needless to add, that the mare almost immediately after got well. I kept the calculus, and, although it was repeatedly washed, worms continued to be engendered on its surface for a long time. At last it dried thoroughly, since which it has lost

somewhat of its size and weight by the disintegration of its but slightly adherent mass.

Trusting this trifle may be worthy of being placed in the collection of the College,

I am, Sir,

To Professor Sewell. Your most obedient.

[This calculus is probably the largest ever passed through the natural channel—the urethra—without an operation. It is of an ovoid form, has all the external characters of the concretions usually met with in the bladder of the horse, weighs 5½ ounces troy, and consists of animal matter with carbonate of lime.]

Mackintosh's Solution of Indian Rubber recommended for staying the escape of Synovia from open Joints.

By Mr. T. King.

Newcastle-upon-Tyne, Sept. 14, 1844.

Dear Sir,—I feel a pleasure in communicating to you, and through you to the profession, that I have lately been using Mackintosh's solution of Indian rubber as a mechanical agent for arresting synovial discharges from the joints, &c., and have found it answer admirably. My mode of application is to lay a good coating of it upon the skin surrounding the wound regularly for the space of a couple of inches or so; then to place upon that a thin pledget of dry tow, and over that another coating of the solution; then a second pledget of tow a little thicker than the first; and, lastly, in cases where the situation admits of it, a good cotton roller bandage well put on, and then smeared with another coating of the solution. In cases where it is not practicable to put on a bandage, I simply put on the different layers of tow and solution, which adhere invariably much firmer than any thing I have ever yet used.

I remain, Sir,

To Mr. Morton. Your's very truly.

[We think the above plan deserving of trial. In one instance we have adopted it, and the success attendant warrants us to speak in commendation of it.]

[The following note has been received from Mr. Read, to which we give immediate insertion] :—

My dear Sir, *Crediton, Dec.* 14, 1844.

In my paper on "poisoning by yew," in the *Transactions of the Veterinary Medical Association*, I perceive from the last number of that work that Mr. Robb cannot have carefully read the preamble to the same, it being there distinctly stated the animals were feeding on *straw*, consequently the word *leguminous* is a mistake. It ought to have been the *stamineous* or *staminaceous* part of *legumens* and *cereulea*. I am well aware that pulse contains an abundant supply of azotized material; and if Mr. Robb will peruse the volumes of *The Veterinarian*, and take a little time in reading them, he will perceive that in the majority of cases, when yew has acted as a poison, it was when there was a want of albuminous food or provender that the animals were poisoned by it: however, I thank Mr. Robb for noticing the error.

I am, dear Sir,

Your's truly,

Robert Read.

To Mr. Morton.

P.S.—Will you please correct the mistake in the next number of the *Transactions*.

On the Classification, Structure, and Development of the Echino-coccus Hominis, shewing reasons for regarding it as a species of Cysticercus.

Under the above title a paper was recently communicated to the Royal Medical and Chirurgical Society by Mr. Erasmus Wilson; and as the echino-coccus hominis differs in no essential particulars from the echino-coccus veterinorum, we proceed to lay before our readers the abstract of Mr. Wilson's paper, published in the medical journals.

"The author agrees in the opinion, now become general, of the universality of this curious entozoon in the sacs of the common acephalo-cyst, but differs with all preceding writers in regarding it as a fixed or pedunculate animal in its perfect state as well as in its undeveloped form. The cases in which

it was observed, were the common hydatid tumour of the liver. The little animal measures in its longest diameter from $\frac{1}{700}$ to $\frac{1}{175}$ of an inch, is scarcely distinguishable by the naked eye, and is enclosed in clusters of from two to one hundred in a proper membrane, which is developed from and attached by a point to the internal membrane of the acephalo-cyst. To give an idea of the number of the echino-cocci contained within an hydatid tumour, the author counted their number in an acephalo-cyst of about the size of a hazel-nut. In this small cyst he found forty clusters, several of which contained eighty individuals, and the entire number of echino-cocci was about one thousand. The animal is found in two states; namely, a contracted and an elongated state. In the latter there is perceived a circlet of hooklets at the cephalic extremity, with four suctorial processes; then follows a cyst-like body, or caudal portion, into which the cephalic portion is drawn in the contracted state, and at the caudal extremity is the peduncle. After giving a minute description of the animal, the author proceeds to describe the changes which take place in the creature after death, and gives a full account of the progressive stages of its development. The author considers the offices of the hooklets and suctorial processes to be involved in obscurity, the creature having neither mouth nor organs of progression. The identity of structure of the echino-coccus with the cysticercus he considers to be complete, and proposes for it the name of *cysticercus pedunculatus.*"

We cannot pass this subject by without a remark on the unexpected testimony which Mr. Wilson's researches afford of the independent animality of the acephalo-cyst. It has been a question of late how far the acephalo-cyst was to be regarded as an animal at all; but the existence of animals so highly organized as the echino-coccus, in its interior, affords sufficient proof of that being the case. The echino-coccus appears to be one of the commonest parasites of the animal organism, being present in every instance of hydatid, and therefore has strong claims to our attention.

At our request, Mr. Wilson has furnished us with several drawings, with explanations, illustrative of this curious animal. (*See plate, fig.* 2.) We think that his belief of the identity of the echino-coccus with the cysticercus is fully borne out, and the figures may be referred to as correct representations of the latter animal. The circle of hooklets surrounding the head of the cysticercus is met with, on a minute scale, in each echino-coccus: the precise number of these hooklets has hitherto been an undetermined question. Mr. Wilson states them to be thirty-four; namely, seventeen long and seventeen short.

BYE-LAWS, &c.

OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

SECTION I.

The Seal.

THE Common Seal of the ROYAL COLLEGE OF VETERINARY SURGEONS shall consist of the Armorial Bearings, Crest, and Motto of the College, as follows; viz.—

Arms:—Argent, a cross, engrailed gules between a horse's head erased in the first quarter; an arrow in bend, entwined by and piercing a serpent in the second; a horseshoe in the third, all proper: and a bull's head, erased sable in the fourth.

Crest:—On a wreath of the colours, a centaur proper, holding a shield argent, charged with an aloe, also proper, as the same are in the margin hereof more plainly depicted.

Motto:—"VIS UNITA FORTIOR."

CHAS. GEO. YOUNG, *Garter*.
J. HAWKER, *Clarenceux*.
FRANS. MARTIN, *Norroy*.

The Common Seal shall be in the custody of the President for the time being.

SECTION II.

Admission of Members.

1. No person entering to the Veterinary College of London or Edinburgh, or such other Veterinary School as may be sanctioned by the Charter on or after January 1, 1845, shall be admitted a Member, or be eligible for examination by the Board of the Royal College of Veterinary Surgeons, until he has attained the age of twenty-one years.

2. No person shall be admitted as a Member of the Royal College of Veterinary Surgeons after January 1, 1848, who has not served an apprenticeship of three years to some Member of the College in regular practice during the whole of that period.

3. A printed List of Members shall be published every three years, a copy of which shall be had, on application to the Secretary, on the remission of 1*s*. 6*d*.

4. Alterations taking place during each year shall be printed and published annually in a form corresponding with the triennial List, the charge for which shall be 6*d*.

5. Every Member, after his admission, shall subscribe his name in a book to be kept for that purpose, and shall receive a copy of the Bye-Laws, to which he will be bound to conform.

Section III.

Meetings of the College.

1. A General Meeting shall be called upon a requisition, signed by twenty Members of the College, being sent to the President, such meeting to take place within three weeks after the receipt thereof. The object for which such meeting is called shall be fully stated in the requisition.

Section IV.

Meetings of the Council.

1. A meeting of the Council shall be holden on the first Wednesday after every Quarter-day.

2. The President may at any time call a meeting of the Council, and shall do so upon a requisition in writing, signed by five of its Members: the nature of the business to be brought forward at such meeting being specifically stated in the notice.

3. The first business transacted at all meetings of the Council shall be for the Secretary to read the minutes of the preceding meeting, in order to their confirmation.

4. No Member of the Council shall vote upon a question relating to himself.

Section V.

The Board of Examiners.

1. The Council shall appoint twenty persons to constitute a Board of Examiners; Ten for England, and Ten for Scotland; the election to take place by Ballot.

2. Twelve of the above persons shall be Members of the Royal College of Veterinary Surgeons, and eight shall be Members of the Medical Profession.

3. The Professors and appointed Lecturers of any veterinary school sanctioned by the Charter, and the Principal Veterinary Surgeon to the Army, shall be, *ex officio*, members of the Board of Examiners; but they shall not receive any portion of the fees accruing from the examinations.

4. Any Veterinary Member of the Board of Examiners being

absent for more than four consecutive meetings, shall be reported at the next ensuing meeting of the Council, and, at their discretion, shall be liable to removal.

5. The President, or, in his absence, the Senior Vice-President, may, upon any emergency, direct a special meeting of the Board of Examiners. Double the amount of the usual Fee to be paid by each Candidate examined by such Board.

6. Every Member of the Board attending during the entire period of each meeting shall be entitled to the fee of Two Pounds for such attendance.

Section VI.

Examinations.

Each candidate prior to his examination must produce certificates to the following effect: viz.

1. Of having completed his twenty-first year.

2. On or after January 1, 1848, of having served an apprenticeship of not less than three years to some Member of the College in regular practice during the whole of that period.

3. Of having attended, during two sessional years, Lectures delivered at the Royal Veterinary College of London or Veterinary College of Edinburgh, or at such other veterinary school as may be sanctioned by the Charter:—

a. The Anatomy, Physiology, and Pathology of the Horse, and other Domesticated Animals.

b. Veterinary Medicine and Surgery.

c. Chemistry, Materia Medica, and Pharmacy.

4. Of having diligently dissected during his pupillage at the College.

5. Of being able to take off and put on a shoe, to drive the the nails skilfully, pare out a hoof, and search for its diseases; such Certificate to be available either from the Professor of the College, or from the Practitioner with whom he served his apprenticeship.

6. Of having conformed to the Rules and Regulations of either or any of such schools recognized by the Charter at which he has been a Student.

7. These Certificates, together with the Fee for examination, must be delivered to the Secretary at least fourteen days before

the examination takes place. To all candidates who shall have entered the Veterinary Colleges of London or Edinburgh, or such other veterinary school as may hereafter be recognised by the Charter, on or after January 1, 1845, the Fee shall be Five Guineas. From those entered previously, the present fees only will be required.

8. Every person entered at the Veterinary Colleges of London or Edinburgh, or such other veterinary school as may hereafter be recognised by the Charter, on or after June 1, 1845, shall, after having been examined and approved for the Diploma, pay a Fee of Five Guineas previous to his admission as a Member of the Royal College of Veterinary Surgeons.

9. A List of the successful Candidates shall be drawn out, and, having been signed by the Examiners present, shall be transmitted to the President, who shall upon the receipt thereof, and the payment of the Admission Fee, grant the Diploma of the College to each individual.

10. That the signatures of the Examiners present be affixed to the Diploma, which shall be in the form following: viz.

"*Know all men by these presents, that the Board of Examiners appointed by the Council of the Royal College of Veterinary Surgeons having deliberately examined Mr.* , *and having found him to be fit and capable to practise the Art and Science of Veterinary Medicine and Surgery, I, the President of the Royal College of Veterinary Surgeons, hereby admit him a Member of the College, and authorize him to practise the said Art and Science accordingly.*

In witness whereof I have subscribed my name, and have caused the Seal of the College to be affixed hereunto, this day of , *in the Year of our Lord One Thousand Eight Hundred and*

_____ *President.*

Member _____

Member _____

} *Examiners.*

Section VII.

Misconduct of Members.

1. If at any time a Member shall violate any Bye-Law of the College, or be guilty of any fraud, false statement, or imposition, in any matter required by the College, after full and impartial investigation, his admission shall be forthwith cancelled.

Section VIII.

Property.

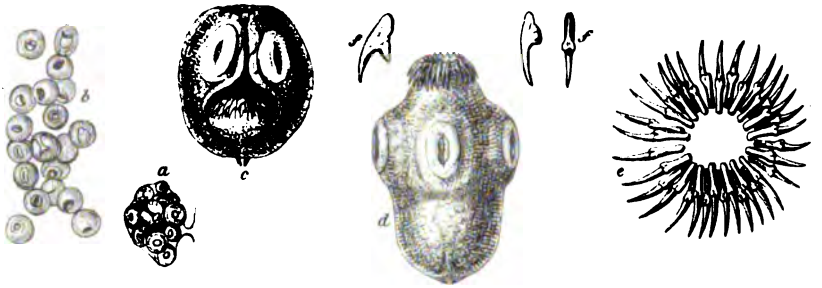
I. No payments of money due from the Royal College of Veterinary Surgeons shall be made except by order of the Council, and only by cheques, such cheques to be signed by the President of such Council Meeting, and countersigned by two of the Members of the Council then present.

2. All surplus monies belonging to the Royal College of Veterinary Surgeons, except what is necessary to be in the hands of the bankers for current expences, shall be vested, from time to time, in the Three per Cent. Consols of Great Britain, or other Government securities, in the names of Trustees appointed by the Council.

Note by the Editors.

We had written, and anticipated being able to introduce, "Reviews and Notices" of books presented to the library. These, however, having been excluded from the present number by other matter, will obtain a place in the succeeding one, it being a division, in common with some others, which we intend making in the Journal.

Fig. 2.



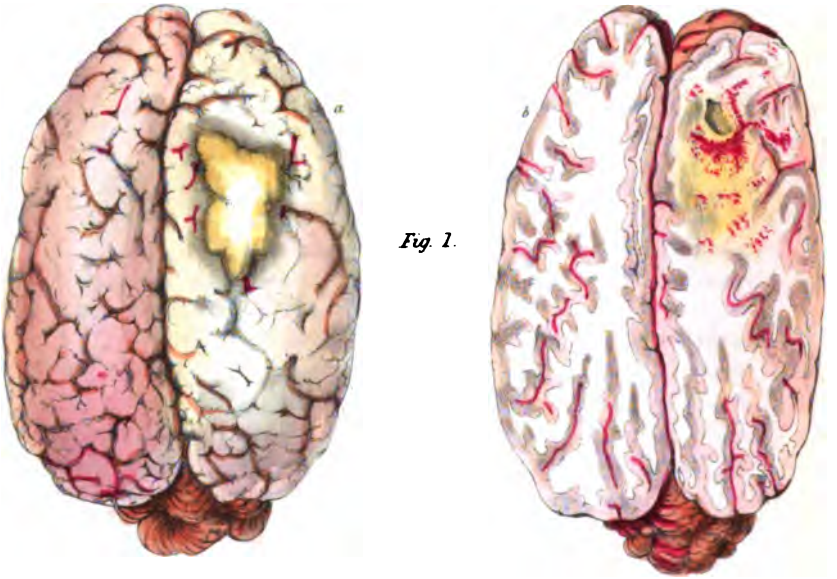
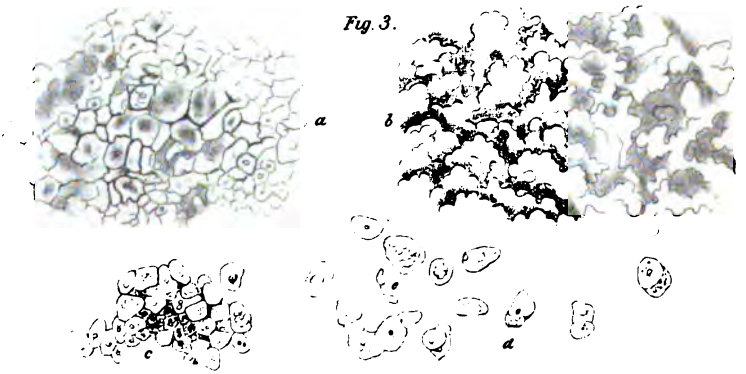


Fig. 1.

Fig. 3.



EXPLANATION OF PLATE I.

Fig. 1.—The appearance of the brain on which an abscess had formed. The case is described at page 91.

a.—Shews the external aspect of the brain, with the situation of the abscess.

b.—A section of this organ; the purulent matter having insinuated itself between the convolutions of the brain, and caused their displacement with absorption of a portion of the cerebral substance.

Fig. 2.—Structure of the echino-coccus; the parasite of the acephalo-cyst, described by Mr. Erasmus Wilson. See page 98.

a.—A cluster of echino-cocci contained in their proper membrane, the membrane being connected by means of a peduncle to the internal membrane of the acephalo-cyst.

b.—A group of echino-cocci set at liberty by the rupture of their proper membrane, and of the peduncles by which they are connected to that membrane. Both the preceding figures are magnified 38 times.

c.—An echino-coccus in its contracted state, magnified 155 times. The figure is viewed by transmitted light, so that the internal organization of the animal is apparent. At the upper end of the figure is the aperture left by the withdrawal of the head; the line leading downwards from this aperture indicates the course taken by the head during its retraction. The oval-shaped body near the bottom of the figure is the head surmounted by its hooklets. Above the head two of the suctorial processes are seen; and at its lower end the remains of the peduncle.

d.—The echino-coccus in its elongated state. The head is surmounted by a circle of hooklets; below the head three suctorial processes are seen, and then follows the body or caudal portion of the animal. Near the lower part of the figure is seen the attachment of the retractor muscle of the head. This figure is magnified 155 times.

e.—The circle of hooklets viewed upon its under surface; the circle is composed of thirty-four hooks, seventeen long and seventeen short. This figure is magnified 456 times.

f. f.—Separate hooklets magnified 456 times. Each hooklet has a pointed extremity, a blunt extremity, and a base, the latter being equal to about half the length of the entire hooklet.

Fig. 3.—Structure of the cerebellum described at page 94. A portion being subjected to examination by Mr. Erasmus Wilson, presented the appearances shewn in the following figures:—

a.—A part of the section of the tumour magnified thirty-eight times. In this examination the tumour had the appearance of being composed of small polygonal masses loosely connected together; some of them being hollow in their interior, or filled with a softer substance than that which forms the exterior.

b.—A portion of the same tumour, seen with the same magnifying power, but dried. In this state the section has a loose, spongy, or foam-like appearance.

c.—A portion of the tumour magnified 310 times, shewing its minute structure. With this magnifying power, it is seen to be composed of cells varying in size from $\frac{1}{3000}$ to $\frac{1}{1400}$ of an inch in diameter, containing in their interior more or less granular matter and one or more nuclei.

d.—Separate cells magnified to the same amount as in the preceding figure.

e.—A small elongated body, of which there were several interspersed among the cells, apparently a portion of a nerve tubercle.

THE

VETERINARY RECORD, &c.

VOL. I.] APRIL 1845. [No. 2.

AN ACCOUNT OF A SUPPOSED OSSIFIED BRAIN OF AN OX IN THE VETERINARY MUSEUM OF MILAN:

READ AT THE SCIENTIFIC ASSEMBLY IN TURIN, BY DR. LOUIS PATELLANI.

Translated from the Italian, by Mr. J. S. Gamgee.

Fig. 1.

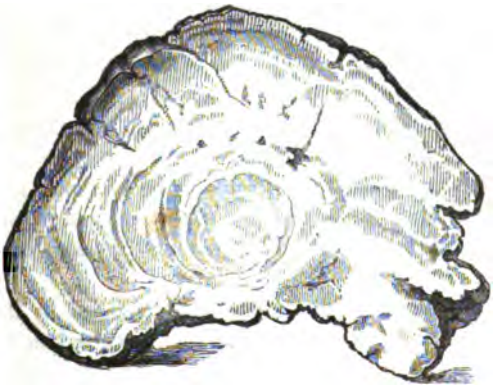


Fig. 2.

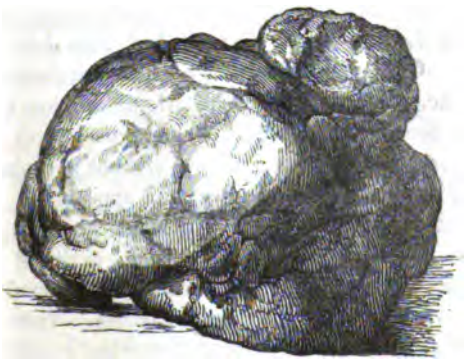


Fig. 1.—Represents a section of the cranial tumour.
Fig. 2.—Shews its general appearance externally.

ESSAY, &c.

It being but a short time since that my sovereign, Ferdinand I, honoured me with the title of Professor of Zootomy and Zoophysiology in the Royal University of Pavia, I am sorry that I cannot present myself before this learned body except as a hearer, And I would not have done even this if the invitation which I received from you, gentlemen, had not made me conclude that my absence would have cost me the loss of one of the most powerful means of instruction. Not being able to do more, I beg that you, my honoured colleagues, will kindly accept the few remarks that I have hastily put together as a proof of the high esteem in which you are held by the learned world, of which those beings cannot form a part who, envying the fame of others, see nothing but as through a mist even in the clearest day.

For a long time the most celebrated men have laboured to investigate the nature of the brain and nervous system, examining attentively every peculiarity which may be presented; and in this Piedmontese state there still exist anatomists and physiologists of European fame who have written admirable essays on the above subject.

The Veterinary College of Milan, established in 1807, under the direction of Professor Pozzi, and re-organized in 1834, so as to leave but little to be wished for to secure its prosperity, contains in its museum an ossified brain.

This museum owes its origin to the indefatigable zeal of Professor John Leroy, whose example has been followed by his successors. Of its numerous and valuable specimens in morbid anatomy, &c., unfortunately no historic description exists. The writer only became possessed of a catalogue a short time since, just commenced by Professor Leroy, of what is contained in the museum, in which the following account appears:—

"No. 82, a very hard piece of bone, large, heavy, and of a tooth-like substance, found in the cerebral cavity of an ox, and assuming a form similar to the brain. The animal in which it was found enjoyed apparently perfect health. This specimen is well worthy of notice, because it furnishes a very interesting physiological question, and also on account of the rarity of the

circumstance, there being only four cases of this kind on record in Europe." Being in possession of this information, I thought it my duty to make further inquiries of those who had been the longest in this establishment.

Angelo Bagnalasta, clinical lecturer, and one of the best-known veterinarians here, is a pupil of Professor Leroy, and affirms that he heard the following account of this morbid mass:—

"A butcher in Bologna was fattening an ox, which in a short time became of considerable size: having killed him, he found the above-named brain in the cerebral cavity."

This rare object was given to Professor Moreschi, who sent it to Prince Eugene Beauharnois, Viceroy of Italy, who by means of Landoir, veterinarian at court, presented it to the Veterinary College of Milan.

Another veterinarian, Baldassarre Volpi, M. Leroy's pupil, and assistant to Professor Bagnalasta, asserts that he saw the brain enveloped in its proper membranes, and that nothing but a saw was able to divide it*.

Without laying any great stress on the above information, there being no precise history of the brain, and the skull in which it was found not existing, in short, nothing remaining but the object itself and Professor Leroy's observations, I have thought proper to make these latter the basis of my brief considerations, which I now submit to the judgment of this congress.

Professor Leroy's account offers for decision the three following questions:—

First: Whether the brain in question be that of an ox?

Second: If it be without doubt composed of cerebral substance?

Third: If the individual who possessed it was always in perfect health?

In order to give an adequate answer to the first question, I think the best way is to compare the dimensions of the brain in question with those of the cerebral cavity of an ox; yet, before I do

* The celebrated Professor Tiedmann, to whom I mentioned the fact while in Turin, was not astonished at hearing that the animal lived in perfect health with such a brain. He said that his medulla oblongata must have been very much developed, and likewise the nerves corresponding to the senses. The same opinion was expressed by Mr. President Tommasin.

so, I have thought it desirable to present a sketch of the ossified brain [*see woodcut*], so that every one may form correct ideas respecting it: and whoever visits the veterinary establishment at Milan may, at his leisure, attentively examine it. Its form is that of an irregular cone with a broken apex. Of the same form may be considered four surfaces; the one anterior, the other posterior, besides two others which are lateral; and two extremities, one of which is superior, the other inferior, resembling the brain placed in the cerebral cavity in which it was found. The anterior surface is spheroidal, with prominences and very marked excavations: the posterior is concave, with small depressions; the two lateral surfaces are convex, but unequal; the left one is continuous until it reaches the inferior part, where it unites itself to the anterior surface, and there it exhibits a part wanting, which has been sawn off. The right lateral surface is mostly irregular. The internal surfaces of the two halves are white, variegated with streaks of an ash-colour, which does not correspond with the dirty yellow of all the external surface. On all these external surfaces are visible many concentric laminæ; and towards the edge of the anterior surface, which unites itself with the superior extremity, are three slits, of ten, fifteen, and twenty millimetres in length, commencing at the base of the superior extremity, where it unites itself externally with the lateral and anterior surfaces. These narrow excavations indicate a continual division. Besides the described colour, the internal face of the left half was artificially polished, so as to shew an ivory brightness, like the enamel of teeth. In this bright surface are some small cracks in the middle, which may be attributed to the action of external agents, but which, also, lead one to suspect the division of the semi-concentrical striæ. On various parts of the external surface, especially in the right half, are visible many small membranous laminæ, and some striæ of alveolar substance.

Taking into consideration the various diameters, I have obtained,

First: The diameter, taken vertically from one extremity to the other, is thirty-seven centimetres.

Second: The horizontal one, which follows the line uniting the cerebrum and cerebellum, is thirty-six centimetres.

Third: The transversal diameter, taken at the centre of all the surfaces, is twenty-nine centimetres.

The sawn surface of the right half is twelve centimetres in length and eighty-five millimetres in width. And, drawing the comparison between the above-named dimensions and those of the cerebral cavity of an ox about eight years old, the cranium cut longitudinally from the horns to the nasal bones, the following are the results:—

First: That the vertical diameter, taken from the great opening of the supreme bone to the olfactory cavities, is thirty-three centimetres.

Second: That the horizontal diameter, taken in cutting the olfactory cavities and the centre of the ethmoid bone to return there, passing over the petrous portion of the temporal bone and under the apophysis, measures twenty-nine centimetres.

Third: That the transversal diameter, taken at the junction of the sphenoid with the cuneiform apophysis of the supreme bone, passing laterally on the semicircular apophysis of the petrous portion, traversing the temporal and the frontal bones there, where both externally and below is the origin of the horns, is equal to thirty centimetres.

The supero-inferior dimensions, taken from the opening of the medulla oblongata, where it unites itself with the cuneiform apophysis to the condyloids, near the condyloid openings at the centre of the crista ethmoidalis, is equal to twelve centimetres, and corresponds to the dimensions in length.

The antero-posterior dimension, taken from the centre of the frontal bone at the junction of the cuneiform apophysis with the sphenoid, is ninety-five millimetres, and corresponds with the dimensions of the width.

From this comparison one may conclude that, although some dimensions of the ossified brain exceed those of the cerebral cavity of which I have made use, yet, on the whole, as oxen have brains of a diversified size, it may be supposed that the ossified brain in question belonged to an ox.

To convince myself more effectually that the above brain was that of an ox, I drew the comparison between it and a sound one, still keeping in remembrance the diameters of the cavity, and also of the specific weight of both brains.

The ox from which I extracted the latter sound brain was about twelve years old, and was slaughtered by means of blows on his

cranium; on which account the os supremum was divided downwards to the condyloid apophysis, together with the wedge-like apophysis, and also at the parietal bones, in the insertion of the temporals and frontals. In consequence of this fracture a portion of the cerebellum bulged out of its lacerated membrane, and the medulla oblongata was contused and divided in the right half. Notwithstanding, the cranium being sawn in an oblique direction from the base of the horns to the arch over the eyelid, I was able to open the cavity conveniently and extricate the brain, which afforded the following dimensions:—

First: The vertical diameter, taken ideally (a part of the cerebellum missing), is thirty-eight centimetres.

Second: The horizontal diameter is thirty-five centimetres.

Third: The transversal diameter is twenty-nine centimetres.

The brain being cut in half, it was fourteen centimetres in length and eighty millimetres in width.

The diameter of the cavity lengthways was thirty-nine centimetres; the one in width was thirty-two centimetres.

The sound brain, being placed on the scale, weighed fifteen ounces (Austrian weight): on performing the same experiment on the ossified brain, I found it equal to twenty-nine ounces three-quarters (Austrian). The best half of the latter brain weighed fifteen ounces.

The various weights of the ox's brain, in the different stages of life in which it is usually slaughtered, considered from eighteen months to four years old, are as follow:—

The brain of a calf, from one to six months old, weighs from eight to twelve ounces (Milanese weight); that of an ox, from six months to three years old, weighs from twelve to fifteen ounces of the same weight; that of an ox from three to twelve years old weighs from fifteen to twenty ounces of the same weight, considering it one of the largest breed of oxen.

Although the dimensions that I have obtained are not quite correct, as I have no proper craniometer and encephalometer, yet, from what I have said, one may conclude that the ossified brain in question may be that of a bullock.

II.—In order to give an adequate answer to the second question, namely, "Whether the ossified brain be formed of cerebral

substance?" I have deemed it proper to investigate the specimen by its physical zootomic characters, microscopical observations, and, also, chemical analysis, and compare these with the sound brain just extracted from the cranium.

The ossified brain is, externally, of a dirty-white colour, approaching to yellow; inside, it is of a yellowish ash-colour, which varies in its intensity in the various deep and superficial striæ; for which reasons one may conclude that the ossified brain in question is formed of two substances, differing in colour, as, in fact, the cortical and medullary substances present themselves in the brain. I shall, however, omit naming the different colours of the several cerebral laminæ. The smell of the dust obtained in sawing through the brain is like that of horn. Its taste is unpleasantly sweet. The ossified brain is much heavier than the sound one. The tissue is compact, laminated, and striated. It is easily filed. Its form, if not exactly like that of a bullock's brain, closely resembles it. In it one may see the two cerebral hemispheres, and the divisions between the cerebrum and cerebellum.

The difference between the superior and inferior portion of the lobes is observable. As it regards the cerebral circumvolutions, if in the right half they be irregular, such they do not seem to be in the left, where is preserved the roundness and gradual declivity in all directions. If the objects on the different surfaces are to be considered separately, some of them are to be seen which have retained their primitive form.

In the anterior surface going from the division of the cerebellum to the cerebrum, is observable the first transversal circumvolution more voluminous than in the left half: it loses itself subsequently, but in the right half it unites itself with the longitudinal medium which limits the dividing line of the hemispheres. Among the many circumvolutions, the third in the left half is worthy of notice; but this one soon vanishes among the equal protuberance in the remainder of the superior portion of the left lobe, until one finds the same surface.

In the posterior surface is observable the portion of the cerebellum separated in form from the one of the brain. In this place is wanting the pons varolii and the medulla oblongata; and there

is only to be seen a small protuberance, which proceeds from the edge of the brain, and reaches the right lobe of the cerebellum, which it partly covers; but on this organ the dividing vermicular prominence is not visible, therefore a precise form cannot be given to it, because in this place is one of the slits above-mentioned. The existence of one of the divisions of the brain cannot be imagined, except in the left half, and the square form of the optic nerves is hardly discernible on this part likewise, the brain here not being entire, on account of a part having been sawn off. The olfactory nerves mix themselves in the cerebral circumvolutions. The membranous tissue folds itself in places in the various parts of the external surface, as if the brain were involved in its true membrane.

In the sound brain the convolutions are more regular and in greater number above and in the centre, than below, laterally or behind. They are not very deep, and, dividing the brain in the direction of the ventricles, which in bullocks are narrow and placed towards the anterior lobes, is to be observed a substance like marrow, surrounded by a limited substance of a yellowish ash colour. In the posterior surface the parts are distinct and well marked, commencing from the medulla oblongata and going downwards. The ossified brain being placed in this cranial cavity, although it did not perfectly fill it, yet one could see that it had the necessary form to occupy a similar one rather less capacious; a thing easily understood, knowing that the bones of the cranium follow the development of the cerebral substance.

To these observations I have added those of the microscopical and chemical investigation; and, this establishment not being as yet in possession of the necessary instruments, I was kindly presented with them by Professors Balsamo, Crivelli, and Dr. Polli, Assistant Lecturer of Technical Chemistry.

With Amici's microscope I examined,—

1st. The powder obtained in sawing the brain, which presented the appearance of a laminated cellular tissue, of an irregular figure.

2d. A splint composed of a substance similar to the cerebellum, which to the naked eye did not exhibit any tissue, did not present by the aid of the microscope any thing but spots more or less dense, in which could be seen some small scales.

3d. A small piece of tooth-like substance, similar to the cerebellum, also did not shew any thing but spots more or less intense, with small scales.

4th. Likewise in the powder of this small piece nothing particular was to be seen.

5th. In the powder obtained from the external surface of the splint was visible a cellular filamentous tissue.

6th. A small portion, which I thought was membranous, taken from a spot on the external surface near the right posterior lobe, presented a tubulous mass.

7th. Another small portion of the same, suspended in water, presented some filaments platted together in various manners with spherical bodies, and with a higher power, small tubes were visible and minute spherical bodies.

8th. The powder of the same diffused in water likewise presented small tubes and little bodies like bladders.

9th. Another portion of membranous substance taken from the anterior left lobe shewed small tubes with minute ramifications like spherical vases and small bodies, which were seen to be opaque by the reflecting mirror, and of a transparent yellowish colour when the mirror was put far off.

Having examined the bone powder with Amici's microscope, and various parts of the brain just taken from the skull of an ox, I obtained,—

First; From the powder scraped from the naturally formed skull of an ox, tried both when dry and in water, the scaly tissue.

Second; In a portion of a substance like marrow, small spherical bodies; with a higher power, the same with filaments; and with a still higher power, the same with more developed filaments.

Third; In a portion of skinny or membranous substance, very small spherical bodies.

Fourth; In a portion of pia mater, united granules in bands.

Fifth; In the powder of the sound brain dried in the oven, the cellular tissue not very distinct, with tubes of small round and oblong bodies of a yellowish colour.

Respecting the analysis kindly made by Dr. Polli, it appears that the brain in question is composed of phosphate and carbonate of lime, of phosphate of magnesia and chlorure of soda. Of the first there is a large quantity, of the second moderate, and the last two

are merely traceable. He doubts whether there exists any fluorure of lime. With these is found animal matter in a small quantity, but less than half of that which is usually contained in bones.

Considering the above analysis exact, and having compared it with the best analysis, which admits in the bullock's brain muriate of soda, the sulphates and phosphates of lime, ammonia, and magnesia, the chlorure of soda, and the phosphate and carbonate of lime, a great analogy appears between them*.

We must, therefore, conclude that, considering attentively the physical zootomic characters, with the results of the microscopic observations and the chemical analysis, we may safely assert that the ossified brain contained true cerebral substance, which of necessity diminished in consequence of the enormous increase of dentitious or tooth-like substance.

III.—The point which offers a physiological question, and one very difficult to answer, is that based on Professor Leroy's inquiry, Whether an animal with such a brain could live in perfect health? According to the Professor's opinion, it seems as if we are obliged to maintain that the vital actions of this animal corresponded exactly to the conditions of life, and that all the organs regularly reacted with the agents indispensable to existence. Yet, as there is another mode of explaining health which can be made use of in the present case, so each one may interpret it as he pleases. Following in this particular the principles of one of the most renowned schools of Germany, although expressed in different words by one of the most celebrated Italian physiologists, I distinguish in life three manifestations, which present themselves in the phenomena of sensibility, movement, and vegetation; to which correspond, as fundamental forms, the nervous mass, the muscular fibre, and the cellular tissue, over which preside the cerebral and spinal nerves, and those of the great sympathetic. The

* Professor John, besides the above-named principles, has found in the cerebral substance of a calf phosphate of iron and silex.

Lassaigne and Lauret maintain that the horse's brain contains water, osmazome, albumen, chloride of sodium, sub-carbonate of soda, phosphate and carbonate of lime, like that of man. Vauquelin found in the nervous substance, water, a white thick matter and some red matter, osmazome, albumen, phosphorus united to the two thick substances, sulphur, phosphate of potash, and phosphate of lime and magnesia.

most important object which offers itself to our consideration respecting the nervous mass, seems to me to be that which demonstrates whether an organ modified in its organization may at any time manifest its natural phenomena? Leaving this question for the present, I shall examine the facts necessary to explain this case, which is one certainly very rarely met with. Every one present knows, that there are many authors, whom I do not deem it necessary to mention, who, studying the various phenomena attributed to the nervous system, have had a wish to discover its primitive origin. The existence, seat, and functions of the soul have long been a subject of discussion, a problem which I hold it is difficult to solve. Having made a distinction between the spirit and the soul, the brain has been considered the seat of the latter; but the malformed or altered structure of the brain in idiots and fools gave rise to an inquiry as to which place in these the soul occupied; and after all the peculiarities of the encephali had been examined, arose the acephali, who having no brain, and nerves extremely developed, presented new matter for physiological inquiry. Then were more profoundly studied the medulla oblongata and the medulla spinalis, and the great intercostal nerve: especial nerves were also assigned to sense, motion, and to the vegetative process; and it was concluded that the body could be animated without the presence of the brain, and that the cerebrum was either the origin or the termination of the nervous system.

What surprise will then be created in the minds of you, gentlemen, who are here assembled, by an ossified brain, and particularly in him who knows the strength of the nervous mass in the invertebrata, the power of the medulla oblongata, and of the nervous prolongations in the vertebrated class of animals, with the power that animal magnetism may have?

If we are allowed to admit, what facts prove, that not unfrequently a transposition of the senses takes place, and that the organs are developed and are sensible without an encephalon, so much more readily we can admit their existence with this modification. Is it impossible to explain the formation of this brain or one of a similar nature? Every physiologist knows that the cellular tissue is one of the fundamental forms of the organism, as well as of the bony system, and that in these latter predominate lime and other earthy matters united with phosphoric acid: now, if it be true that in the blood are traceable all the materials of the

organic tissues, and that some investigators have been able to find there even those of the nerves and cerebrum; and if it be true that a physiological phlogosis exists, why, supposing a modification of the vegetative process of the nervous mass, differing as among the other named fundamental forms, may we not also adopt the opinion of cerebral ossification? Could it not be formed during the progressive development of the organized body, or may it not take its origin with the work of conception, accepting it as a phlogistic and physiological process?

If we refer to comparative pathological anatomy, facts are to be found which so much the more confirm this enunciated opinion. Every one knows that, in man and in domestic animals, calcareous concretions form in the intestinal tube, and in the secreting glands. In the annals of our science are to be found cases of ossification of the larynx, of the valves of the heart, and of the heart itself; of the pulmonary artery, of the left auricle, and of the aorta; of the spleen and uterus, and also osseous tumours met with in the Fallopian tubes. We have likewise read histories of cases of tumours on the nerves, of softenings, hardenings, and hypertrophy of the brain, and of hydrocephalus; of fragments of bone one inch in length being found in the brain, and tumours of the size of a hen's egg, as well as the annular tubercle being of the density of iron, and the plexus choroides filled with earthy matter.

From these facts, it clearly results that oftentimes in the animal organism, there is a large amount of calcareous phosphate and other earthy principles, which alter the form and the mechanical, chemical, or dynamical forces of the tissues and external agents, and which are thrown directly on one or the other of most important viscera. But does it follow of necessity, in consequence of this modification, that the functions of the viscera must be suspended or altogether altered? I very much doubt it. Who can tell the many resources which Nature has reserved to herself? If there be examples in which, with the alteration of the tissue, the viscera have shewed unnatural phenomena, it is also true that there are many examples proving the contrary. Meanwhile there exist in Europe some other ossified brains, as Professor Leroy says, although he does not assert where. One is in the possession of a butcher at Vienna, who found it in a fatted bullock, although it seems to be but a part of that organ. Our domestic animals, in

the most important viscera of which are frequently found concretions of all sorts, do not for many years manifest any extraordinary symptoms. In the anatomical and pathological Museum of the University of Pavia, a preparation exists which shews the contrary position of the viscera of the abdomen, being placed from right to left, without the individual to which they belonged having given signs of any perturbation. A man, in whom the spleen was found ossified, was also in the enjoyment of perfect health. Cases of cancer in the encephalon, and of congenital hydrocephalus, attended by simple epilepsy, have also been met with; and after having experienced an epileptic attack, the individual is said to have again possessed his natural faculties.

From what has been advanced, I think I may affirm that the ossified brain belonged to an ox in perfect health.

Can the cerebral ossification be an obstacle to the desired investigations in phrenology? I think not; for I am well persuaded that, if the custom of interring dead bodies without examination were not so generally adopted as it is, among the innumerable cases of cretinism, brains would be found much more frequently ossified than is at present suspected.

TUESDAY, DECEMBER 3, 1844.

The TREASURER in the Chair.

On the table the remainder of the morbid specimens received during the vacation were placed, and the following communications read.

A CASE OF CONGENITAL HYDROCEPHALUS IN A FOAL.

By Mr. C. DICKENS.

Dear Sir, *Kimbolton, May* 27, 1844.

EARLY this morning I was summoned in haste to a cart-mare, the property of a farmer three miles from this place. I was informed that, up to a week since, the abdomen was very much enlarged, and she had every appearance of foaling shortly; but for the last two days she has looked thin, and the mammary glands have diminished.

This morning she was very restless, being up and down constantly, and groaning, but did not evince any parturient pains.

Upon examination I found the os uteri dilated, and a breech presentation with the hind legs extending forwards. I administered ʒiij of the ergot of rye in ale immediately, and left her for twenty minutes; when the pains became strong, and, after two hours of perseverance and hard labour, we extracted the fœtus, the head of which I send you just as removed, a quantity of fluid only having escaped from the cerebral cavity; having foregone my own desire for inspection, rather than displace any part.

Remarks.—The mare was found about three months ago cast. I am of opinion that the fœtus thus got displaced, and the depression in the skull was formed by the hind feet resting upon the head and forcing the soft parts forward. I once witnessed a similar case in a lamb, which was alive when I first saw it.

I am, your's, &c.

Mr. Simonds.—The cranium was enlarged to three times its natural size, and the face considerably shortened. It is well known that children are liable to accumulations of water both within the ventricles and between the meninges of the brain; but whether, in this case, the fluid was deposited in either or both of these parts, from the state in which the specimen was received I was not able to ascertain. My opinion, however, is, that it was a well-marked case of congenital hydrocephalus, and I am inclined to think the membranes were most involved. Little can be said in explanation of the nature and causes of this disease: and even when watched from its commencement to its termination, its pathology is very obscure, and, when occurring before birth, this must of necessity be even more so.

Supposing the presentation to have been what is called a "breech-presentation," each pain, or contraction of the uterus, would naturally tend to bring the hocks into the position in which they were found. The case, therefore, in this particular, presents no novel feature; but, connected with the delivery of the patient, there is a circumstance deserving of notice. Had the presentation been a natural one, the head, from its great size, must have become impacted in the vagina; and thus it would have been im-

possible to have completed the delivery without having recourse to an operation. But being a breech-presentation, the passage of the hinder parts served to dilate the vagina; and Mr. Dickens was, consequently, able to remove the fœtus entire, notwithstanding the increased size of the cranium.

Inspection of the skull presented the bones thin, soft, and in many parts united only by membrane, the enlargement being very considerable, from the accumulation of the fluid.

A Case of Diseased Heart in a Bull.

By Mr. Carlisle.

Dear Sir, *Wigton, June* 6, 1844.

The heart sent was taken from a valuable bull, the property of John Watson, Esq., Bolton-park. My motive for sending it was more particularly to have your opinion as to the correctness of my diagnosis, rather than from the singularity of the disease. I will first state the particulars of the case, and the treatment adopted by one of the old school.

On the 17th of April, the animal was observed to be unwell, and, as near as I could ascertain, the following symptoms presented themselves:—disinclination for food and motion—slight distention of the rumen—respiration accelerated—ears drooping, and other febrile indications—fæces natural. At this time Mr. ——, chemist and druggist, who also assumes the title of veterinary surgeon, was sent for. He repeatedly attempted to withdraw blood, but was unsuccessful; when he declared it to be impossible to bleed him, at the same time telling the owner it was a matter of little consequence, as he could give the animal medicine that would soon cure him. Accordingly the following was administered:—℞ Aloes Barb. ℥j, sulph. magnes. ℥xx, pulv. zingib. ℥ij. The next day no amendment was perceptible, although the animal was purging violently; notwithstanding which, towards night another pound of salts and ℥iv more of aloes were given.

On the 19th, the patient was no better. I was then requested to attend with Mr. ——, but declined: I was, consequently, summoned alone. The animal was then standing—his ears drooping—eyes

dull and suffused with tears—conjunctival membrane very vascular, and having a yellow tinge—belly tympanitic—fæces in a fluid state and very offensive: when made to move, he had every appearance of a horse labouring under laminitis—pulse 100, full and bounding, with irregular intervals of vibrating jerks—accelerated breathing—great tenderness on pressure applied to the left side behind the elbow—the heart's action conveyed a singular tinkling noise, and at intervals the whole body was convulsed with spasmodic twitchings.

Treatment.—Venesection to the extent of 16lbs.—inserted setons in the pectoral region—gave sedative medicines combined with demulcents—blistered the sides, and ordered plenty of flour-gruel to be given two or three times a-day.

20*th.*—The above symptoms more intense, and the fore legs much abducted. Pulse 130, and of the same character—countenance extremely dejected when disturbed—palpitation of the heart audible, and the spasmodic twitchings more confined to the muscles of the face—fæces quite fluid, and when voided accompanied with much mucus. Blisters not yet acted. Blood-letting was had recourse to from the abdominal vein until indications of syncope took place; after which I repeated the sedative agents in increased quantities.

21*st.*—General symptoms much the same, and respiration at intervals very laborious. The owner now becoming alarmed from my unfavourable prognosis, wished to send for a practitioner who formerly had attended his stock, to which I offered no objection.

Mr. R——, after a lengthened and careful examination, differed with me as to the seat of the disease. It is, he said, distention of the digestive organs combined with congestion, and the animal is quite free from all thoracic disease. Accordingly he wrote a prescription, which consisted of linseed oil and hydrocyanic acid to be given every four hours. I proposed that Mr. R—— should remain all night to watch its effects, and requested that he would not leave before I arrived in the morning, for I prognosticated a post-mortem examination then, when the true nature of the malady would be made manifest. Three doses of the medicine were administered, and they were about to give the fourth, when the animal fell suddenly and died.

Post-mortem appearances. — Peritoneum free from disease — stomach and bowels very much distended with flatus, and containing but little ingesta—mucous membrane of the small intestines presented a livid appearance throughout—the cuticular covering of the rumen came away as if from maceration, but the parts beneath were free from inflammation. Nothing more worthy of notice existed in the abdomen. On laying open the thorax, about two quarts of serum escaped from both sides of the lungs, which were much diseased—pleuræ pulmonalis et costalis on the left side highly inflamed —the pericardium, on its external and internal surface, was nearly in a state of gangrene. The heart you received, and will be much better able to judge of the nature of the morbid change which had taken place in it than I can describe. I feel convinced that you will agree with me, that I was right in the views I at first took of the disease.

I am, &c.

Mr. Simonds.—In the morbid specimen, the history of which has just been read, the pericardium was in a state bordering on gangrene, and the heart itself softened in structure, and covered with flocculi of lymph. The peculiar vibrating or jerking pulse, the pain on pressure being applied to the left side, and the singularity of the animal's gait, all bespoke the heart being the seat of the disease.

In the latter stages the digestive organs were deranged. This circumstance is, however, of little importance connected with the case, and, probably, they were earlier involved, in consequence of the large doses of purgative medicine which had been administered. I therefore quite concur with the view taken by Mr. Carlisle of the disease, and believe the treatment he adopted was the best that could have been had recourse to.

Mammary Tumours removed from the Flanks of a Heifer.

By Mr. T. W. Mayer.

My dear Sir, *Newcastle, Oct.* 3, 1844.

I have this day forwarded by railway two tumours, which I removed yesterday from the sides of a two-year old heifer. The larger one weighed seven pounds, the smaller two pounds and a half.

They have been gradually increasing in size ever since the animal was a calf; but latterly they have developed themselves so rapidly, that the owner wished to have them removed. The animal was first seen by me about three days ago, and appeared in perfect health. I communicated to the owner the risk that attended the operation, and gave it as my opinion that the growths were constitutional, an opinion which I think, on examination, you will coincide with.

On opening the tumours, a large quantity of thick cream-coloured pus made its escape, with large masses of cheese-like substance floating in it. The sac itself is lined with what seems to be a calcareous deposit, and which is continued into the substance of the sac itself. The tumours were situated on either side of the flank, immediately underneath the common integuments, being loosely attached to the tendinous expansion of the muscles beneath.

I will take care to communicate the result of this case to you.

Believe me to remain,

Your's, very sincerely.

Mr. Morton.—I have, since the receipt of this letter, heard from Mr. Mayer that the case is apparently doing well.

Mr. Simonds remarked upon the length of time which some tumours remain imbedded in the cellular tissue, and upon the rapidity with which others hurry on to a fatal termination: and observed that, when these growths were of a malignant nature, the constitution was generally involved, while those of a benign character were strictly local, and therefore the fittest for operation. "Ruminants," he proceeded to say, "were very liable to the formation of tumours about the head and neck. These, however, were situated upon the flank, and Mr. Mayer prudently resolved to remove them. I am not aware that these morbid growths in cattle are ever absorbed by the use of iodine, unless in the earlier stages of their growth; but where, as in the present instance, the tumour had evidently been of some duration, I am not of opinion that the employment of iodine would have been attended with any benefit. Mr. Mayer states that he observed an appearance of calcareous matter lining the cyst, and the sensation imparted to the finger when passed over the surface would naturally lead to this inference; the correctness of which, however, on closer examination, I

am inclined to doubt. I have here laid open a portion of the tumour, and it presents a beautiful variegated surface, not very unlike to the arbor vitæ of the cerebellum. It consists of a number of small granules of various forms and sizes, contained in a dense outer cyst, and, independent of the common cyst, each granule appears to possess its own proper covering; and these coverings being of a lighter colour than the central substance, give to the cut surface that arborescent appearance to which I have alluded. In the centre of some of the granules only a very minute quantity of pus can be discerned; in others, a larger quantity is perceived; while a few appear to have had their proper sacs absorbed, and to have mingled their contents, thus forming large internal cavities within the substance of the tumour. There can be no reason to suppose the purulent fluid, thus inclosed and isolated, would have become absorbed; and had not the tumour been removed, we may conjecture its augmentation would ultimately have involved other parts, and caused great constitutional disturbance. I am inclined to think that the sensation imparted to the finger, indicating the existence of calcareous matter, is caused by portions of the hard scirrhous capsules being attached to the outer cyst, and I consider the morbid parts before me as interesting specimens of those tumours termed *mammary*.

"It is the general opinion that formations of this character are intermediate in their nature between the malignant and the benign. They may, however, occasionally take on the cancerous form, or they may not; and it is probable that the constitution of the patient regulates their development. Yet, under such doubtful circumstances, it is certainly the best practice to operate at once, rather than incur the delay and hazard which would attend the use of iodine or its compounds. The magnitude of the growths, and the importance of the region in which they were placed, rendered the operation, I have no doubt, a subject of serious consideration to the operator, for in cases of this kind the possibility of hæmorrhage or collapse must always render the result dubious; but I am happy to hear the case has terminated favourably."

A somewhat desultory conversation now ensued.

An inquiry from *Mr. Cartwright*, as to the probability of iodine affecting glandular structures besides the parts diseased, drew from *Mr. Morton* an explanation that iodine has a specific tendency to

remove abnormal growths, after which healthy structures are attacked, but its use to such an extent would argue a want of discernment in the practitioner. Mr. Wardle has recorded a case in which, from the free use of iodine, the testes had become diminished; but, observing the effect produced, he discontinued it, and the glands recovered their natural functions.

Mr. Green inquired whether, by promoting the absorption of tumours by this means, no danger was incurred from the formation of internal abscesses, such, for instance, as were known to follow the suppression of strangles? The question was admitted to be one worthy of consideration; but the Chairman thought the general result of the use of this agent, iodine, justified no fear on that head, and pointed to the distinction between a constitutional disorder and a simple local affection; arguing, that the treatment unadvisable in the one case might prove highly judicious in the other.

Mr. Dyer related a case that came under his observation, in a cow that had the epidemic of 1839-40, in which a tumour of considerable dimensions developed itself. Being called in, he employed iodine for some time, but with no marked benefit; and he therefore proposed to dissect the tumour out. The proprietor objecting to the operation, a seton was passed directly through the swelling, when a quantity of thick pus escaped, and in a month the swelling had disappeared. Mr. Dyer concluded by stating he had repeatedly used iodine for cattle, but without being favourably impressed with its action.

Mr. Simonds stated that the action of iodine on the ruminant is not so active as in the horse, nevertheless he could bear testimony to the utility of this drug in many cases. He was aware of the great tendency which existed in animals that laboured under the epidemic of 1839-40 to the formation of cellular abscesses, very many instances of this kind having fallen under his notice, and in such cases, the tumours not being malignant, would of course yield to the treatment Mr. Dyer had adopted; but had a gland been involved, probably iodine, which here had failed, would there have been attended with success.

Filariæ in the Bronchi of a Calf.

By Mr. J. Holmes.

My dear Sir, *Thirsk, Sept.* 8, 1844.

I have this day forwarded the windpipe of a yearling calf. I think it a beautiful specimen illustrative of the location of these parasites. I am sorry I cannot give you a detailed account of the symptoms, &c., as it was only by accident I saw the case. I was called in to attend a colt belonging to a gentleman a few miles from this place, and my attention was drawn to a man who was skinning a calf. On inquiry I was told the calf had been ailing ever since it was three weeks old: the symptom most prominent, indeed the only one observed, was a distressing cough, which gradually increased till the animal's death; and although its appetite remained unimpaired, it gained no flesh, and was, as the man expressed it, "a bag of bones." I became desirous of making a post-mortem examination. On opening the chest I found the two front lobes of the lungs entirely gone, not a particle remaining; and the other portions considerably reduced in size. On opening the trachea I found a host of filaria existing there, and which had found their way down into the bronchial tubes, as far as they could get. At the top of the epiglottis they seemed so numerous as almost to fill up the opening. They are now alive at the time I am writing, which is sixteen hours since the death of the animal.

I need not enter more fully into the appearances presented, as you will have an opportunity of observing them for yourself. Nor have I time at present to enter upon an argument respecting the formation of these filariæ; but it strikes me very forcibly that, if not engendered, they have been, at least, fostered by the diseased state of the animal.

I am, my dear Sir,

Your's very truly.

Several members made observations on the foregoing case, but they were chiefly of a speculative character. The Chairman dwelt upon the nature of hoose or husk, and alluded to the different modes of treating this disorder by tracheotomy, the inhalation of diluted chlorine, and the administration of ol. tereb. in doses of ʒij to ʒiv: to the latter method he, from experience, was inclined to give his approval.

Case of Melanosis in a Cow.

By Mr. J. K. Lord.

Tavistock, October 10, 1844.

I was requested to see a valuable Durham cow having a large fungoid mass growing from the left orbit. On examining it I found that nearly the whole of the structure of the eye was removed, and its place occupied by a mass which I soon ascertained was a melanotic tumour: it had the peculiar jet-black appearance, and discharged a thin offensive matter that constantly ran down the side of the face. I told the owner that nothing but its extirpation would be of any service: this he assented to; and, having previously prepared my patient by lessening the provender and administering aperients, I had her cast, and proceeded to perform the operation as follows:—

I first passed a suture through each eyelid, so that my assistant could hold them apart; I then made an incision through the posterior or upper canthus, extending about an inch beyond the bony ring of the orbit. I now had the tumour well exposed, and, commencing at the posterior canthus, dissected it out, keeping as near the bone as possible. Pretty much bleeding followed, but this was easily stopped by using torsion on the arteries. I then filled up the orbit with tow, over which I tied the lids with the sutures I had previously inserted, and the animal was allowed to get up.

I saw her early next morning, and, not finding any febrile action present, I only ordered her a little green food. The dressings were not removed until two days after the operation, when I applied the nitrate of silver to the exposed surface. This caused, as I intended, a considerable slough to take place. I then used a weak nitric acid wash, in the proportion of one part of the acid to forty or fifty parts of water, and the wound soon assumed a healthy character and rapidly healed. The cow is now quite well, and fattening fast.

Not having seen a case of melanosis as occurring in the ruminant recorded, I have thought that this might be worthy of the consideration of the members of the Association. It is, perhaps, as well to remark that the cow was nearly white.

Mr. Simonds.—I may observe, that the origin of no disease is, perhaps, involved in greater obscurity than melanosis. We know but little of the causes of this peculiar affection, and there are great differences of opinion as to the nature of the peculiar matter which characterizes this malady. Some regard it as a fungoidal growth, others consider it a particular substance eliminated from the blood, while another class view it as a carbonaceous deposit. Not one of the several writers on this subject, however, can be considered as having established his opinions; and all we can with certainty assert is, that the disease, in its later stages, is associated with a fungoid development. The present case is not without interest, and will be the first recorded in THE TRANSACTIONS of this disease in the ruminant. However common melanosis may be in the horse, cattle appear to be in a great degree exempt from its attacks; and during a long and extensive practice I never met but with one case of the kind. It is singular that the disease, in the instance now under consideration, attacked the eye; and in the one to which I have adverted, as having fallen under my observation, the orbit was likewise the seat of the affection. The melanotic tumour in this case, however, was associated with fungus hæmatodes; the bones of the orbit were absorbed, the whole of the globe involved, so that no eye could be discerned; and an unhealthy surface was presented, which bled on the slightest touch. There being no prospect of a cure, I advised the animal should be destroyed.

The diseased facial bones I have preserved.

[The Chairman here exhibited to the members of the Association the skull of a ruminant. The lachrymal, malar, and superior maxillary bones, with a great portion of the frontal arch, shewed extensive caries, the whole of which cavity had been filled with the fungoidal tumour.]

The animal to which I allude was not, however, as in Mr. Lord's instance, near white, being marked about the body with several streaks of a light red colour. This distinction is only deserving of notice, because we know melanosis in the horse is intimately associated with colour. The treatment Mr. Lord adopted was decisive and judicious; but I much doubt if the result will be favourable, because, in this disease, the constitution is affected, and the viscera generally involved. As a proof of the correctness of

this opinion, I submit to you a divided radius, where you will observe a mass of melanotic matter deposited in the centre of the cancelli. This bone was taken from a horse which belonged to Sir W. Magnay. The animal was, some months ago, admitted into the infirmary to be operated upon for melanosis, there being a large tumour between the coccyx and anus, and others in an earlier stage of development on the body; several of these were removed, the owner being first apprised that the disease, in all probability, would not be eradicated by the operation. As I expected, in about three months afterwards the animal was again brought to us, and another tumour of a large size occupied the place of that I had excised, and others had become more developed. The horse looked poor—he had lost flesh, and the coat was staring—the appetite was impaired—and the near hind leg was partially paralyzed. Seeing there was no hope of a permanent cure being effected, we recommended the horse should be destroyed.

On a post-mortem examination, the spleen was found to be four times its natural size, and covered with isolated and congregated melanotic tumours, some of them being of considerable magnitude. The colour of these tumours was not uniform—some were black, others were in different stages advancing towards it. The liver was also affected: its surfaces were studded all over with light coloured spots, which were tubercles of a round figure and of a dusky yellow colour, hard, and in their centres black melanotic matter was found deposited. The kidneys, lungs, connecting cellular tissue of the muscles, the surfaces of the bloodvessels, and the skin, were found covered with small black deposits; and over the sacro-sciatic nerve of the left side was a large deep-seated tumour, the pressure of which at once explained the cause of paralysis in the near hind leg.

To avoid an unnecessary repetition, I beg to refer you to the first volume of the TRANSACTIONS of the Association, where Mr. Morton has collected all the continental and English authorities of note upon this subject.

A Breed of Solipede Pigs.

By Mr. F. King, *Jun.*

Dear Sir,—The accompanying foot was given to me the other day, with another similar to it; and as I consider it rather a curiosity, I have sent it to the Association. This is the *third generation* of pigs that have been born with the same kind of feet, and the mother of these is just like them, and has had several litters similarly formed.

Believe me,

Your's sincerely.

Mr. Simonds.—The only peculiarity in the specimen before us is, that the superior bones of the phalanges are not united, while the lower ones are blended together. In the solipede race of pigs both the upper and lower phalanges are usually consolidated. The specimen, therefore, has some little interest, and it serves to illustrate the progress of those changes by which breeders often appear to produce distinct varieties: thus we find in some parts of England, particularly the north, that these instances are common.

An Account of a singular Disease, principally affecting the Spleen of Cows.

To the Veterinary Medical Association.

Gentlemen,—The following account of a singular disease which appeared this summer among the cattle of two dairies, in this county, I have ventured to lay before you, being assured the importance of the subject will receive from you the consideration it deserves.

I am,

Your's, &c.

J. Howell.

July 5th, 1844.

I was requested to attend at Mr. Barton's, a farmer, residing about six miles from this place, to meet Mr. Tiley, veterinary surgeon, of Dursley, and Mr. Limbrick, veterinary surgeon of Sodbury, for the purpose of examining a cow which had died that morning, supposed to be poisoned. I found upon my arrival that two other cows had died in a similar way the previous week; that four others were then ill, but two of them were fast recovering.

The symptoms, I could gather from those then ill, and also from Mr. Tiley, who had been in attendance, were, when first seen, a peculiar dulness, hanging of the head, back arched, and a disinclination to move; still they fed a little. After these symptoms had existed from eight to twelve hours, a trembling of the muscles of the neck and shoulders came on, with dimness of the eyes, together with a swelling of the glands of the throat and a great difficulty of breathing, and in some a total loss of milk.

The muzzle was moist, ears and root of horns of the natural temperature, fæces soft, and some were rather inclined to purge; rumination continued, and in nearly all there was an inclination to feed up to the time of death. Those that died stood up, perhaps, two or three hours after the trembling fit came on, when they would suddenly drop down, put the nose round to the left side for a few minutes, then stretch out the head, and die without a struggle. In fact, so little was there to be observed amiss with them a few hours before death, that a stranger going into the court or field would hardly be able to tell the healthy ones from those that were ill.

The post-mortem appearances observed in the one we examined: On opening the cavity of the abdomen, a slight redness of the peritoneum and omentum was perceived to exist; and on removing the intestines, a large quantity of very dark-coloured sanguineous fluid was found within the cavity.

The spleen was enlarged to four times its natural size, softened, and contained a quantity of very thick and dark-coloured blood, some of which was escaping from small ruptures on its concave surface.

It being Mr. Tiley's opinion that the cows had died from some vegetable poison, I made a very careful examination of the contents of the stomach, but failed in detecting any noxious plants.

The abomasum was slightly inflamed, and contained a quantity of dark-coloured fluid, with pieces of stone, bricks, and other refuse matter. The heart and lungs were perfectly healthy, the lungs being very white; the brain also appeared normal, excepting a slight congestion of the plexus choroides.

The treatment Mr. Tiley had adopted consisted in blood-letting, and subsequently administering a dose of mag. sulph.; afterwards giving half-a-pint of brandy in water twice a-day, and, fortunately, five out of eight attacked, recovered. Part of the flesh of the first cow was given to three pigs: they all died. All the cows on this farm had a dose of sulphate of magnesia given to them, and only one was attacked afterwards, which recovered.

On the 25th of July, Mr. Randal, living in the adjoining farm, perceived one of his cows to be ill. Mr. Tiley attended, bled her, and gave a draught; however, she died the next day. Upon examining her, the spleen was found to present the same appearances as that of the other cow. Some of the blood taken from this cow was given to a fine sow pig, and she died the next day.

On the 1st of August another was taken ill, and died; on the 5th, another; 8th, another; 9th, another: on the 10th, the owner came to ask me to see four others, all then ill. One of them died soon after I arrived, so that I had an opportunity of observing the symptoms, and making a post-mortem examination of that one, and also of the one which had died the previous night. I found them present nearly the same appearances as the one examined at Mr. Barton's. All the viscera of the abdomen were perfectly healthy, excepting the spleen: one of them weighed twelve lbs. three-quarters. Two of the cows ill appeared to be rallying: they had all been dosed with brandy and salts. To the other I gave a small dose of sulphate of magnesia, bled her to the amount of seven quarts, and blistered the throat and the region of the spleen. The difficulty of breathing was very great in this case.

11*th Aug.* 6 A.M.—I again visited them. The one bled yesterday appears a little relieved in her breathing. Repeat the blistering, and give potas. nit. ʒiv, ant. tart. ʒj, pulv. zingib. ʒij; omni quartis horis.

12*th*.—Upon calling this morning, I found my patient had died during the night. Her spleen was also very much enlarged. This day I bled the whole of the cows on the farm, twenty-nine

in number, and gave to each mag. sulph. ℔ss, sulph. sub. ʒiv, potas. nit. ʒiv, cum zingib. ʒij.

Only one more fatal case occurred after this, which was on the 14th. This animal did not live more than two hours after first seen to be ill. In two cases I administered sp. ammon. co. ʒj every two hours, and, as I think, with benefit. Those that recovered had not the trembling fit so strong, neither was the difficulty of breathing so great. Seven of them were milkers, and a nineteen-months'-old heifer, making eight which died out of fourteen that were attacked.

The cattle on both farms were in the same pasture they had been in for some time. The land is a poor clay soil, and the keep on it very short, owing to the long-continued drought.

There is no running water on either farm; still the cattle were not so bad off for water as on many of the neighbouring farms.

DECEMBER 10, 1844.

The TREASURER in the Chair.

Messrs. R. Bunnell, T. Barrow, and G. White, were elected Members.

Mr. Erasmus Wilson presented to the Library an Essay on "A Horn developed from the Human Skin."

ON CONSTITUTIONAL OPHTHALMIA.

By F. LEMANN, *M.D.*

[Communications addressed to the Patron, Professor SEWELL.]

Woodlands, near Wellington, Somersetshire,
November 20, 1844.

My dear Sir,

SINCE I came to reside here, two years ago, I have been obliged to act as my own veterinary surgeon, there being no certificated practitioner of the art within several miles of me to whom I could refer in cases of illness among my horses.

The very valuable information I have received from you on the subject at different times, within the last twenty-five years, inspired

me with confidence in the offset of my practice; and I have endeavoured, by reading, reflection, and reasoning analogically, to make up for the deficiency of my previous practical knowledge. Many of the diseases of horses are so similar to those of the human subject, and may be cured by the same remedies, that I have now no difficulty in treating them. I find it quite as easy to develop symptoms in the dumb animal as in the human subject. No mistake, for example, need occur in the diagnosis of enteritis, or the distinction between it and spasmodic colic; and the symptoms of pneumonia and pleurisy are very palpable.

The known success I have met with in curing my own horses has induced several neighbours to solicit my advice for theirs, by which means I have gained much experience in a short time. The disease which I believe has been considered almost the opprobrium of the veterinary art, viz. specific ophthalmia, which frequently terminates in moon blindness, caused me much trouble and anxiety in the early part of my practice; but I have now obtained the mastery of it, and it is chiefly on that account I write to you at present.

A very fine young horse I purchased when I first came to reside here was, after a few weeks, attacked with inflammation in one eye. No general or constitutional symptoms of disorder attended the attack; it appeared to be quite local; and I therefore hoped it would prove to be only a slight cold, and treated it accordingly during the first day: but finding it not improved the next morning, I lost no further time, and began active treatment. I bled him freely, put him on bran mash diet with nitre, and purged him with aloes. Fomentations were applied externally. After about four or five days the inflammation appeared to be abating; but all on a sudden, and without any assignable cause, it was renewed with increased violence. I then bled him with my lancet from the angular vein, and applied thirty leeches round about the orbit; the antiphlogistic treatment in all other respects, and external applications, were continued. In about three weeks the inflammation had pretty well subsided, leaving, however, some opacity of the cornea.

He had another similar attack a few weeks later, which lasted four or five weeks ere the inflammation disappeared. For the want of knowing a better, I repeated the same treatment as in the former instance.

During the summer months the horse recovered his strength, and performed his daily work with animation; but, upon the sudden change from warm to cold and damp weather, the eye was again attacked precisely as before.

During the interval of the attacks I pondered a good deal on the unsatisfactory results of the treatment, and called to mind the great variety of structures which compose the eye and its appendages, which we know exhibit specimens of every one of the animal tissues. We find in it bone, cellular and adipose substance, and bloodvessels; mucous, fibrous, and serous membranes, &c. I also reviewed in my mind some of the diseases we ourselves are liable to: I allude especially to those which attack particular tissues, such as rheumatism and gout. These reflections led me to the conclusion, that although the disease alluded to had hitherto been considered an affection of the tunica conjunctiva only, it in all probability involved some fibrous tissue, and resembled the disease we call "rheumatism of the eye" in the human subject: at all events, as I had been so completely defeated in my former treatment of the case, I resolved to proceed upon this new view, and resort to the treatment I have always found successful in cases of rheumatism of the human eye, and other parts.

I did not bleed my horse, as there were no apparent symptoms denoting constitutional disturbance; but I ordered him bran mashes with some chopped carrots and bruised oats, and I gave him pulv. rad. colchici ʒij et potass. nit. ʒj in a small proportion of the mash (in order that none of the medicine might be lost) in the morning and evening. By the time he had taken four doses, i. e. in about forty-eight hours, his bowels became rather relaxed, and I thought it prudent to suspend the medicines, lest the colchicum should induce inflammation of the mucous lining of the intestines: he therefore on the third day took no medicine. We already perceived a decided improvement in the eye; but as a good deal of inflammation remained, on the fourth morning I ordered colchici rad. pulv. ʒj, pot. nitrat. ʒiv, to be given twice a-day:—this plan was continued three days longer, by which time all symptoms had vanished, and the eye regained the same degree of brightness it possessed previous to the attack.

Instead of fomentations to the eye as formerly used, I ordered a warm dry flannel to be applied over it repeatedly during the day,

and had the neighbouring parts rubbed lightly with a soft hand, i. e. shampooed: both appeared to soothe him very much. To the conjunctiva I applied three times a-day, by means of a camel-hair brush, a solution of the nitrate of silver, five grains to an ounce of distilled water.

Since this last mentioned cure, some similar cases have happened to my neighbours, who solicited me to see them, and they have all got well by the same treatment; so that I have now no hesitation in pronouncing it to be an infallible remedy.

While on the subject of colchicum, I will mention my success with it in curing a case of pneumonia in one of my saddle horses.

The attack commenced in the usual way, and I bled him freely once; and recollecting the injunction against giving purgatives in that disease, none were administered; but two drachm doses of colchicum were commenced immediately after the bleeding, with warm bran mashes, but no oats. In about forty-eight hours the bowels became relaxed, and soon after every symptom of inflammation disappeared. I listened repeatedly with my ear to his chest during the treatment, and distinctly marked the various changes from congestion of the lungs to healthy breathing. I gave him ʒj doses of colchicum for two days longer to complete the cure.

It is of importance to ascertain that the colchicum powder be genuine. I believe the powder of the root is not in general use, and that linseed meal is sometimes substituted for it. As I use a good deal of it, I purchase mine at Apothecaries' Hall.

Believe me, my dear Sir,

Your's very truly.

Woodlands, near Wellington, Somersetshire, Dec. 2, 1844.

My dear Sir,—You have my free consent to make what use you please of the communication I sent you last week respecting my treatment of the ophthalmia in horses, and it will gratify me to hear it has been read and discussed at the meeting of the Veterinary Medical Society. I shall rejoice, also, if the treatment I found so eminently successful in curing my patients be repeated by other persons who are competent to test its efficacy.

I care not what name be given to the disorder at present; the proof of cure is the main object of inquiry, and of that I feel confident, and shall therefore abstain from any hypothesis on the subject, though I could now adduce abundance of facts in corroboration of the opinion I stated in my last letter, viz., that the disease called "specific ophthalmia" in the horse, is manifestly and essentially a rheumatic affection; by which epithet I mean to designate that peculiar disease which is prone to attack the fibrous tissue in particular.

In my treatment of the cases I described to you, I combined nitrate of potash with the colchicum, in obedience to the popular opinion of its properties as a febrifuge; but I must candidly state that I rest all my confidence on the colchicum. To the peculiar and specific action of that medicine on fibrous tissue I ascribe its beneficial influence in all diseases of increased arterial action. We are in possession at present of no other medicine of equal efficacy in controlling morbid action of the heart and arteries.

I deny that digitalis, opium, conium, and other medicines of that class, operate in the same way upon the circulation as colchicum does; they benumb the brain, and too frequently mask the real morbid condition: but colchicum never oppresses the sensorium, though its operation in checking diseased action is frequently so sudden as to appear almost magical.

I could dwell a long time on the properties of this medicine, which I have used many years with the happiest results; but I must not trespass further on your valuable time to describe cases which are very interesting to me, but might prove irksome to you.

I remain, my dear Sir,

To Professor Sewell, &c. Your's faithfully,

FRANCIS LEMANN.

Mr. Morton said that as yet the "colchicum autumnale" has found no place in the materia medica of the practitioner of veterinary medicine. Some years since he instituted several experiments on horses with this drug; more, however, with a view to ascertain its general action on the system than to find out any specific virtues it might possess. Indeed, his experience had tended to weaken his faith in specifics as a class; nevertheless, it is well known that

disease materially alters, if it does not determine the action of therapeutic substances. The following experiments it will be borne in mind were performed on horses apparently in health. He commenced by giving one ounce of the fresh root of the meadow saffron daily, beating it up with crushed linseeds, so as to form a ball. This dose was gradually increased until three ounces were given, twice in the day, and with every increase of quantity marked action supervened. The animals' pulse prior to the exhibition of the agent was 40, and with each augmentation of the dose it fell, until with the maximum quantity it had decreased to 28 beats in the minute, still continuing firm in tone, and regular. The diminution was two beats per diem. Besides this sedative influence, the kidneys were at the beginning called into increased action; and by additional clothing the exhalents of the skin were easily excited. After the larger dose had been repeated two or three times, the bowels became relaxed.

Thus the colchicum autumnale is proved to be a drug of some power, and probably of value, its action being that of a sedative, and also a laxative in large doses, and a diuretic or a diaphoretic in smaller ones, as the exhalents of the skin are or are not rendered susceptible of being acted upon by the aid of artificial warmth. On withholding the drug, the pulse gradually regained its former standard, and during the experiments the animals evinced no disinclination for food, but it was rather thought that the appetite had increased.

Mr. Simonds.—It would appear from the observations contained in the communication just read, that Dr. Lemann is of opinion that the disease known to us as "constitutional ophthalmia" is principally confined to the conjunctival membrane; this, however, is not correct. And although veterinary surgeons may not be agreed as to the original seat of the disease, still he (Mr. S.) considered that they are unanimous in looking upon the conjunctiva as being involved only secondarily. This point is, however, of minor importance; nor should he have noticed it had it not been possible for silence to have been construed into acquiescence. Of the action of colchicum he regretted he had no experience. The experiments which the Secretary had obliged them by reading were, however, of great interest; for it appeared that colchicum lowered the heart's action without inducing an intermittent pulse,

such as generally accompanied the exhibition of many other sedatives. It also seemed not to impair the appetite, but rather to increase the desire for food; therefore, in cases of debility associated with irritation, these were therapeutic qualities of the greatest value. Colchicum, likewise, seemed to have a diuretic and diaphoretic action; neither of which should be overlooked, although oft repeated doses appeared necessary to produce these effects. It was with extreme difficulty that diaphoresis could be induced in the horse. Some even denied the possibility of producing it at all; and among these was the late Professor Coleman. With no less an antagonist had Mr. Morton to contend, when he asserted his belief in the power of various agents to excite the cutaneous secretions of the horse. Professor Coleman earnestly supported his opinion, and was accustomed to account for the general fatality of pneumonia among horses, by the veterinary surgeon not having any agent at command, which, like ipecacuanha or potassio-tartrate of antimony in the hands of the human practitioner, at once lessened the heart's action, while it increased that of the capillaries.

Mr. Ernes admitted the importance of Dr. Lemann's communication, but regretted that the observations it contained were not more extended. He lamented that a gentleman, evidently so well qualified to observe, had not in the first instance been well informed as to the prevailing opinion regarding the nature of the disease; and had not been able to support his opinions by positive evidence, such as may be gained from dissection. The obligation he had conferred upon the Association by directing their attention to new facts, and freely communicating his opinions, deserved their respect and acknowledgment; but he could not agree with Dr. Lemann that the disease originated in the fibrous structures. He had seen much of specific ophthalmia. He did not exaggerate when he asserted that every seven horses out of every ten in Belgium were the subjects of its ravages. The farmers of that country were much addicted to close breeding. The parent of the mare was often the sire of her foal; and specific ophthalmia became very prevalent. Coarse animals with large heads were remarked to be most predisposed to its attacks, which generally commenced about the fourth year, and terminated when the animals were seven years of age. The eyes were consequently attentively observed and

closely watched. No specific for the disorder had, however, been discovered. Couching had been tried as a remedy for its termination in cataract, but the result of the operation was not such as encouraged the practice, which however, he believed, was still often resorted to. When he was last in Brussels, Professor Brogneiz shewed him an instrument by which the lens could be removed without casting the animal. The operation was not difficult, nor, he concluded from the fact he had just stated, one attended with very acute suffering to the patient. The only objection to its general adoption was the fact of the sight not being by it restored. This he thought would be at once perceived to be a necessary consequence when the character of the affection was considered. The conjunctiva was certainly not the seat of the disorder. He had known cases in which ophthalmia had destroyed vision; and because no external inflammation had marked the disease, the fact of its existence at all had remained unknown till the animal by running against some object informed the owner of its loss of sight. He (Mr. Ernes) considered the aqueous humour as being primarily affected in specific ophthalmia, having remarked that cloudiness of the fluid in the anterior chamber of the eye was the earliest symptom to be observed. What power colchicum might have over this particular form of disease he could not say. It was a medicine that was decidedly anodyne in its action. As to its possessing any peculiar diaphoretic power, might not diaphoresis be a symptom developed upon the lowering of the pulse? Partial sweats are found to denote the approach of death, and also to be present as an indication of debility. At this time of the year, too, horses are often debilitated, and, though inhabiting cold stables, are not unfrequently discovered in the morning with their coats wet with perspiration. Diaphoresis might therefore spring from causes which perhaps were produced by the medicine; but this made it only a secondary, not a primary effect, and which was not to be overlooked. Moreover, the colchicum had been employed by Dr. Lemann in conjunction or combination with other medicines, and this circumstance rendered the arrival at any conclusion from the present case almost if not quite impossible. Had it been wished to demonstrate its effects, the agent should certainly have been employed alone.

Mr. Morton.—It is true that in the treatment of ophthalmia,

as advocated by Dr. Lemann, colchicum was employed in union with another agent; but any objection that could be thus taken did not apply when this medicine was given alone and experimentally by him. Its action, he repeated, was both diuretic and diaphoretic, as well as sedative; and these effects were manifested alike under the influence of large or small doses. Moreover, it must not be forgotten that Dr. Lemann placed his entire confidence in the colchicum only, although the combination adopted by him was not an injudicious one; for since no two medicines produce their effects by precisely the same means, the union of agents, even of the same class, was commendable, as their action would be greater than if either was alone employed. Again; one might fail to produce the desired influence from the peculiar morbid state of the system, and the other might supply the loss, while in every case the action was rendered more certain and decided. That colchicum is a diaphoretic, seemed a conclusion warranted from what is yet known of its effects upon the horse. Mr. Ernes appeared to be disposed to attribute this disputed action to its narcotic influence, and submitted that a sudorific tendency was the natural consequence of the depressed energy of the nervous and vascular systems, and induced debility. He (Mr. Morton) did not wish to insist upon his own opinions. He would rather leave experience to decide upon their worth than by any present effort to attempt to afford them the slightest protection. If they were true, they required no such protection; if they were false, they deserved none. When he first observed diaphoresis in the horse to ensue upon the action of certain medicines, such agents lowering the heart's action, the possibility of diaphoresis being thus brought about was denied. In vain was the fact appealed to. Positive evidence went for nothing before the assertion, that, unless the circulation was quickened or pain induced, the horse never did and never could perspire. Since that time, many, eminent for their impartiality and talent, had joined their testimony to his; and it was not now perhaps too much to say, that the general opinion was in favour of the view he had advocated. It could not be denied that, under the influence of colchicum, the pulse did diminish in its number of beats; but with that decrease there was no symptom whatever of debility. The appetite continued good, indeed improved, for an increased desire for food charac-

terised its action. Therefore it would be more reasonable to attribute the diaphoretic influence of colchicum to the power which that medicine has over the exhalents of the skin than to its debilitating influence on the system.

Mr. Robb was not inclined to view gout or rheumatism as confined to the fibrous tissues: he was rather disposed to think other structures were involved, for he did not see how they could be excluded. Dr. Lemann spoke of ophthalmia as bearing a close resemblance to rheumatism of the eye in the human subject, by which he (Mr. Robb) imagined a shifting of the disease to that organ was implied. But specific ophthalmia appeared to originate within the eye itself, though, after its development, the disease did frequently shift from one eye to the other, and in such a manner as to warrant a resemblance being drawn between the two affections. Gout was not, however, a fixed disease, but of an erratic nature. That painful disorder could likewise shift from place to place, and therefore might also be likened to ophthalmia. Gout had been supposed to spring from the presence of uric acid, or its elements, and, he would add, probably hippuric acid in the blood; and, if this were correct, which there was good reason to believe, inasmuch as urea, which was a product of the oxydation of uric acid, had been found in diseased blood, and the acid itself had been detected both in the perspiration and in the urine during an attack of gout, and had been often found deposited in the tissues about the joints as the disorder had subsided; then, specific ophthalmia was rather carried through the medium of the diseased circulation to the part which became the seat of its attack, and was not generated within or by any particular tissue of the eye itself. In this case, however, the place of uric acid would probably be supplied by hippuric or benzoic acids, as it was not likely that uric acid would be found in the blood of the herbivora. Colchicum, though acting principally on the duodenum, appeared to act as a diuretic, and for a diseased state of the blood it therefore seemed likely to prove a remedy; though somewhat of that action in Dr. Lemann's case must be attributed to the nitrate of potass with which it was combined. Secretions, however, were very often not critical when induced directly by medicine—at least, such was his (Mr. Robb's) opinion—though Dr. Lemann, perhaps on better grounds, had arrived at the opposite conclusion. It was well known that spe-

cific ophthalmia was inherited; at least the predisposition was communicated by the sire or dam. Probably, most diseases could be traced to hereditary predisposition: a tendency to gout was well known to be thus transmitted; and this point bore especially on Dr. Lemann's views, and seemed to corroborate them. The medicine to which the Doctor had been pleased to direct their attention was at least characterised by its safety, and he trusted the report which had that night been read would stimulate to a further trial of its virtues.

Mr. Gregory did not consider the aqueous humour to be first affected, but attributed the cloudiness which ushered in the disorder to an infiltration between the layers of the cornea. Though he thus far dissented from Mr. Ernes' view of the nature of specific ophthalmia, yet he perfectly agreed with him as to horses being more liable to its attacks at any earlier period than most writers seemed to consider. Between the ages three and five he had remarked the greatest number of cases, and there was no disease which was better established as being hereditary. Mr. Gregory then related several marked instances illustrative of this remarkable tendency; and the debate concluded by the Chairman observing that his own experience had induced him to consider horses were most liable to attacks of specific ophthalmia after they had attained their seventh year, provided such disease did not arise from hereditary predisposition. No fact, probably, could be better demonstrated than that horses were not exempt on the attainment of the seventh year. Difference of country, soil, and climate, might account for partial differences of the development of this disease; but he was at a loss to reconcile the total variance of the statements he had heard with the settled impressions that practice had impressed on him.

On the Epizootic that prevailed among the Horses at Bangalore, particularly in the Lines occupied by the 13th Light Dragoons.

By N. F. Clarkson, *V.S., Hon. East India Company's Service.*

The nature of epizootic disorders generally, to which horses in this part of India are subject, seems but imperfectly understood.

By the veterinary reports on that disorder which prevailed so

extensively among the horses of H. M. 13th Light Dragoons at Bangalore in 1834, of which condensed abstracts from reports of proceedings of committees, and consultations recorded in the papers I have the honour to forward with this letter*, it appears to be the most prevalent opinion that the disease owed its origin to the *effects of bad forage and water*, and also that some peculiarity of atmosphere was favourable to its production.

I have perused all the documents relative to this subject, and duly appreciate the information they are calculated to afford, but must confess it does not appear to me that such is absolutely proved to be the case: at all events, so far as regards the *forage* and *water*, I differ in opinion with that generally expressed as to the cause that predisposes to this disease, and, though perhaps not so widely, the immediately exciting one also.

It has been said the disorder was caused by bad grass and water acting mechanically as an irritant to the stomach; the one from being hard, dry, and indigestible—the other, on account of its containing mud or sand: that these became the exciting causes, and, so far as I can ascertain, constituted the chief means of predisposition to the affection as well.

The post-mortem examinations proved that chronic inflammation of the stomach had existed, and was supposed to have been present some considerable time previous to the animal giving way to the affection, until, by some unaccountable means, it ripened into active disease, sufficient to produce general derangement throughout the whole intestinal canal, irritative fever, and death.

I do not for a moment mean to say that bad forage is not likely to bring on disease, or that sand or gravel will not irritate the bowels; on the contrary, I know they frequently do so, producing most serious evils, and no doubt the disease in question was in some measure influenced by the dry forage, but, in my estimation, in a very secondary kind of way; otherwise, how could the horses of the 7th Cavalry at the same station escape the complaint, and be in usual good health, when it was unanimously allowed that the forage received by that corps was in every way of an inferior description to that supplied to H. M. 13th Dragoons? If it were so potent in the production of the epizootic, how is it possible these

* These documents being voluminous, and in this instance unimportant, are omitted.

horses could be free from a complaint that was proving so destructive within a short distance of the same lines, being at the time exposed in a *greater* degree to that bane which was supposed to bring about the disorder?

With every deference to those that had better opportunities than myself of judging of this disease, by their being on the ground when it raged, I do not think the forage had a much more deleterious effect here than when given to horses liable to, or labouring under, disease generally; that is, if a horse is predisposed—no matter from what cause—to any disorder, the stomach will certainly bear sympathy, and coarse food must be injurious.

If the *forage* were really the principal cause of such extensive mischief, how happens it that ten horses died in one troop and not one in the next? Those horses were all fed, watered, and treated alike in every way; yet this partiality does not seem to attract material attention.

The epidemic that prevailed at Arcot in 1834-5 (of which I shall speak at some future period) was remarkably characterised by a similar partiality. My register shews 63 admissions from the right squadron, and but 34 from the left. The deaths were in proportion, though comparatively fewer in the left wing.

It is admitted in the proceedings at Bangalore that the locality of the lines occupied by H. M. 13th Dragoons, and something in the atmosphere (probably), contributed to bring about the disease. If it be allowed that the situation had more than a secondary influence, all difficulty to account for the *partial* run of the complaint will disappear; and I acknowledge the fact, that, when so many horses are herded together, they demand an immense volume of pure air, which can only be supplied, in sufficient abundance to insure health, by a perpetual and uninterrupted access of free, pure air: and this locality being deficient in this, which is indispensable and vitally necessary for the preservation of health, some clue to its origination *generally* may fairly and reasonably be attributable to the situation of the lines, and this more than all the other causes besides.

By the blood becoming disordered, or an irritability of the nervous system established, the various functional powers will be more or less affected. This state of things may progress slowly, and be undetectable for a considerable length of time, and insidiously work

itself into a predisposition for taking on more active disease. The equilibrium in the normal powers of life being thus destroyed, the effect of malaria, or any thing baneful enough to affect health, can no longer be resisted. The stomach will sympathize—the secretions become morbidly changed—and the animal, to relieve himself from pain, is directed instinctively to eat earth. This may account for the presence of so much sand or mud observed in the large intestines. With respect to the treatment, I will not at present say more than that preventive measures will doubtless prove the surest remedy: to effect which, commence by clearing away walls, buildings, or any thing likely to obstruct the free current of pure air—or move the horses to other ground—or take up most of the flooring, and replace it with clean new-dug earth—give the horses an entirely new bed once a week, instead of mixing the old and new litter together—sweep out the lines;—and by these attentions to cleanliness the general health must be improved.

DECEMBER 17, 1844.

The PRESIDENT in the Chair.

Messrs. J. Arnold, W. Keyes, and G. Varnell, were elected Members.

Mr. Ernes exhibited, by the aid of a microscope, many of the "acarus equi." He stated that the readiest mode of procuring these parasitic insects was, to scrape with a spatula the scurf from off the skin of the infected animal on to a sheet of white paper, when, by warming the matter obtained, the motions of the insects might be distinctly perceived by the unaided vision. The acarus was, however, very difficult to procure from a horse which had been subjected to only one dressing for mange. He added, that after the able and lucid remarks which Mr. Erasmus Wilson had made upon this subject at the close of the last session, and which were published in the TRANSACTIONS of the Association, he

would not attempt a description of the mange insect. He then briefly alluded to the many discoveries of similar parasites as the cause or result of cutaneous diseases in different animals from 1784, when M. Leontine first affirmed itch in the human subject was the result of the development of a living insect, to the recent period, when Mr. Wilson had in this country demonstrated mange in the horse to be associated with the ravages of a similar parasite.

The President remarked on the importance which was to be attached to the inquiry, whether these insects were the cause or the effect of the disease, and whether they were present in every case of mange.

Mr. Ernes said that the greatest difference of opinion prevailed among pathologists upon these points. He was inclined to think that the disease first appeared, and the insect was only developed with the vesicle in the interior of which it seemed to exist. The horse, from which the parasites now before the members were that afternoon obtained, was fat and in good condition, about seven years old, and the acari could only be procured from him in one spot, on the inside of the thighs.

The President inquired if Mr. Ernes had made any experiments as to the capability of communicating mange by this insect?

Mr. Ernes replied, that the only experiment of the kind which he had made was an unintentional one upon himself. When examining some of the acarus equi during the last summer, he had unthinkingly touched his ear with his finger. A violent itching followed, which continued for twenty-four hours. This instance would seem to imply that the disease could be communicated in the manner to which the President had referred, but it would also indicate that the insect lost its power of propagating, and speedily perished, if placed upon any other creature than the one upon which nature had designed it to exist. It had been stated that the acarus equi lived but for the period of forty-eight hours. Mr. Ernes, however, said that he had kept the insects in the scurf alive for ten days, and even under a watch-glass he had observed them to be alive after three days—clearly proving that the general opinion as to the shortness of their existence was incorrect.

Case of Encysted Chronic Abscess containing Masses of Hair and inspissated Pus, which had assumed the Form and Size of small Peas.

By Mr. H. Christian, *jun.*

Canterbury, Dec. 8, 1844.

Dear Sir,—Thinking that the members of the Veterinary Medical Association would feel interested with the enclosed singular tumour, I have forwarded it to you. During the life of the animal it appeared like an indurated and circumscribed swelling, situated under the skin in the front of the chest, partly embedded in the pectoral muscles; but not interfering at all with the animal's work, or causing the least lameness, it was not considered worthy of notice. It has been there more than twelve years, and the commencement was not known, or even noticed. The horse was a black cart stallion, used for draught, and, being very old and worn-out, was destroyed; when, on removing the skin, this body presented itself; and being accidentally cut, many of the pea-like concretions were lost. I send you what remain. The two larger bodies appear composed of hair that has become felted together.

I am, my dear Sir,

Your's truly.

The President.—The morbid parts before me consist of a sac, in the interior of which are a number of small rounded bodies resembling white peas, and apparently composed of inspissated pus. I should conjecture that in this case an abscess was first formed the contents of which not being evacuated, the more fluid portion was absorbed, and by the action of the muscles the thickened and confined matter was rolled into the forms it now presents. That the contents have been subjected to such motion, and which can alone be attributed to the muscles, it is but reasonable to conclude from the smooth surface and perfectly spheroidal figure of each of these numerous bodies. It will be remembered that, during the last session, Mr. Hunt sent to the Association a tumour which contained several bodies composed of inspissated pus. In Mr. Hunt's

case, however, the bodies were ovoid in their general figure and more varied in their size. I then expressed an opinion that, as the abscess had opened into the eustachian cavities, the action of the air might have in some way contributed to those singular formations, but in the present instance the air was excluded. Absorption must consequently have taken place from the inner surface of the sac; and the pus thus inspissated ceasing to act as a foreign agent, became, by the churning action of the muscles, formed into these numerous consistent and rounded bodies.

Thus far only I can offer some solution of this most singular case, which, nevertheless, presents another feature worthy of special notice. I allude to the sac, which—and I have observed the same in other cases—has assumed an integumental character. It is dense as skin to the feel. Hairs are growing from its inner surface, and it only wants an epidermis, which a more minute inspection, perhaps, may discover, to perfect its similitude with the common integument. The hair growing upon the lining membrane accounts for the presence of these larger bodies, which closely resemble in appearance the hair-balls found in the rumen of the calf. This is not a common occurrence, although I have removed tumours that were filled with hair only, and the membranes surrounding which presented all the appearance of inverted skin.

Case of Strangulation of the Rectum in a Filly, by one of the Ovaria becoming pendulous and twisted around it.

By Mr. E. Sansom.

Blackburn, Dec. 14th, 1844.

Dear Sir,—Having met with a very singular case a few days since, I have taken the liberty of sending you an account of it. If you should think it worthy of insertion in the Transactions of the Association, it is at your service.

Dec. 7th, 1844, I was requested to attend a weaning filly, belonging to John Taylor, Esq., of Morton Hall, near Whalley. His man stated she had been attacked during the night, and, thinking she had the gripes, he had taken two quarts of blood from her. I arrived about ten A.M., and found the filly very ill; pulse im-

perceptible at the submaxillary artery; breathing not much laboured, but short; legs deathly cold; continually lying on her back or belly, evincing great pain; her belly very tense and much swollen; constantly looking at her flanks; conjunctival membrane highly injected. I immediately examined her per rectum, and found I could not pass my hand up farther than about twelve inches, from apparently something like a stricture into which I could introduce only the ends of three fingers. Her case I considered hopeless. I did not bleed, but gave Tinct. opii ætherial et solutio aloes ää f. ʒij, cum ol. lini ʒviii; threw up enemas of warm water, blistered the surface of the abdomen, and repeated the opium in four hours. I saw her again at eight P.M.; she was very uneasy, but the pulse could now be felt, although I could not count it: its character was thready. I again examined per rectum, and could not now introduce the end of one finger into the gut. The blister not having acted at all, I repeated its application, and continued the use of the clysters and opium. She died about seven o'clock the next morning, when I made a post-mortem examination; and to my great surprise I found one of the ovaria loose, and twisted around the rectum as tight as if a ligature had been passed around it. The ovary was of a great size, very black, and full of congested blood: it had inserted itself through a fold of the cellular membrane, and the rectum was full of dung up to the strangulation. The single and double colon were very much inflamed. I should have sent you the specimen, but unfortunately, as a person was washing it, it became untwisted, and thus its interest as a morbid specimen was destroyed.

I am,

Your's, &c.

Mr. Ernes.—The history of the case just read is, in my opinion, important, as the operation of spaying would certainly have removed the obstruction, and in any future similar case it might be performed with certainty of relief.

Mr. Morton.—This is allowed; but I would ask, how are we to know before death the precise nature of the strangulation?

Mr. Ernes.—I admit the force of the objection; and remember only one instance in which the symptoms similated those de-

scribed in the present case. The obstruction in that case was produced by a number of polypi attached to the mucous membrane of the rectum: these were removed by traction, and the animal got well.

The President.—The observations of Mr. Ernes appear to me to demand serious attention, while the objection raised by Mr. Morton all must have felt the force of. Strangulation of the rectum, produced by displacement, is by no means unusual. I have also seen lacerated portions of the omentum occasion it. The symptoms of abdominal disease are always more or less obscure; and however plainly the animal may indicate the general locality of the disorder, to accurately point to its precise seat, must, at all times, be a task of some difficulty. The examination per rectum, then, becomes of paramount importance, and no excuse on the part of the veterinary surgeon can palliate or justify the neglect of it. Surgery admits of no refinement of sentiment, but, its aim being to alleviate the sufferings of the patient, it even claims respect for the sacrifice of feeling which many of its duties compel the performance of. The examination in the present instance disclosed a stricture to be the cause of the symptoms, and enabled the practitioner to form a correct opinion as to the nature of the derangement. I think, when it has been ascertained that strangulation exists, and is produced by entwinement around the peritoneal surface of the intestine, a coarse of procedure is warranted, such as no ordinary circumstance would justify. Then let the horse be cast, and the abdominal cavity opened; the obstructing substance might thus be removed; and this being done, as Mr. Ernes has observed, the disease is removed. It may be said that death may result from the operation. I know it; but without the operation there is no chance of recovery. The course I am recommending, all must be aware, is one which only peculiar existing circumstances could justify. I feel it would be a desperate proceeding, and it must be one adopted only in despair of all other means succeeding in effecting the desired end. Let me not, then, be mistaken as advising the laying open of the abdomen in every case of suspected strangulation. To warrant the procedure, the precise seat of the affection must be ascertained, and every endeavour made to obtain a correct knowledge of the strangulating substance. To open this cavity is, in

the human subject, now no unusual operation, and with our patients it is one of common-place frequency. The fear which was once entertained of dividing the peritoneum no longer exists; but the huge and weighty intestines of the horse joined to the untractableness of the patient, forbid the hope that these could be minutely investigated to discover the seat of strangulation. Death to the animal, discomfiture and disgrace to the operator, would too frequently follow such speculative wildness. Only when the strangulation is upon the rectum could an operation be attempted with reasonable prospect of success; and even then it should be undertaken with promptness and in the early stage, or inflammation may have run on to gangrene.

In the case just related, from the nature of the pulse, &c., I should imagine the animal to have been beyond the reach of relief by such an operation; therefore it will be seen the remarks I have made are merely suggestions applicable to future possibilities, rather than strictures upon the present case.

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1. ON INFLUENZA IN HORSES.

By Mr. W. Ernes.

About the end of October 1844, many horses were attacked with the influenza in the south and north-eastern parts of the metropolis, particularly on the banks of the Thames, the course of which river the disease seemed to follow: it was more prevalent and fatal among the heavy draught-horses than any other breed that came under my notice. The following symptoms were observed by me:—loss of appetite, thirst, stiffness and pain in the posterior extremities, pulse from 70 to 90, sometimes strong and bounding at the first, but more generally small and indistinct. The mouth dry, the tongue much coated, the visible mucous membranes dry, and of a brown yellow colour—the general temperature of the body below the natural standard—the fæces hard, dry, and dark-coloured—the urine scanty, of a dark colour, and in many cases voided with great difficulty, owing probably to the pain the animal experienced when in the proper position to urinate, from the state of the hind legs. The respiration is but little disturbed at first, but it soon increases. There is frequent yawning,

and an erection of the penis. About the second or third day after the attack, one or both eyes become tumefied, accompanied with an abundant lachrymal discharge; sometimes they are entirely closed. Vesicles on the eyes have been observed by Mr. Braby, but not so general as in 1836. They generally appear on the inner canthus, under the membrana nictitans. The cornea now becomes opaque, and temporary blindness is thus often produced. In one case, deafness occurred. The mucous membrane of the mouth is much inflamed, being very red, and possessing a yellow tinge. As the disease progresses, there is a glairy discharge from the fauces, having an offensive smell; the throat is very sore, and a painful cough often present. The animal evinces pain on being pressed about the chest, shoulders, and legs, and swelling of these parts frequently exists. The pulse is hardly perceptible, the respiration much increased; the fæces soft, slimy, and of a pale colour; the skin hot and tender; the thirst increased; the appetite altogether gone. There is either much nervous irritation present, or the animal stands with closed jaws in one corner of his stall. From the fourth to the sixth or seventh day a favourable crisis sets in, this being, generally, the result of medical treatment: the eyes are opened, the legs less swollen, the pulse more perceptible and stronger, the appetite returning, yet the mouth is still offensive to the smell, although the tongue appears cleaner and less coated; the alvine evacuations are about the same as they were, but the urine is very abundant, clear, and natural. The animal, although continuing for a time exceedingly feeble, gradually recovers perfect health.

In cases where this favourable crisis does not take place, the disease seems to remain stationary for several days, from the fourth or fifth day to the tenth or twelfth; when suddenly some of the abdominal viscera seem to become more involved, the animal suffers much pain, and soon dies. Or, abscesses having formed in the lungs, some of them burst, and pus, having an offensive smell and chocolate colour, is abundantly discharged through the nostrils, the patient ultimately dying from asphyxia. In all these cases obstinate diarrhœa is always present, and has existed for a shorter or a longer period. On a post-mortem examination, the abdominal viscera are found to have been more or less inflamed; the double colon and cœcum are of a dark colour, their mucous

membrane is much thickened, of a black colour or ashy grey, and separates easily from the muscular coat. The small intestines but slightly participate in this change. In the stomach are found traces of recent inflammation; the spleen is gorged with venous blood; the liver is sometimes much inflamed, or even softened—at other times it is merely congested. The kidneys and bladder generally partake of the inflammation, but the single colon and rectum seem to be less affected as they proceed onwards in their course.

The lungs, if not the seat of disease (in which case extensive abscesses have been formed), are found in a state of congestion, and filled with venous blood. The parenchymatous structure is but little altered, but the air-passages exhibit indications of violent inflammation, the mucous membrane of the trachea and bronchial tubes being in many cases in a state bordering on gangrene, black, and easily separated from the subjacent tissues: this alteration becomes less marked as we ascend in our examination towards the mouth, although the pharynx has generally been much inflamed. The heart is filled with venous blood, and with the whole of the muscular fibre of the body is pale and flabby. The brain and spinal cord I have not examined. The mortality from this disease in my practice amounts to nearly one in twelve. On inquiring into the general mortality of horses compared with the previous year, I find an increase of eighty-nine on the last quarter of 1844. In one establishment of slaughterers, the numbers are as follow:—

1843.	Oct. 258..	Nov. 288..	Dec. 219....	Total 765
1844.	Oct. 288..	Nov. 327..	Dec. 239....	Total 854
				Increase 89

Treatment.—This should by no means be too active. Bleeding is not indicated, and in the majority of cases it does harm. Purgatives, particularly aloetic compounds, are to be avoided altogether, as the smallest doses will often cause violent action. The patient should be allowed an airy, loose stable, if possible, with warm clothing and plenty of thin gruel slightly acidulated. In the beginning of the attack, small doses of the nitras potassæ in solution, with, perhaps, an addition of spiritus ætheris nitrici, according to the case; or the liq. ammoniæ acetatis, with the extractum bella-

donnæ. In those cases where the pulse is strong, the digitalis purpurea will be found very useful; but this must never be pushed too far, as debility soon supervenes, and in large-sized animals this is most troublesome to remove. Tonics must be early employed: the best and safest are the vegetable bitters, such as the anthemidis flores and gentiana radix. The mineral tonics are not advisable, on account of the irritation induced by them in the mucous lining of the alimentary canal. If the diarrhœa be great, opium with the vegetable astringents, as catechu, kino, and oak bark, should be given. In those cases in which the stomach is much disordered, the alkaline carbonates are indicated. Counter-irritants to the throat, chest, &c., will be very useful, in particular where there is an early tendency of the disease to attack the lungs. I have given the ammoniæ hydrochloras in doses of two drachms three times a-day with very beneficial results. The action of this salt seems to be on the mucous membranes, their secretion becoming more abundant, thinner, and of a healthy colour; it also promotes the alvine evacuations and alters their character, while it increases their quantity: it would not, however, be advisable to give it in cases where violent diarrhœa or increased arterial action exists. The food should be of good quality, small in quantity, and easy of digestion; consisting of carrots, malt, scalded oats, and meadow hay. The state of convalescence lasts from ten to twenty days, according to the severity of the attack.

In conclusion I would observe, that the name influenza, or, what is better, *influentia*, which, I believe, was first applied to this affection in 1836, is any thing but appropriate to the affection it is intended to designate; neither is it easy, taking the whole of the symptoms into consideration, to class this affection properly. The continental authors do not describe it, but their *fièvres gastric, bilieuse, muqueues*, and *adynamic*, have many of the common characters of influenza.

If we refer to the soreness of the throat, the intense redness of the mucous membranes of the mouth, &c., we may trace some resemblance to scarlatina of the human subject. On the other hand, the pain and stiffness of the limbs would place it among rheumatismal affections. I have no doubt but that many very severe cases have assumed all the characters of the putrid or typhus fever of human subjects.

Among the causes, we may place the great heat of the foregoing summer, and the fact of the new hay and oats being used much sooner this year than last, on account of the scarcity of the grass. But the principal cause, in all probability, is the cold damp air which prevailed very much in the beginning of the autumn, particularly in the form of heavy fogs, &c., and the sudden and unexpected changes which have since taken place, both in the temperature and hygrometric state of the atmosphere, which have necessarily induced alterations in its electrical condition: whether any miasm or organic exhalation may be floating in the air, giving rise to this disease, I am not prepared to state.

2.—ON INFLUENZA IN HORSES.

By Mr. W. GARRARD.

I AM at a loss nosologically to place the disease which has received the above name. Fever, of a typhoid character, seems one of its most prominent features; and that it is epizootic I have no hesitation to affirm, for, in every instance where one horse has been attacked, others in the immediate neighbourhood have become affected. I consider I have witnessed it in two forms—a mild and a more aggravated one. In the former the early symptoms are, loss of appetite, dulness, slight cough, yellowness of the buccal membrane, the conjunctival and Schneiderian membranes being of a similar hue, and rather more vascular than natural; pulse and breathing accelerated, the latter but slightly so; the bowels constipated, the fæces being voided small in quantity, buttoned, and covered with mucus; extremities and surface of the body alternately hot and cold; dry state of the skin, with prostration of muscular power and spirits. In the early stage our treatment has been very simple; consisting in removing the patient to a comfortable and well ventilated box, regulating his diet, attending to the warmth of the body and extremities, accompanied with the administration of gentle laxatives, febrifuges, &c. After the bowels have been sufficiently acted upon, and the febrile symptoms subdued, mild stimulating tonics have been given with great advantage. Under such treatment these cases have soon become convalescent.

In the more aggravated form the symptoms are severer from the onset. At the period we have been called in we have generally found the countenance very anxious, the respiration amounting to sixty or seventy in the minute, and the pulse about eighty or ninety, but of a very feeble character: the animal in most instances refuses all kinds of food, and appears stiff and sore; evinces great disinclination to move, and in many cases will stagger and tremble, as if he were about to fall; visible mucous membranes considerably injected—on the Schneiderian membrane numerous inflammatory spots are perceptible (petechiæ)—skin hot and dry—ears and legs alternately hot and cold, or, what is more frequently the case, one hot leg and three cold ones, or the reverse—buccal membrane yellow—tongue covered with a brown fur—secretion of the mouth very clammy, and emitting an acid odour—bowels constipated, what fæces are voided being very hard, dry, and encoated with mucus. The greater number of cases are attended with a very distressing cough, which comes on in paroxysms: the horse will give one full, bold cough, followed by two or three shorter ones, shake his head, and appear almost choked: the secretion of urine is scanty, and very high-coloured. If the above symptoms are not speedily relieved, the pulse rapidly increases in number, becomes extremely feeble, and ultimately quite imperceptible at the jaw—the extremities cannot be kept warm—there is an apparent disgust for all kinds of aliment—the Schneiderian membrane assumes a very dark hue, almost approaching to black—and the general debility and irritability increase, until death closes the scene, which generally takes place about the sixth or eighth day; at least, such was the case with those we have been unfortunate enough to lose.

The post-mortem appearances were those of general inflammation; indeed, scarcely a texture in the body could be said to be wholly exempt from inflammatory action. The whole of the alimentary canal presented an inflammatory blush; the cuticular coat of the stomach would readily separate from the subjacent textures; the liver might be easily broken down by slight pressure of the finger; the lungs and heart were considerably inflamed, and upon the pleura costalis I observed many spots of ecchymosis: the fauces and larynx were very much inflamed, as might be expected from the peculiar cough which in most cases

was present; and the bowels contained little else but fluid of a very dark colour.

In the treatment of these cases our object has been to guide the disease, if I may so express myself, to its termination, rather than adopt such active measures as might be supposed to cut short the attack, believing it to be of that nature which will run its course, do all we may to oppose it. We have not had recourse to blood-letting in many cases, as the state of the circulation at the time we have been called in contra-indicated the necessity of such a measure being adopted; nevertheless, I think, if the cases were seen at an earlier period, a small blood-letting would have been advantageous. In every instance in which we have had recourse to it, the patient has been attacked the time we were on the premises; and several similar instances occurred at one large establishment, where so many horses fell sick in regular succession, that either Mr. Draper, or myself, was requested to be in constant attendance. After getting the patient into a comfortable box, well ventilated, we generally give a dose of laxative medicine, consisting of hyd. chlor. ʒss, cum aloës ʒiss ad ʒij, followed by a diaphoretic draught:—℞ Spt. æth. nitr., spt. æth. sulph. comp. āā fl.ʒi, liq. ammon. acet. ʒiv ad ʒviii, tinct. lavand. comp. fl.ʒss, M. ft. haustus; which we find has a very beneficial effect in establishing the balance of the circulation, and producing a general warmth of the body and extremities. I know that actual diaphoresis in the horse is denied by most persons, nevertheless I am persuaded we can produce something very nearly approaching to it. In order to effect this purpose, we have the body warmly clothed and the horse's legs immersed into a bath-tub filled with water, as hot as he can bear it, and allow them to remain in fifteen or twenty minutes; after which they are rubbed dry as quickly as possible, and warm flannel bandages are applied the whole length of the legs. The box should be well bedded. You will perceive our dose of laxative medicine is small, and we rely in most cases upon the subsequent administration of enemas; because a stronger dose of purgative medicine than the above would be attended with danger, the bowels in most cases being more easily relaxed than kept in that state.

Should the above draught and warmth to the extremities raise

the pulse, so as to enable us to bleed, we do so; but, as I before stated, we have failed to produce such an effect, except when we have been in early attendance. Sedatives are given, as circumstances may indicate: our favourite agent is belladonna, with nitrate of potassa, given in sufficient doses to keep up an action of the kidneys. Counter-irritation to the throat and whole course of trachea, also to the sides, if circumstances lead us to infer the lungs are much involved, is likewise had recourse to. The counter-irritant we employ is the ung. hyd. biniodidi, which we find produce more infiltration into the cellular membrane than any other compound, provided it is properly prepared and applied; at the same time it is a neat, clean application.

With this treatment the accelerated respiration, cough, and other violent symptoms, will often subside in a remarkably short space of time; yet they too often return again and again, and at every return the extreme languor and nervous irritation seem to increase. In many instances, after leaving the patient apparently much relieved, we have been hastily summoned by the groom, he stating the horse to be dying. We have returned, and found him blowing, his head hanging down, nostrils dilated, legs and ears deathly cold, a peculiar rattle in the throat, twitching of the muscles of the body, and subsultus tendinum of the fore extremities. Under such circumstances we have again had recourse to the warm bath to the legs, and the administration of a diffusible stimulant; and where the nervous irritability has been very great, we have found considerable benefit from calomel and opium given every three or four hours; at the same time we continue to administer diffusible stimulants with diuretic agents.

Hitherto I have said nothing about diet, which I think a very essential point in the treatment of this disease. Until the bowels are relaxed we allow no kind of dry food whatever; in fact, in most cases the animal will not take any. A little boiled wheat, with bran mashes, may be offered, or any of the succulent roots, with gruel, or white water, to drink. As soon as the bowels are relaxed, and the acute symptoms somewhat abated, we endeavour to induce the animal to take as much nutriment as possible: the quantity of boiled corn may be increased, and a little good hay, with carrots, &c., given; regulating the diet so as to get plenty of support into the system, at the same time keeping the fæces

in a pultaceous state. But, in many cases, all kind of food is obstinately refused: the bowels, for twelve or twenty-four hours, will act more than desired, then cease altogether, and, although the bowels cease to act, fluid may be heard continually rumbling about in the intestines: under such circumstances we have plenty of well-boiled gruel horned down every four or six hours, and give a bottle of port wine every eight or twelve hours, with doses of ammon. carb. and pulv. zingib. every six hours. By such measures we have succeeded in completely rallying cases which, to appearance, had sunk below all hope of recovery.

Doubtless, many members of the profession will question the propriety of our treatment, seeing we have been pretty liberal with stimulating medicines under circumstances where inflammatory action was unquestionably going on; yet it must be borne in mind, that that inflammation was not acute, but of a sub-acute character, and attended with extreme languor and great nervous depression, which appeared to be rapidly exhausting the vital powers. Had the depletive system been carried to any great extent, I feel no hesitation in saying the result of our practice in this affection would have been widely different; for, out of eighty cases treated, we have only lost four—two of which were subjects of previous pulmonary disease, and one presented extensive disorganization of one kidney, which must have been the result of diseased action going on for a considerable time.

I am,

Melbourne, Derbyshire. Your's, &c.

3.—ON INFLUENZA IN HORSES.

By Mr. T. Wright.

Influenza is a disease to which our most valuable patient, the horse, is peculiarly susceptible; and although it is not generally described as being a very fatal malady, is still one which demands our strictest attention, in order to avert as much as possible the annoying and deteriorating effects too often produced on the system by its insidious ravages.

As it is my intention in this paper to consider more particularly those points connected with this disease of most importance to us in a practical point of view, I shall waive all further prefatory remarks, and at once proceed to an investigation of its

Causes.

Numerous are the opinions that have been advanced in order to account for the long-continued existence of this disorder; but, from the exceeding variability of the circumstances under which it is found to make its appearance, they have all been more or less objected to. It is produced by causes seemingly of the most opposite character; affecting indiscriminately both the old and the young; animals in the field or in the stable, at rest or at work; and often when the system is under the influence of the very medicines to which we should have recourse in our endeavours to combat it.

Mr. Sewell, in an essay read before this Association in the year 1836, stated as his opinion, that the noxious vapours given off during volcanic eruptions might become so diffused through the atmosphere, that, although not sufficient in quantity to enable us to detect their presence, yet, when inhaled, they would act on the system in such a manner as to produce influenza. Mr. Karkeek also seems inclined to favour this opinion.

Now, that many of the epidemic and epizootic diseases which have been known to prevail at different periods, in this as well as other countries, have their origin in the effects produced upon the animal economy by the inhalation of those mephitic vapours, it would be a fallacy to attempt to deny; but, still, I cannot reconcile myself to the opinion that the disease to which we affix the name of influenza is at all dependent on this source for its development; for, if this is admitted as its cause, how are we to account for the fact, that any variable condition of the atmosphere, such as sudden changes from cold to heat, and dry to damp, is sure to be followed by many cases of this affection?—and, if volcanic emanations had any influence in its production, their effects would long ere now have passed off, by the known tendency which gases have of becoming equably diffused: instead of which, we find the same disease to exist now that existed in the middle of the last century,

and has continued to do so with some slight modification ever since that period.

Much has also been said respecting the agency of miasmata or malaria in producing this disease, but nothing satisfactory can be explained with regard to it as a cause; and when we take into consideration the fact that horses being placed in situations in which the presence of miasmata is altogether unknown, or at least unsuspected, have become affected, whilst others situated in districts well known for their power of producing miasm have altogether escaped, we shall not be induced very readily to accept this as a cause of its production.

Now, it is a fact that cannot be disputed, that influenza is an invariable attendant upon any marked changes in the condition of the atmosphere, and this without the slightest respect to any particular season. It is upon the knowledge of this fact that I now presume to direct your attention, more particularly than has hitherto been done, to a consideration of the influence of the different electrical conditions of the atmosphere upon the systems of different animals, as being the disposing cause of this disease. We know that electricity produces different effects upon different persons, and also upon the different states of the constitutions of such persons: we also know that all animals possess a certain share of electricity, which electricity has many important offices to perform in the animal œconomy, particularly in the function of secretion. Together with this, it has been proved that the atmosphere in an ordinary state is in a positive state of electricity, and when moisture, rain, snow, or sleet, is present, that its condition is altered to the opposite state, and therefore it becomes in a negative electrical state. Now, if we look at the very acute sensibility displayed by the horse, and the extraordinary irritability of his nervous system, which is known to render him more susceptible of sympathetic fever and tetanus than any other animal, we shall not be surprised to find that any cause acting so as to rob his system too suddenly of any part of its natural stimulus should be productive of the most serious results, by causing a partial obstruction to the performance of the natural functions of the whole of the organs of his body, a state of things most conspicuously developed in the first symptoms of influenza. And if what I have said be correct, it may be accounted for in the following manner:—

first, that during the settled state of the weather the system is continually producing electricity, which, from the positive electrical condition of the atmosphere, is but slowly given off, and therefore its stimulating effects are imparted to the nervous system, and thus the secretions are carried on healthfully and with vigour. Secondly, a change takes place in the atmosphere, and it becomes by either of the abovementioned causes changed into an electro-negative condition. It now speedily conducts off the electricity from the body; the healthy stimulus is thus lost to the nervous system, and, if the constitution is not in a condition to support this loss with impunity, prostration of the vital powers must, to a great degree, as a natural consequence, be the result. And here I leave my view of the predisposing cause of this disease.

We will now consider the

Exciting Causes.

These are said to consist in any sudden exposure to wet and cold, extreme exertion, change of diet, taking up from grass to the stable without due preparation, &c. Wounds, the application of blisters, &c., seem also to bring about an attack, which is generally found to aggravate the local disease. It was a knowledge of this fact that induced the late Mr. John Field to suppose this disease to be of an erysipelatous kind. I have also known it to supervene upon the effects produced by a common dose of purgative medicine, but its appearance under those circumstances has not been of such frequent occurrence as to induce me to pay any particular attention to them as exciting causes; the liability to an attack, in my opinion, being as great without as with their presence.

The next and more important division of our subject will bring us to a consideration of

The Symptoms.

The first symptom manifested by the patient on the appearance of influenza is a partial loss of the appetite, after which he is observed to perspire more than usual at his work, looks dull, and in a few days rejects his food altogether; he next shews evident signs of weakness; his eyes become clouded, and now and then he is heard to cough; effusion takes place into one or both upper eyelids,

and the tears escaping over the under one run down upon the cheek; soreness of the throat is now observed to be present, for when he attempts to drink, instead of swallowing any quantity, he will gulp it, and let it return again; he picks his hay and slowly masticates it, without however attempting to deglutate it; his head is protruded, and the slightest pressure of the larynx excites a cough, which appears to be performed with great pain; the coat loses its soft feel and looks dry; the pulse is generally about sixty, but of a very peculiar character: if a slight pressure is applied to the artery by the finger, it feels bounding and full; but if we impart to it any considerable amount of compression, we shall find it to become obliterated much more readily than in an inflammatory disease. The mouth is hot and dry, the dorsum of the tongue is furred, and patches of scarlet appear on its sides; the Schneiderian membrane is very red, and often covered with mucus; a slight discharge of a thin watery fluid escapes from the nostrils; the conjunctiva is of a more or less scarlet colour, and tinged with yellow; the extremities, although mostly warm and comfortable, are in some instances of an icy coldness; the urine is high coloured, and small in quantity; the fæces are scybalous, and frequently voided.

We may now fairly conclude that influenza is established in its purest form, and our attention must henceforth be directed to its terminations. In about two or three days an alteration takes place, when the symptoms either gradually disappear or increase in violence. The first is its most frequent course, when a copious discharge will take place from the nostrils; the appetite will return, but will remain for some time delicate; the animal will look better in his coat, and appear altogether more lively, but still be very weak. When, however, instead of improvement, we find the reverse to obtain, we may expect that either acute catarrh, pneumonia, or pleuritis, will follow, although I have seen cases wherein the prostration of strength has been so great that the patient has gradually sunk from exhaustion, without the slightest appearance of any local determination on a post-mortem examination.

Acute catarrh is its most frequent sequela. It is known by an exacerbation of all the preceding symptoms: the nose becomes protruded, and the neck is fixed in one position; the pulse is slightly increased (probably from the pain), and the respiration is

somewhat accelerated from the obstruction existing in the air-passages; a discharge takes place from the nostrils, consisting of pus and mucus in large quantities; and the Schneiderian membrane is much reddened and inflamed: the appetite is sometimes very good, but the patient is not able to swallow from the excessive pain that accompanies the act. When the disease locates itself in the parenchymatous structure of the lungs instead of the fauces and larynx, the patient will look much dejected; his eyes become almost closed, his head hangs down, and he will stand as if permanently fixed; the nostrils will be dilated, and a slight heaving of the flanks is to be observed; the pulse is quickened, and the discharge from the nostrils ceases; the membranes lose their scarlet appearance, and become pale and yellow.

The most favourable symptoms here to be observed are, a copious nasal discharge, and the legs, which have hitherto been very cold, to become warm and œdematous.

When the pleura is more the seat of the inflammation than the substance of the lungs themselves, there will be the presence of that double respiratory effort so peculiarly characteristic of this disease, and an evident flinching on pressure being applied to the intercostal spaces: this generally ends in hydrothorax, and which may be known to have taken place by the sudden acceleration of the respiration, and the quickened and feeble state of the pulse.

Treatment.

My treatment has generally consisted in giving at the onset sol. aloes ʒij ad ʒiij, in order to bring about a relaxed condition of the bowels. The action of this drug in this affection is very quick, it frequently producing the desired effect in ten or twelve hours; it will likewise cause a certain degree of nausea, which is also very desirable. I then, in order to meet the increasing debility, and to reduce the redundancy of fluid in the blood, administer daily doses of tonic, diuretic, and diaphoretic medicines, combined; such as potass. nitras, liq. amm. acet., with gentian. rad. et pulv. zingib. If the pulse be full, and the other symptoms do not forbid the detraction of blood, I at once have recourse to venesection, and thus, in my opinion, render an attack of inflammation of the lungs, or their investing membrane, less likely to follow; but remember, I only do this in the very first stage.

I now rely entirely upon the efficacy of the daily repetition of the above-named medicines—and it is seldom that I have cause to change them for any others—until the disease has worn itself out, and the time for the administration of tonics alone has arrived. I, however, carefully watch the progress of the disease; and if inflammation should shew itself in any vital organ, I at once have recourse to venesection and counter-irritation, with the administration of nitras potassæ et antim. pot. tart., in doses according to the severity of the attack. When the inflammatory stage has subsided, and all fear of a relapse has passed away, I then commence a course of tonics, with which I continue until convalescence is perfectly established; taking care to supply the patient with good nutritious diet.

The best counter-irritants we can employ are the acetum cantharidis and setons. By the frequent rubbing in of the first we can produce irritation almost to any extent, and it will be found greatly to facilitate the suppurative process excited by the setons when it is applied with them.

The appearance of serous effusions externally, no matter in what situation, is always hailed by me as a favourable symptom, for I find that on their being produced the other symptoms abate and disappear. The best method of treating those enlargements consists in the use of hot fomentations and slight scarifications.

Post-mortem Appearances.

The appearances presented by those animals that die of this disease, previous to any local determination of it, present no organic lesion whatever in any part of the system—at least, so far as I have been able to discover; I have therefore attributed their death to excessive prostration of the vital powers, from which the system was unable to recover. I have not had an opportunity of investigating a case of death in which catarrh alone has been present, and therefore am unable to give to you any description of the appearance of the parts in which this disease is seated.

The lungs of those patients which die of pneumonia as a sequela of this disease are black from congestion of blood, and in some cases the existence of numerous incipient tubercles may be detected.

In pleuro-pneumonia, or where the pleura has been implicated in the inflammation, effusion into the thorax, and that to a considerable extent, is often found: the lungs are collapsed, and the pleura pulmonalis and costalis covered with flocculi of yellow lymph.

I remain,

Your's, &c.

Mr. E. Braby.—On rising to express my opinion on this subject, I feel I have but little to say, as in most particulars I coincide with those whose essays have just been read. The cause, however, of the present disease I cannot attribute to any hygrometric or thermometric changes in the air, as the average variations during this and former years have not presented any such striking difference as would, in my opinion, warrant that conclusion. The preceding year, which was unattended with disease, was no less unsettled in this respect than the present one, which has been marked by the appearance of influenza. I will not assert that the disorder originates in some peculiar electrical condition of the atmosphere, too subtle for our senses to take cognizance of; but, swayed perhaps by my inability to discover any direct influence, I am certainly inclined to favour that opinion, although at present I may not be prepared to support it.

Of the various breeds of animals which suffer from this affection, the lighter kinds, I have remarked, are not so severely debilitated by its attack as the heavier horses. This I do not attribute to the mere difference of condition. Cart-horses are generally kept in a plethoric state; but though plethora disposes to an inflammatory termination, the reverse I have observed induces a susceptibility to be attacked. I would rather trace the debilitative effect of the disease upon the heavier breed of horses to the greater amount of cellular tissue which enters into the structure of those animals, the cellular tissue and mucous membranes, in my opinion, being the parts which influenza more particularly affects. And another reason why the heavy draught-horse has this disease more severely than the lighter horse is, that we do not discover it in its earliest stages. Being an animal that is accustomed to go slow, any disease or indisposition is not so soon detected in him as in the lighter animal, because the rider or driver of the latter immediately per-

ceives that the horse is unwell. If, therefore, the disease is attacked in its earlier stages, it does not often run on to any alarming extent. The average number of deaths under the prevailing form of influenza I have found to be one in twenty; and the symptoms in which we seem very nearly to agree, in cart-horses (for to that particular kind of animal I must be understood more especially to allude), to be, in the first instance, stiffness of the extremities, attended with considerable rheumatic pain, sore throat and total loss of appetite; while, as the case proceeds, more or less affection of the thoracic and abdominal viscera becomes apparent.

My treatment has been to have the animal as soon as possible removed from the place in which he was attacked to some open shed or box, where he may be allowed to move about, and to take care the body be warmly clothed and the legs frequently dry rubbed. Every post-mortem examination having shewn me the fauces and trachea were considerably inflamed, I must so far differ with Mr. Ernes as to regard the disease having rather a tendency to affect the larynx than the lungs. The throat is almost invariably affected; and this part, together with the chest, I therefore order to be stimulated with ol. canth., and afterwards administer a draught composed of ol. lini Oss., spt. æth. nit. ʒij, tinct. opii ʒiss. This, with vegetable tonics, combined with potassæ nitras, or potassæ carbonas, in the after stages of the disease, I have experienced to be all that is necessary for the milder forms of influenza. I must, however, be allowed to differ with those who recommend the exhibition of aloes in this disease. That drug, in all its forms, when treating a case of influenza, I would avoid as I would a poison. In six cases where I ventured to give only ʒij of the aloetic mass, four of the horses died of hypercatharsis; and I am firmly convinced that to the heavier breed of horses aloes cannot with safety be given at all in this disease. Few cases demand medicines that have a sedative action, and blood-letting I have adopted only in a very few instances, and then during the very earliest stage of the disease.

In the more severe cases, if the symptoms do not abate, when the pulse is between eighty and ninety—and it is thus high not unfrequently—then I have employed powerful sedatives, such as digitalis combined with belladonna, and from their union have

observed the best results, the pulse being lessened in frequency while it was increased in tone. Should pulmonary symptoms appear, I have introduced setons in the chest, and have also employed a mustard cataplasm as a stimulant. The appearance of œdematous swellings towards the termination I have always regarded as a favourable symptom.

Mr. H. Hallen.—If I have not mistaken the last speaker, he would insert a seton after the application of a local stimulant. Is not the skin by the action of the counter-irritant rendered hard, and the passage of the seton consequently made more difficult? Might not the effect be more quickly produced if the seton were first introduced and the blistering compound applied subsequently? Then, as to the length of the seton. Roaring is to be feared as one of the sequelæ of influenza, and, as a check to this, setons are assuredly serviceable. I have passed a seton from the neck to the chest, and I find that on removal of this seton the suppurative action speedily stops. One of the authors of the Essays read recommends the use of flannel bandages to the legs. The bandages generally employed, I may observe, are by no means large enough for their intended purpose. I prefer them of such a size as will not only envelope the leg, but also extend some way above the knees and hocks. Often, after the legs have been fomented, have I ordered the application of two sets of such bandages, and the result of this practice is the prevention of the parts becoming chilled by evaporation. After the legs are thus enveloped, if I place my fingers under the flannel, the skin will be felt warm and comfortable. It is also my practice to take care that the legs after being fomented do not remain for even a short time uncovered; and so particular am I in this respect, that I have had four men to bandage the four legs. Another essential point I hold to be the taking off of the shoes, as thereby pressure is removed from the wall of the foot, and the circulation of the blood aided. I have found this to facilitate the recovery of the animal, and after it have always observed the horse to appear easier. When taking off the shoes, I at the same order the horse to have an abundance of good short litter on which to stand, taking care that it is so short the animal cannot by pawing scrape it up. As to the administration of aloes, I perfectly agree with Mr. Braby,

Having had some experience in the treatment of this disease in Her Majesty's service, I should fear aloes as I would a poison, on account of its tendency to produce superpurgation.

Mr. Braby.—Again, I must request it will be remembered that my remarks apply more particularly to the heavy breed of horses. It is the more important to bear this in mind, as I am of opinion that influenza assumes a different character when it attacks the lighter horse.

Mr. Hallen has remarked upon my use of blisters. I prefer, however, the application of mustard to cantharides to the skin, which I think acts best when mixed with warm water to the consistency of cream, and is then well rubbed in the contrary way to the hair. The reason of my preference is, I have experienced its action to be quicker, and the effect, consequently, to be more immediate and marked. As to setons, I have not employed those agents of a greater length than from eight to ten inches, and should fear to introduce them to the extent implied by Mr. Hallen's observations. After disease has disappeared setons often continue to suppurate, and this circumstance is an objection to their extensive introduction in animals which, on account of their size and structure, are incapable of withstanding that degree of depletion which might be altogether harmless in the lighter breed of horses, to which Mr. Hallen's remarks, I opine, more especially referred. Neither could I hold myself warranted in the use of setons as a preventive to roaring, however I might employ them as remedial agents when roaring had supervened. I have now a case in which roaring has supervened consequent upon inflammation of the glands. The virulence of the disease, however, has in that case been subdued, and with it the affection to which it gave rise is now fast disappearing, without the aid of setons. Among heavy horses the possibility of such animals becoming roarers has not been with me a source of any anxiety. Such a consequence is far from probable. In the early stage of influenza the great nervous irritability which affects these animals demands more serious attention than the remote chance of their respiration being ultimately, and then for a time only, impeded. The nervous irritability to which I allude affects the extremities, and assumes all the characters of the acutest form of rheumatism. To alleviate it, I have administered colchicum in all its forms, and with some

benefit, although not quite equal to my expectations. The acetous extract, in half-drachm doses, I think the best form in which this drug can be exhibited, and only when nervous irritation is present have I found its administration beneficial.

The use of warm water to the legs of heavy horses I must object to, as however assiduously they may be rubbed after its employment, the heels will continue wet, and inflammation followed by suppuration not unfrequently be the result. Nor can I approve of taking off the shoes of cart-horses: their soles being generally flat, pressure on the sole would create pain, and irritate a system already suffering from morbid excitability.

It is not unusual to have the sole even lower than the frog, and all must have remarked that cart-horses walk without the shoes with far less ease than animals of a lighter make. It is not, therefore, on account of the breaking of the hoof that I object to the practice Mr. Hallen has recommended, but because of the pressure which must result to the sole, and which I cannot conceive any amount or kind of litter can effectually obviate.

Mr. Wright.—Mr. Braby objects to the use of aloes in influenza. May I ask what medicine he would employ to relax the bowels? I have been in the constant habit of exhibiting this drug, and have never seen a case in which any unpleasant consequences have supervened.

Mr. Braby.—In most cases no laxative is necessary; and where an aperient has been required, I have found linseed oil sufficiently active, and milder than aloes in its operation. Many practitioners, no doubt, have exhibited aloes; but it must have been to the lighter horse, on which the effects are by no means so energetic as on the heavier breeds.

Mr. Woodger.—I quite agree with Mr. Braby as to the impropriety of exhibiting aloes during influenza; and, as that gentleman truly states, this disease will rarely admit of any depletion. I gave aloes in one case, which I nearly lost in consequence of the catharsis which ensued. I likewise drew blood in two cases; and of these two, one terminated fatally. There is a tendency in this disease for the bowels to become relaxed without the aid of medicine; and I have had to combat diarrhœa when no purgative had been administered. In those cases in which indications of constipation existed, carrots, mashes, and succulent diet, have

proved in my practice quite sufficient to remove it. During the recent outbreak of influenza in this metropolis I have been called on to attend at least two hundred cases. The description of animals which formed the majority of my patients were such as are classed under the head of "machiners." So prevalent has been the disease, that in some instances there was a difficulty to accommodate the number which, in one stable, were attacked at the same time. It has always to me seemed desirable that the horse suffering under influenza should be removed from the stable which healthy animals occupied. Where it could be obtained, I have always placed the patient in a loose box; and, as a separate box could not always be afforded every individual, in one instance I placed sixteen horses suffering from influenza in a large shed or barn, which I procured for the purpose, at Chelsea. I found the animals did not injure each other by being thus put together, but rather benefitted each other, and the small amount of fatal terminations which resulted from this practice I may, perhaps, be allowed to appeal to, in order to convince the members of its propriety, as I have not lost more than one in a hundred cases.

Mr. Rice.—In all the cases of influenza which have fallen under my care, the disease has assumed an aggravated aspect. In each case, at the onset, I gave aloes in ʒjss doses, and certainly witnessed no bad effects from it; I, therefore, cannot agree that aloes is so dangerous a drug in influenza as I have this night heard stated, although I fully admit, that a horse when suffering under that disease requires the system to be supported, and this I have endeavoured to do by horning down arrow-root gruel, in which was dissolved a little nitrate of potash. In some of the cases to which I have alluded I bled to the extent of two quarts, and I am happy to say, that in every instance the patient recovered.

The Patron.—The number of deaths which have occurred in the practice of Mr. Woodger are certainly exceedingly few, and speak well for the plan he has pursued. I have heard of a stable in which one horse out of every four attacked was lost. Some practitioners have had but few cases, and yet out of these have lost the majority. Others, among whom I know Mr. Hallen to be numbered, have had many, and lost but few. The mode of treatment adopted by the successful practitioner should receive especial attention, and every new practice introduced by him

ought to be deliberately discussed, and patiently considered. Among the "new lights" which have this evening been placed before us, none, perhaps, is more striking than the unusual custom which Mr. Hallen has pursued, and that with good effect, of taking off the shoes from the feet of horses affected with disease. Inquiring into the effect produced upon the animal economy by the contact of metals, we may, perhaps, best arrive at a sure conclusion, by asking, What has man experienced? During the voyage which Sir John Ross made to the North Pole the sailors found they were unable to endure even the nails which in this country are commonly driven into the soles of shoes. In Canada, also, men are careful that no metal is introduced into these coverings of their feet. We have not yet learned to apply the instruction which facts of this kind should convey; but we must not forget that the horse's shoe is of iron, and is in immediate contact with a part of the body.

It is true, that the dry and insensible, thick and resistant horn of the horse's hoof little resembles the soft, sensitive, and yielding covering of the body; and we should not, from the contact of the horse's hoof, expect a result so marked in its effect; yet shall we, therefore, infer no effect ensues? Let the answer be such as experience will afford. Take the shoes off from both feet on one side, and let them continue on the feet of the opposite side; note then the temperature of the hoofs, observe the signs by which the horse expresses a sense of ease, and from the result draw the conclusions, which, I in no way doubt, will accord with those Mr. Hallen has expressed. For years it was my custom, when quitting London during the heat of the summer, to have the shoes removed from the feet of my own horses, and I never had any cause to regret the practice.

The President.—During the progress of a debate it often happens that remarks which, when first made, appear trivial, are, upon consideration, found to be of importance. An instance of this has occurred to-night, in the observations made by Mr. Hallen respecting the taking off of the shoes of horses suffering from disease, when it is most desirable that the legs should be kept warm. This practice, certainly, is of some advantage, and it is interesting to ascertain the cause of the chilliness to which the extremities of our patients are liable. We at once attribute this to a tardy state

of the circulation. The veins of the horse's feet are numerous and superficial, and they are singular from possessing no valves by which the onward current of the blood in other vessels of this kind is greatly facilitated. Within the veins of the foot intermittent pressure determines, to a certain extent, the flow of blood. When the shoe is on the foot, the entire weight of the body is supported by the inferior surface of the wall; but remove the shoe, you then take off a fetter, and the frog coming down upon the ground, the elasticity of the horn is allowed to perform its natural function, thereby increasing the force of the circulation in the foot. I therefore think the observations made by Mr. Hallen on this, which to many might seem a trivial matter, of importance, for it is not only applicable in the treatment of influenza, but also many other diseases. While asserting this, however, I am not insensible to the force of the objections raised by Mr. Braby; but, in the application of a remedy, the judgment of the practitioner must always be exercised, and a practice which I would recommend to be followed in the treatment of the lighter breed of horses, I can readily admit might, in the case of heavier animals, whose feet are mostly mis-shapen, and their soles either flat or bulging, be attended with very serious consequences.

Mr. Robb.—The general agreement as to the nature and forms of this disease is highly satisfactory. There appears to no difference of opinion in this particular, except what might be expected to arise from the fact, that some practitioners have seen the malady in the heavy cart horse, while others have attended horses of another kind, in which the impressions of the disease have been more or less varied, according to the peculiar temperaments and idiosyncracies of these animals. With regard, however, to the treatment, there seems to exist some little discrepancy. I yesterday visited an infirmary situated in this metropolis, where many cases had been treated. The person who shewed me round the stable was not the principal: but he informed me that the practice at that establishment had been somewhat modified by the results. At first, aloes had been given, whereas now only a slight febrifuge was administered, consisting of the pot. tart. ant. et nitras. potassæ, and small blood-lettings were had recourse to. That person also described to me the post-mortem appearances, among which he named an inflamed state of the lungs; but it is probable he was

mistaken in this. We must remember that it is often difficult to distinguish betwixt congestion and inflammation, except in connexion with symptoms during life; and the symptoms here are not such as would lead us to look for any active determination to the lungs. There is no organ in the body so often found after death in a state of engorgement as the lungs. This often takes place from merely passive congestion, or from asphyxiating causes during the last moments of life, and sometimes even after death; and the pathological characters in these cases are all alike, and in no respect different from cases of pure inflammation before any change of structure or consistence has taken place. It is equally difficult to say what is produced by vital and what by mechanical causes. For my own part, I look upon influenza as a febrile disease, in which the mucous membranes are affected; and as we know that when the mucous membranes are diseased diarrhœa is very easily induced, I agree with those who think it better to be cautious in the use of aloes, though I would not altogether proscribe that drug, as there are, undoubtedly, cases in which it acts beneficially. The mucous membranes of young animals (and a great many young horses are affected with the influenza) are much more delicate and susceptible than those of adult ones. Then, as to the causes; notwithstanding all that has been said and written about epidemic influences, we are still in the dark on this subject. If epidemic diseases proceeded from miasmata or gases dissolved in the air, the disease would proceed collectively; whereas the reverse is the case—those attacked being often at a certain distance one from another. Raspail believes that the microscopic germs of plants are raised from the ground by the wind, and, entering the system by the external openings of the body, constitute by their germination what are termed epidemics; but were such the case, I imagine we should be favoured with them much oftener. Others suppose the morbific matter to exist in the atmosphere, likewise in the solid form, and to engender disease by the propagation of a species of decomposition or motion in the animal tissues, similar to some such decomposition or motion existing among its own molecules. Dr. Prout observed, during the prevalence of Asiatic cholera in this country, an increase in the weight of the atmosphere; he remarked, likewise, an acidity in the saliva, even of healthy persons, with an absence of lithic acid in the urine;

and which made him suppose that a disposition to form oxalic acid existed which was referrible to some influence at work in the production of cholera. Such phenomena may have been connected with the epidemic, or were, probably, only coincidences.

Again, the hypothesis, that tribes of animalcules are the causes of epidemic diseases, has been supported by analogical arguments; but it is quite unsupported by any thing like direct observation. Nor are these analogies free from exception; for, although epidemic diseases in the circumstances under which they appear and disappear certainly do resemble tribes of insects coming and going in the most mysterious and unaccountable manner, attacking whole districts and countries, and even whole quarters of the globe, and recurring, sometimes within a few months and sometimes not for centuries; yet is the analogy rendered doubtful and imperfect by the fact, that epidemics sometimes appear in all their virulence in the depth of winter, a season of the year certainly not the most favourable to the production of insects, and the development of life in animalcules. It is highly probable that electrical changes in the air are frequently connected with the production of diseases. The hypothesis, however, which Mr. Wright has introduced to our notice seems to me to be inconsistent with the nature and ascertained laws of the electrical force. It is, doubtless, very natural for us to suppose epidemic influence to reside in the atmosphere, for the atmosphere is the only thing which is common to all places, and is the great principle of all organization. Still it cannot be denied, though some of our notions on this subject are very ingenious, that they are all, more or less, just so many instances of an unphilosophic spirit which pervades the human intellect, tending to the substitution of all kinds of hypotheses when our powers of observation are too limited to discover the truth. If this influenza arise from vicissitudes of weather, it should not be ranked among epidemic diseases; for though, like epidemic influences, heat, cold, and moisture reside in the atmosphere, nevertheless, these latter are common and well known causes of disease. Nor should epidemic and epizootic diseases, as appears frequently to be the case, be confounded with endemic and enzootic, or with infectious diseases, the distinction between all these being sufficiently well defined.

The Patron.—The published tables at least demonstrate that the present disease has not arisen from any unusual variations in the

temperature of the atmosphere. The old field of conjecture appears to be over-run with weeds, and a fallow with fresh tillage is here certainly required. None of the causes mentioned by Mr. Robb strike me as approaching to the truth. It requires to my mind a more extended view than any of the authors seem to have possessed in order to discern the fact. Looking back so early as Homer, we hear that when the plague visited mankind, animals were first affected; and the remark then made has been rendered trite by the frequent corroboration it has received. How shall we account for this? Are animals naturally more susceptible? Is their mode of living more enervating, or are their habits such as predispose them to infection? The stimulating diet, artificial domestication and social excitements to which man subjects himself, best answer the inquiry. Then how is it that animals which appear to be placed in a condition not predisposing them to suffer from epidemics are found to fall the earliest victims? If we regard the animal we shall be struck with the position of the body. The beast by day plucks its food from the earth, and at night reposes with its head upon the soil. The nose is, therefore, continually in contact with the ground, and by this circumstance alone can I account for man, who walks erect, being the last to suffer. There are in every mining district hundreds of widows who will testify to the noxious vapours found within the bowels of the earth. As the shaft is lowered so the miner finds the temperature to increase. Heat, then, the mightiest of the chemist's agents, is present in the centre, and the other, water, from the tendency of that fluid to gravitate, can hardly be imagined wanting. Of the decompositions which are hourly taking place within this great central laboratory we know nothing; volcanoes, earthquakes, poisonous caves, and infectious planes, only serve to convince us that the action is incessant. Some gaseous compound is set free, and through the porous crust of the earth it gradually escapes, breeding disease. It may be too widely distributed for chemical tests to detect it; nor can I admit there is any force in the non-existence of any proof of this description. The chemist may not be able to discover any difference in the atmosphere of two localities, yet an individual shall enjoy perfect health in the one, and be constantly subject to disease when inhaling the other. We shall best attain a knowledge of the composition of the subtle poison by carefully watching

its effects, and patiently studying its phenomena. In the mean time, by observing the facts with which it is connected, we may be enabled, in a great degree, to escape its influence. In Glasgow, it has been stated that those of the inhabitants who were compelled to inhabit cellars were the first victims to an epidemic which visited that city, and something analagous to this I noticed in a dairy situated close to London. On account of the expensiveness of the ground-rent, the building in which the cows were kept was divided into stories, and there were, consequently, cows living on the ground-floor, while others resided on the first floor of the premises. The animals which inhabited the lower region were the first attacked, while those living above them never suffered so severely.

[Press of other matter obliges us to withhold the continuance of the debate on this interesting subject—Influenza.]

REVIEW.

THE ANIMAL KINGDOM, CONSIDERED ANATOMICALLY, PHYSICALLY, AND PHILOSOPHICALLY. *By* EMANUEL SWEDENBORG. *Translated from the Latin, with Introductory Remarks, by* JAMES JOHN GARTH WILKINSON, M.R.C.S., 2 vols. 8vo, pp. 1258. London: Newbery, 6, King Street, Holborn; Baillière, 219, Regent Street. 1843 and 1844.

THE publication of these volumes is, in more points than one, no uninteresting occurrence. In fact, they admit of at least a two-fold consideration. In the first place, the anatomical basis on which the views they contain are founded, is supplied directly from the works of the great anatomists of former times,—of those who were the fathers of the organic sciences, whose discoveries were our inheritance, and whose accumulated wealth, recast in the moulds of the present day, furnishes even yet the most passable and purest coin that we have in circulation in our schools of science. In the second place, they attempt a theory of organic nature, and specifically of the human body; and they aim to shew

the connexion of the natural sciences with each other, and afterwards with the human mind, and with human society; in fine, with a philosophy of causes.

It will be impossible in our limited space to give any thing like an analysis or digest of Swedenborg's theory; for this we must refer the reader to the Translator's "Introductory Remarks;" or, if he be desirous of a complete understanding, to the "Animal Kingdom" itself. We shall, therefore, content ourselves with throwing together a few remarks suggested by the perusal of the book, on the two headings into which we have distributed the consideration of the subject: and first we shall speak of the old anatomists.

It is not impossible that certain very scientific people, masters of terminology, profound in the microscope, and for these reasons claiming the high title of "practical men," may here exclaim, "Who *are* the old anatomists? Were there any worthy of the name until light and truth came in with the nineteenth century? Surely, no. For our Bell had not then discovered the distinct origins of the motor and sensorial nerves; nay, the theory of reflex action was unknown; no Kiernan had illustrated the liver, and no Bowman had cleared up the mystery of the kidneys; the cell-theory of Schwann had not then explained our bodily conglomeration; cytoblast and cytoblastema were not in all the pages of knowledge; and, worse than all, mankind had no achromatic microscope, nor, in fine, any better instrument for the discovery of fact or truth than comparatively rude knives and eye-glasses, and were constrained to draw, to a large extent, unlike us of the nineteenth century, upon those poorest, weakest, and most fallible means, the rational faculties."

To this we must reply, that notwithstanding these disabilities, and even in consequence of some of them, there *were* anatomists, and great anatomists too, in former times. Indeed, the names of such of them may be still remembered as have led the way in the discovery of particular parts or structures. The name of Vieussens is handed down to us in connexion with his valve: Winslow is not forgotten by the student when he mentions the foramen of Winslow: Eustachius hangs in recollection by the slender pegs of the Eustachian tube and valve, and Fallopius is equally honoured and fortunate by having a Fallopian tube. Willis is known by a

circle, and Zinn by a zone: Brunn and Peyer, by little glands: Glisson, by his capsule: Morgagni, by his liquor: and Malpighi, by the corpora Malpighiana. This, truly, is the most infinitesimal amount of fame that ever was conceded to greatness: it is about as adequate as if the whole reign of Queen Anne should be set down in history as the period when three celebrated farthings were issued from the Royal Mint; or, as if the record of London should be perpetuated to posterity by a few isolated bricks preserved in some future museum; for these men were as industrious as ourselves in the collection of facts, and far surpassed us in that philosophical spirit without which the successful prosecution of physiology is impossible. Moreover, as the subject was comparatively new to the world, so its first cultivators laboured with a zeal, an energy, and a freshness of mind, such as belong almost exclusively to the youthful period of an experimental science; or such, at any rate, as hardly belong to a time like the present, when the field *appears* to be pretty well exhausted. If the old anatomists are to be characterised by what they did in a comprehensive sense, then we should say, that they were the authors of nearly the whole of the anatomy that is to be found in the anatomical manuals of this day, and that they themselves presented this knowledge to the world in a form that was admirably lucid and systematic. More than this, they eliminated views on physiology so connected as closely to approximate to a rational system, and which, although now extinguished and forgotten, must be reverted to with anxious inquiry whenever the spiral of scientific progress comes round again to that point where men desire to exercise the understanding, and to subordinate the microscope to the senses, and the senses to the higher faculties of the soul. Their views, we repeat it, the order of their treatises, their speculative suggestions, the accuracy of their descriptions, and their living style, strike us with profound respect and astonishment; and, judging them in their own walk, and by the ends they had in view, we feel how little modern science, with all its boasting, has added to the results to which they had already attained. We make this remark especially with regard to their physiology, meaning by the term, the exploration of the causes and uses of the effects and organs that are visible in the body; or, in other words, of the rationale of anatomical facts.

Many causes, doubtless, co-operated to bury the works of these great inquirers, and all these causes may, perhaps, be generalised into two divisions. 1. The defects of the old anatomists themselves. 2. The unworthiness of their successors. We shall not pursue this subject farther, but refer our readers to the short outline of it contained in Mr. Wilkinson's "Introductory Remarks."

The work under review contains numerous extracts from these writers, prefixed, by way of foundation, to each chapter of Swedenborg's Theoretical Analysis or Induction. No modern book, to the best of our knowledge, exhibits so complete a *catena* of their opinions, or will so readily enable the student to form some opinion of their unshaken claims to the attention of the medical world. He may there be re-introduced, with due ceremony, to the venerable Eustachius; to Malpighi, the father of visceral anatomy; to Ruysch and Morgagni, the great purifiers of the anatomy of the schools; to Leeuwenhock, who first seized the microscope as an exclusive field, and devoted himself to it for fifty years with more than modern eagerness; to Vieussens and Lancisi, eminent alike for their systematic knowledge and philosophical genius; to Bartholin, Verheyen, Heister, and Winslow, whose methodical text-books maintained their ground in the European schools for more than a hundred years, and who supplied their successors with much of both the matter and the form that has been handed down to us from them in the various manuals which are now in use; and, finally, to Boerhave, "the common preceptor of Europe at the beginning of the eighteenth century*," and the consulting physician of the world; who gathered up the experience and deductions of ages, in anatomy, physiology, and medicine, and gave it a new and most compact form in one little book, the "Institutiones Medicæ." If the modern inquirer will submit to this re-introduction, he will be in no danger subsequently of thinking that these great writers are only to be remembered as names fixed up to mark out certain courts and lanes and alleys of the body. He will rather learn to regard them as master minds, who were well acquainted with the leading facts of things, and had no slight intuition into their principles and causes.

This part of the history of anatomy is of some interest in its connexion with veterinary literature. The fact is, that in the early

* Haller, Bibliotheca Anatomica, tom. i. p. 756; tom. ii. p. 444.

days of anatomical knowledge, the greater part of dissections were performed upon the bodies of the lower animals. The dissection of the human body was, at first, a comparatively rare occurrence, to which, as to a spectacle, professors and medical men flocked, or were invited, from the neighbouring schools and towns. Hence, human anatomy rose at first from a veterinary basis—from a basis furnished by the investigation of the anatomy of the dog, sheep, horse, cow, pig, &c. Many most important discoveries were made in the bodies of the lower animals. Thus it was, in dissecting the horse, that Eustachius discovered the thoracic duct, which, however, he described inversely, for he was not fortunate enough to trace it to the receptaculum chyli, and the existence of the lacteals and lymphatics was not known in his time. His description is so interesting a piece of anatomical history, that we cannot forbear to quote it from the "Animal Kingdom," (p. 161) where Swedenborg has inserted it at length.

"In the horse," says Eustachius, "from the great left trunk, near its junction behind with the internal jugular vein, a kind of large offset proceeds, which, besides having at its origin a little semicircular orifice, is also white, and full of an aqueous humour, and a little way from its origin divides into two parts, which again shortly afterwards reunite into one that puts forth no branches, but, penetrating the diaphragm, passes downwards at the left side of the vertebræ, as far as the middle of the loins, where, becoming broader, and embracing the aorta, it ends in the greatest obscurity, so that I have not hitherto been enabled to make out its precise termination."

Such having been the basis of human anatomy, it was only by slow degrees that it assumed a pure form, and rested upon its own proper facts. Nearly parallel has been the history of veterinary anatomy, considered as a distinct science. In the first instance *it* was derived from human anatomy as a basis, and *its* purification, if it *be* already purified, must have consisted in the gradual substitution of veterinary in the place of human dissections. A curious organic connexion this between these two sciences, each generating, and generated by each, shewing that knowledge itself marches in a circular, or, rather, spiral progress, in which every end or point attained is but a new beginning.

But we have said enough, perhaps too much, concerning these

forgotten anatomists: something must be said of Swedenborg, or the chief character would be omitted from the drama; and yet, how to speak of him is a question, for Swedenborg is a mystery which in its whole extent a scientific journal is not the place to attempt to solve.

It may be observed, however, that the "Animal Kingdom," although differing *toto cœlo* from the "Bridgewater Treatises," is an endeavour to shew "the Power, Wisdom, and Goodness of God" as displayed in the organic creation. To work out this end Swedenborg has investigated, on entirely new principles, the formation, functions, and uses of the various parts of the human body; deeming, that if the *order* of all these could be rightly seen, the mind would be able to go beyond that common deduction which declares God to exist, and to be good, wise, and powerful, in the same sense in which these attributes are attributable to man; and to have different and higher views of goodness, wisdom, and power, themselves. In fine, his work is not an attempt to lead men out of atheism, but to lift them above theism into revealed religion. In this it differs essentially from every other treatise of apparently similar pretensions.

The view he takes of the body is, to a great extent, mechanical; but then he predicates a mechanism of the fluids as well as of the solids. He applies everywhere the Doctrine of Series. Some glimpses of this important instrument of rational physiological knowledge have been seen by Carus and other writers; and it has been applied by them to the bones. Thus they have aimed to shew, that all the bones, including those of the cranium, are repetitions of the vertebræ; in a word, that in the bones there is but one principle, and many modifications. Now, Swedenborg has carried this law through the soft parts as well as the bones, and through the fluids equally with the solids. With him "every thing is a series, and in a series." The whole of the viscera are a stupendous series, in the higher parts of which (the brain, for instance) every thing goes on that goes on in the lower. Thus the lower are so many legible illustrations of the higher; the diffuse organs of the abdomen and chest are explanations of the concentrated cerebrum. We shall not dwell further on this law, but simply observe that Swedenborg so consistently applied it as to arrive by induction at the existence of an animatory motion in the brain, *synchro-*

nous with the respiratory motion of the lungs; a doctrine which has much to do with the whole of his physiology.

His opinions upon the spleen, the thymus gland, and the supra-renal capsules, are, to say the least, extremely curious, and at any rate consistent with the rest of his theory: how far they may be admissible in modern science, or consistent with it, is another and a widely different question. This, however, we will say, that the amount of mere anatomical knowledge of these organs which has been added to the store since his time, is (notwithstanding Sir Astley Cooper's splendidly printed quarto on the thymus), altogether insignificant; so that Swedenborg may upon these points be almost as well tested by the knowledge of his own day as by that of ours.

Swedenborg's ideas of the uses of respiration are, to our mind, altogether new, and, if true, of great importance as modifying our views of nearly the whole field of physiology. We shall therefore conclude this Review by citing the following notice of them from the "Translator's Introductory Remarks," begging our readers for a few brief moments to forget oxygen, hydrogen, and carbon, or, if that be impossible, to give those necessary elements only a secondary place in their conceptions.

"With respect to the last-named of these offices of the lungs, namely, that they supply the body and all its parts with motion, it is one of the most important discoveries in the "Animal Kingdom," and not less wonderful in its consequences than in its simplicity and obvious truth. If the reader can once succeed in apprehending it, there will be no danger of his letting it go again even among the perilous quicksands of modern experience. It is one of those truths that rest upon facts within the range of the most ordinary observation, and require but little anatomical investigation to confirm and demonstrate them. It is visible in its ultimate effects during every action that we perform, and at every moment of our lives. Perhaps there is nothing in the history of physical science that is more illustrative of the native ignorance of the mind, or that better shews how far we have departed from the simplicity of nature, than the manner in which this grand office of the lungs has been overlooked; particularly when coupled with the fact, that it should have required a great and peculiarly instructed genius, by an elaborate process, to place it once again under our

vision. But nature is simple and easy; it is man that is difficult and perplexed. Not only in the lungs, but in the whole body, the primary office is disregarded, and the secondary substituted for it. It has been supposed that the lungs inspire simply to communicate certain elements of the air to the blood; and expire for no other end than to throw out by means of the returning air certain impurities from the blood. Under this view, their motion is only of use for other things, or instrumentally, and not as a thing in itself, or principally. And yet it is not confined to the sphere in which these secondary offices of the lungs are performed, but pervades the abdomen as sensibly as the chest, and, according to the shewing of the experimentalists, extends also to the heart, the spinal marrow, and the head. It was therefore incumbent on the physiologist to shew what its function was in all the regions where it was present, and to declare its action as a universal cause, as well as its action as a particular cause. Now the motion itself which the lungs originate is their grand product to the system; the inspiration and expiration of the air are but one part of its necessary accompaniments, being performed in the chest alone. Granting that the inspiration and expiration of the air are the particular use of this motion in the chest, what then is the use of the rising and falling which the lungs communicate to the abdomen, the heart, the spinal marrow, and the brain? What office, analogous to respiration, does the motion of these parts communicate to the organs? It manifestly causes them all to respire, or to attract the various materials of their uses, as the lungs attract the air. For respiration is predicable of the whole system as well as nutrition; otherwise the head would not be the head of the chest, nor the abdomen the abdomen of the chest; but the human body would be as disconnected, and as easily dissipated, as the systems that have been formed respecting it. The universal use, therefore, of the respiratory motion to the body, is, to rouse every organ to the performance of its functions by an external tractive force exerted upon its common membranes; and by causing the gentle expansion of the whole mass, to enable the organ, according to its particular fabric, situation, and connexion, to respire or attract such blood or fluid, and in such quantity, as its uses and wants require, and only such. Each organ, however, expands or contracts differently, according to the predicates just

mentioned; the intestines, for instance, from articulation to articulation, to and fro; the kidneys, from their circumference to their sinuosity or hilus, and *vice versâ*, the neighbourhood of their pelvis being their most quiet station and centre of motion: and so forth. In a word, the expansion as a force assumes the whole form of the structure of each organ. In all cases the motion is synchronous in times and moments with the respiration of the lungs. The fluids in the organs follow the path of the expansion and contraction, and tend to the centre of motion, from which these motions begin, to which they return, and in which they terminate. The lungs, however, only supply the external moving life of the body; but were it not for them, the whole organism would simply exist in potency, or, more properly speaking, would cease to be; or were it permeated by the blood of the heart,—a condition which can by no means be granted,—the latter would rule uncontrolled in all the members, subjugate their individualities, and not excite them to exercise any of the peculiar forces of which they are the forms. In a word, the whole man would be permanently in the fœtal state, for ever inchoate and ineffective."

So far the translator. We have now done with the "Animal Kingdom;" and we honestly declare, that, be its merits great or none, or in whatever intermediate category it be placed, it stands alone amid scientific writings, and is a monument, at any rate, of the persistent daring and originality of Swedenborg's mind.

COMMUNICATIONS AND EXTRACTS.

To the Editors of "THE VETERINARY RECORD."

Gentlemen,—THE first number of your new Periodical having lately come under my observation, I cannot forbear taking the earliest opportunity of expressing to you my high opinion of the work, and of sincerely thanking you for an undertaking which is likely to prove the richest addition that has been made to veterinary science since the establishment of the institution over which

you so ably preside. It is unquestionably the duty, and indeed it ought to be the pride, of every practical veterinarian to contribute his quota to the store from which all may glean something of interest or advantage; and, therefore, if you will allow me the honour of a place in your lists, I shall, from time to time, bring before your notice such cases and observations as, occurring in practice, seem to me most worthy of publication in your valuable "RECORD." Take, to begin with, one of

DISLOCATED FETLOCK JOINT,

an accident which so seldom occurs, that I have never yet seen an account of it in those works to which the veterinary surgeon commonly refers, when he meets with any thing novel or puzzling in practice. The following report may, therefore, not be without interest.

On the 13th of May, 1843, I was requested, by a farmer residing about half way between this town and Shrewsbury, to visit a two-year-old chestnut colt which had met with an accident on the preceding day, under rather curious circumstances. He had been haltered and led out into a field for the purpose of undergoing the operation of castration; but, on feeling the rope round his neck, he took to kicking and plunging, with such a degree of desperation, that he soon made his escape from the hands of the individual who was leading him, and started off at full gallop. He had not gone far, however, until, one of his feet getting fast in the halter, he came down suddenly and with great force; and, on rising, was perceived to walk, or rather hobble along, with his near hind fetlock-joint in contact with the ground. Of course, the lameness was so excessive, that he was without difficulty recaptured; and having been led gently to the stable, the farrier usually employed at the farm (there being no veterinary surgeon within nine miles of the place) was immediately sent for. This worthy gentleman, after duly examining the injured joint, and making a few learned observations on the same for the edification of those around him, pronounced it a broken leg, and then advised, as he had never found broken legs come to any good, that the animal should be immediately destroyed. To this the owner was about to consent, when a third party suggested, as the colt was a very valuable

one, the policy of calling in a properly qualified veterinary surgeon, and I was accordingly sent for on the following morning.

On my arrival, I found the poor animal evidently labouring under intense suffering, consequent upon the injury, with symptoms of constitutional disturbance really alarming. As before described, the fetlock joint of the near hind leg, whenever he made an attempt to use it, was brought into direct contact with the ground, as were also the pasterns and hoof, which pointed laterally and outwards from the supposed median lines.

Having secured him from struggling by the usual means, I proceeded to examine minutely into the nature of the injury. This there was not much difficulty in doing; for, strange enough, the swelling which had taken place up to this time was very trifling, and, therefore, I was enabled, almost immediately, to form, what the event proved to be, a correct diagnosis.

The absence of any thing like crepitus satisfied me that there was no fracture present, so that it was evident I had nothing but a dislocation to contend with. In this, as the anatomical construction of the parts would lead one to suppose, the sessamoid bones were found to participate; and, as might also have been anticipated, it was from their articulations with the metatarsal bone that they were severed, the union with the os suffraginis remaining perfect. Of the degree of ligamentary lesion it was impossible to form an opinion, although, from a circumstance of which I shall speak presently, I am inclined to think it must have been considerable.

Of the manner in which the reduction was effected it is unnecessary to speak, suffice it to say that the resistance to be overcome was so very trifling that I had not the slightest difficulty, unassisted, in bringing the parts into their proper position; a circumstance at which, I confess, I was a good deal surprised, as I had anticipated in this a rather serious undertaking. The reduction completed, I allowed the animal to be liberated, whilst I got ready the splents and bandages, when he used the joint with perfect freedom, and walked round his box tolerably upright. On visiting him again, however, in the course of half an hour, dislocation had again taken place; thus proving, as I have just hinted, the existence of considerable ligamentary injury. The reduction was again effected with the greatest ease.

For securing the parts in their proper positions, I made use of

the gum bandage, after the manner in which it is now sometimes applied by surgeons in cases of fracture and dislocations. I commenced by covering the leg, from the hoof nearly up to the hock, with a piece of linen rag, upon which I laid a thick coating of mucilage, afterwards applying a strong cotton roller, and taking care to use the mucilage brush at every turn of the bandage. Upon this I placed several large pledgets of tow also saturated with the gummy solution, and then, on each side of the injured joint, a piece of wood previously grooved out in a manner to adapt it to the parts, over all of which another strong roller was several times applied in the same way as at first; and I then left him with directions that he should be watched, so that he might not move until I had seen him again.

On the following day I was pleased to find my patient going on in every respect to my perfect satisfaction. The bandages were quite dry and firm—the joint perfectly straight—and the symptomatic fever fast subsiding. In a word, he never afterwards faltered, and when, at the expiration of a month, the bandages were removed, he was perfectly free from lameness; nor was there the slightest swelling or other mark remaining to denote that such an accident had ever occurred.

Before taking leave of the subject, perhaps I ought to confess that I am indebted for the hint of the gum bandage to some observations made by Mr. Mayer, jun., of Newcastle, at a meeting of the Veterinary Medical Association, held in the theatre of the R. V. C. about four years ago.

I have considered the foregoing case deserving of record, partly because it is one of rare occurrence, and not yet spoken of by any veterinary author with whom I am acquainted, and partly because it evinces somewhat forcibly the necessity of a knowledge of anatomy to the practical veterinarian, and proves, beyond dispute, in spite of the boast of experience, that all conclusions deduced from other than scientific facts are both deceptive and dangerous. Moreover, it is a remarkable instance of the efficacy and utility of the gum bandage, to some of the advantages of which I shall draw your attention on a future occasion.

I am, &c.

Bishop's Castle, Salop,
Feb. 25th, 1845.

W. Litt.

Case of Rabies in a Horse.

By Mr. J. Markham.

Dear Sirs,—Perceiving the history of a case of rabies in the horse in your last number, by Mr. Raddall, I beg leave to forward another, which I was called upon to treat on the 1st of November last.

About ten o'clock A.M. a boatman came for me, telling me he thought his horse had an attack of colic, as he was rolling about, and had lain down several times on the towing-path that morning. He also informed me, previous to my seeing the horse, that he thought there must be something the matter with his mouth, as he would get the corn into his mouth, and there hold it a short time, and then let it drop out again without swallowing any of it, which observation led me to ask him if his horse had ever been bitten by a dog: he said, not that he knew of, but he might have been, as he had been turned out to grass for a month, with a rowel inserted in his chest, some persons believing him to be chest-foundered, and he had not been taken up from grass more than a week. When I arrived at the stable the animal was standing quiet, and seemed free from pain: the man that was left with him said he had not lain down for the last ten minutes, but had bitten his shoulder several times, which was then bleeding, and several pieces of skin, the size of a half crown, were torn out. The cause of his thus biting his shoulder they thought was the rowel, it being still in his chest. On examination I found his pulse full, but scarcely at all accelerated; his ears warm, his mouth hot, but moist. I had him taken out of the stable, and examined him very minutely, to see if I could find the marks of any bite about him, as my suspicions were increased by the groom telling me that he ran at him several times that morning, and had never shewn any symptoms of vice previously. I could not detect any thing that would lead me to suspect he had been bitten. I proceeded to administer a cathartic ball, but before I could get my hand out of his mouth, a violent spasm came on, and he appeared similar to a horse having tetanus: the spasm continued for about a minute or two, but which seemed to me a very long time, as one of his tushes entered the under part of my wrist, and the other

the back of my hand, which was any thing but a pleasant situation to be placed in, since I could not tell how long the spasm might last, it being the first case of rabies I had ever attended; but I happened to have the presence of mind to keep his tongue between his molar teeth, which prevented his jaws from closing so tightly as they otherwise would have done. My wrist was bitten very severely, as you may suppose, one of the large tendons being divided, a portion of which, protruding, had to be excised; but the wounds are now healed, and I feel no inconvenience whatever from the bite. It will, however, be a caution to me for the future, and I hope to others also, never to attempt to give a rabid horse a ball.

When the spasm ceased, the ball was ejected: a dose of aloes was then dissolved in warm water and ordered to be given as a draught, but as soon as the animal tried to swallow, the spasm came on again, and he held the horn in his mouth for some time. When the spasm ceased, and the horn was taken from him, I perceived that his teeth had gone through the horn on each side. I was not in the stable while he was drenched, but I asked the men if he had swallowed any of the draught?—they said they did not see him swallow at all. A large quantity of blood was now taken from him, and he was placed in a loose box, a pail of water being left with him, and a little mash. I then went home, requesting the owner to let me know if any violent symptoms came on, and cautioned them to be very careful how they went near him. Between three and four o'clock P.M. they came to inform me that he was much worse; that he ran at them if they went into the box, and often seized himself by the shoulder or leg with his teeth; he would then lie down and roll about in dreadful agony. Before my arrival the pain had left him, and he was standing with his head towards the manger. As soon as I opened the box door he immediately turned round and ran at me with open mouth: I stood with the door in my hand ready to make my escape; but when he got within about a yard and a half of me, he stopped suddenly and trembled very violently for several minutes, until his owner spoke to him, when the trembling immediately left him. He continued nearly free from pain from five until nine o'clock, and would go to the water and try to drink, but we could not perceive that he drank any, nor had he eaten any of his mash. Soon after nine o'clock he began to run at his rack and manger, and tried to bite pieces out of the

wall, and continued either biting his shoulder or legs, or running at the wall, rack, or manger, until half-past eleven o'clock, when death put an end to his intense sufferings. I am sorry I had not an opportunity of making a post-mortem examination, as he was taken away early the next morning, and, from the bite I had received, I was prevented being present.

I am, dear Sirs,

Your's, respectfully.

Rugeley, Jan. 15, 1845.

Case of Phrenic Hernia in a Horse.

By Mr. T. D. Broad.

Dear Sirs,—If you think the following case worth a place in your valuable Journal, it is at your service. On the 6th inst. I was called early in the morning to see a five-year-old thorough-bred gelding, the property of T. Clark, Esq., of this town. I was informed by the groom that he was running about the stable like a mad horse. I went immediately, and found him knocking himself from one side of his box to the other, so much so, that it was dangerous to be in the place with him: it was quite impossible to take his pulse. I had a halter placed on him, and pulled him to the side of his box, over which I bled him, and abstracted a considerable quantity of blood, after which he appeared more easy. I then administered a draught, consisting of aloes in solution, tinct. opii, et spt. æther. nit.; threw up enemas of water, and subsequently of tobacco smoke. He remained comparatively easy until two P.M., when another paroxysm came on. The pulse had been ranging from 60 to 80, but was rather feeble. I again bled him until I produced symptoms of syncope, and administered more medicine, continuing the enemas, as the bowels had not responded, although he drank a large quantity of water and gruel. He still shewed much uneasiness, and occasionally laid down, but did not struggle when down. The head was turned to the right side, whether up or down. He remained in nearly the same state until the following morning, ten o'clock, when he reeled about his box, and fell violently. After he was down, he placed his fore legs out in the same position that dogs often do, and which is a very frequent symptom of

diaphragmatic hernia: after lying in that position for a short time he expired. I immediately made a post-mortem examination, three of our surgeons kindly assisting me.

Upon opening the abdomen, the cause of death was soon perceived, as nearly two yards of the ileum had passed through a laceration in the tendinous portion of the diaphragm by the side of the foramen dextrum, through which the posterior cava proceeds, and become strangulated. It contained a quantity of dark coloured fluid, and was in a state of gangrene, as was that part of the pleura in contact with it. I have seen cases of diaphragmatic hernia accompanied with rupture, but never an instance like the present. The lining of the stomach was very much inflamed, and one lobe of the liver was much congested.

The horse was in good condition, and had not been out of his stable the day before his illness, indeed, he appeared as usual as late as eight o'clock in the evening; but, two days previous to his illness, he had been leaping over a bar, which might have been the immediate cause of this lesion.

I am,

Your's respectfully.

Trowbridge, Jan. 31*st*, 1845.

Case of supposed Glanders in a Cow.

By Mr. J. Mannington.

Gentlemen,—The following brief history of a case of disease occurring in the cow, cannot, I think, but be interesting, if not instructive, to the comparative pathologist, in consequence of the great analogy it bears to that destructive malady known by the name of glanders, and to which so many of our horses are annually falling a sacrifice. Should you, therefore, deem it of sufficient importance to occupy a place in your valuable periodical, "The Veterinary Record," a publication I look upon as well calculated to fill up a hiatus which has too long existed in the literature of our profession, its insertion in the forthcoming number will oblige

Your's, faithfully.

To the Editors of "The Veterinary Record."

The patient was the property of Mr. ————, of Hatfield; she had been observed for some time to be falling off in condition, but more especially during the previous month: however, as her appetite did not particularly fail, no medical treatment was adopted until about the middle of April last. At this time her owner, finding that a discharge from her nostrils existed, accompanied with a cough, a diminished desire for food, and other appearances of disease of a more active nature, I was requested to attend.

On examination, the following symptoms presented themselves: a copious discharge of unhealthy pus of a yellowish colour, and adhesive in its character, from both nostrils—breathing quickened and laboured, and also sonorous, arising from the difficulty of the passage of the air through the nasal cavities in the act of respiration—an occasional husky cough—the sight of the left eye nearly lost from inflammation of the conjunctiva, and the transparent cornea quickly going on to an ulcerative termination. The pulse was feeble, beating at about 70 in the minute. There was some shrinking on the application of pressure to the sides. Much constitutional debility existed, with impaired appetite and diminished rumination, but the alvine evacuations were natural. These appearances, together with the history of the case, led me to view the affection as one possessing many peculiar characters, having its seat principally in the respiratory organs.

My diagnosis was unfavourable, but it was deemed expedient to try the effect of medical treatment; accordingly tonics, combined with carminatives, were freely administered, with an occasional laxative to correct the condition of the bowels; a blister also was applied to both sides of the thorax: this acted well, yet no diminution in the severity of the symptoms took place, but contrariwise, for in about a week the cornea of the other eye had become ulcerated, and swellings of the lips, muzzle, and contiguous parts came on, which quickly proceeded to ulceration; her teats also became similarly affected. The discharge from the nostrils was undiminished; the breathing had become more obstructed, quick, and difficult; the cough was nearly incessant, the pulse increased in number of beats, and weaker, and the general emaciation extreme. Under these circumstances it was recommended that she should be destroyed, which was done.

The post-mortem examination shewed the Schneiderian mem-

brane to be extensively diseased, and covered here and there with superficial ulcers congregated together: the cavities between the turbinated bones contained a quantity of pus, of the same nature as that which had been discharged from her nostrils; the mucous lining membrane of the larynx and trachea was inflamed, but free from ulceration; and the lungs were studded with tubercles, many of which had pus in their interiors. No vomicæ were detected, but, from the quantity of matter contained in some of the tubercles, a few days only could have passed without their formation taking place.

Other portions of the lungs presented an appearance similar to that morbid change termed hepatization, which seemed to be the result of inflammation of a more active character, and this probably accounted for the pain on pressure to the sides, and some of the other symptoms present. The ulcerations on the teats were carefully examined; but I failed to detect, either here or in any other part of the body, that state of the absorbents which is present in farcy when associated with glanders in the horse.

On the Disease designated Pleuro-pneumonia Epizootica in Cattle.

By P. Verhegen, *Professor at the Veterinary School, Brussels. Translated from the "Journal Vétérinaire de Belgique," by Mr.* W. Ernes.

The epizootic called pleuro-pneumonia, seems to have first shewn itself in Germany and Switzerland, towards the middle of the eighteenth century. Some writers have dated its commencement farther back, considering the pleuro-pneumonia maligna to be such, which in 1693 committed great ravages among the herds of oxen in Hesse. In 1743 the pleuro-pneumonia epizootica invaded the Canton of Zurich, and has prevailed ever since in Switzerland, sometimes in one Canton and sometimes in another. From 1778 to 1784 it exhibited itself in Upper Silesia, and, dating from that time, it has successively visited the different states of Germany, and has continued there to this day. The pleuro-pneumonia epizootica began to manifest itself in Piedmont in the autumn of the year 1827. It first attacked the cattle of the Vigevano and the Alps of Mondovi, and, according to Laurin, it shews itself every year in the neighbourhood of Pavia.

This affection is the same as that described by M. Huzard under the denomination of peripneumonia chronic, or phthisical pulmonitis, which affected the milch cows of Paris and its environs, and which has shewn itself in the years 1772-76-80-86-87-89-91-92, and in the second and eighth year of the Republic. It seems that it was known long before in the departments of the Jura, Doubs, and Vosges, where it had manifested itself at the time of its first appearing in Switzerland. Since 1827 Professor Delafond has constantly found it to exist in the dairies of Paris and its environs; and since 1830 it has invaded several other departments.

Is this affection identical with the "pleuro-peripneumonia gangrenous" described by Chabert, and with which some authors have confounded it? It is sufficient to compare the morbid lesions of the two affections to remove all doubts of their identity. The peripneumonia gangrenous is to us an old disease, and one which has committed great ravages in Belgium in 1795 and 1796, particularly in the provinces of Brabant and Antwerp.

The true pleuro-pneumonia epizootica which actually prevails in Belgium at the present time, and which has within a few years caused great destruction among our horned cattle, seems to be a new disease, and one which has not before existed. It may be that it has passed unnoticed, from the want of authentic documents. The first accurate accounts we possess date only from 1827, at which period this disease manifested itself suddenly in the communes of Hakendoren, Neerlinter, Oplinten, and Wommersoon. In 1828 and 1829 it shewed itself at Eykoliet, Muysen, Duffel and Tirlemont, Orbeck and Diest, where it was observed by MM. Deceuleneer, Vanderpatten, and Foelen. Since that time it has invaded Flanders, and has also made its appearance in several other provinces. Far from decreasing, it seems to extend its ravages, and now threatens to become a permanent bane to the agriculturist.

It is not at all probable that the pleuro-pneumonia epizootica would have remained unknown had it shewed itself in Belgium before 1827; for it may be justly considered as the most formidable disease affecting the species bovis, with the solitary exception of the contagious typhus: hence it is not so insignificant as not to have been noticed by some observer, and, with other epizootic diseases, have obtained a place in history.

(To be continued.)

NOTE TO THE EDITORS BY MR. W. ERNES.

I find in the number for January 1845, of the Belgian Journal, that the epizootic which has made its appearance among the ruminants in several states of the Austrian empire, and which you have, no doubt, ere this been informed of, is the malignant typhus. Several of the German States have already adopted measures to prevent the importation of cattle, hides, &c. from the infected districts. At the command of the French Government, MM. Yvard, inspector of the veterinary schools in France, &c., and Renault, director of the veterinary school at Alfort, with Imlin, médécin vétérinaire at Strasburgh, have set out for Germany, to study the character of this typhoid epizootic.

From *Paris*:—The pest among cattle, which has shewn itself in Bohemia, could not fail to occupy the attention of the Academy of Sciences, after having been taken up with such lively solicitude by the different agricultural societies. M. Rayer has communicated on this subject an interesting memoir from Dr. Schwab, director of the central veterinary school of Bavaria, addressed to the government of that kingdom.

The disease, at first, prevailed in Moravia, where it was brought by some animals that arrived from Russia and Bessarabia. From September to the 5th of December, 1065 were attacked in this district; 845 died, and 129 were slaughtered. It only manifested itself in Bohemia towards the end of December. It has penetrated into Lower Austria, and this is attributed to the importation of 5224 oxen from Podolia and Bohemia in August and December.

Dr. Schwab has investigated this terrible malady, against the progress of which there is no prevention, except general slaughter, and the most strict blockade of the infected districts.

Dr. Schwab divides the disease into three different periods. The first (sub-inflammatory) presents the following symptoms:—great languor, dulness, prostration of the vital powers, the eyes glaring, dry cough, morbid sensibility of the spinal column, coat harsh and staring, looseness of the incisor teeth.—The second period (inflammatory):—the secretion of milk is suspended, loss of appetite and rumination, excessive thirst, hurried respiration,

twitchings of the nostrils and lips, suppression of urine, trembling of the muscles about the shoulders, mouth dry, and the gums swollen.—The third period is the typhoid, which is manifested by the presence of diarrhœa, redness and tumefaction of the anus, mucous discharge from the nostrils, frequent moans, and death soon follows.

Dr. Schwab has assisted at five post-mortem examinations, which presented the following appearances:—1st, inflammation of the gall-bladder; 2d, alteration of the character of the bile; 3d, inflammation of the fourth or true stomach; 4th, inflammation of the intestinal canal, more especially of the small intestines and cœcum; and, 5th, inflammation of the mucous membrane of the air-passages.

Horns in the Human Subject.—Some curious speculations were excited in the minds of the older physicians by the observation of cases of horny growths. Thus, Rhodius met with a Benedictine monk who had a pair of horns, and was addicted to rumination; and Fabricius, having seen a man with a horn growing from his forehead, whose son ruminated, is willing to give the father the credit of transmitting this disposition to the son, by virtue of the ruminant character which he bore so obviously upon his head.

The most remarkable case of human horn on record is that of a Mexican porter, named Paul Rodriguez. The horn was situated upon the upper and lateral part of the head; it was fourteen inches in circumference around its shaft, and it divided above this point into three branches.

Voigtel cites the case of an old woman who had a horn with three branches growing from her forehead; and M. Dubois had a woman under his care, in the *Hospice de Perfectionnement*, with a horn that measured seven or eight inches in diameter at its base, and was six inches in length. The length of the horn in some recorded instances is also remarkable. Sir Everard Home saw two cases, in both of which the growth measured five inches by one inch in diameter. They were curled, and had the appearance of isinglass. In one case the horn was fourteen years growing. Dr. Gregory mentions a horn which was removed from the temple of a woman in Edinburgh, which measured seven inches. Dr.

Charlere, of Barnstaple, saw one growing from the nape of a woman's neck, which measured seven inches. A horn in the British Museum is said to measure eleven inches in length by two-and-a-half in circumference; and Bartholin, Faget, and several other writers, have spoken of horns twelve inches long.

A singular instance of horn is mentioned by Cruveilhier, in his "Anatomie Pathologique," as falling under the notice of Dr. Faget, of Bordeaux. The subject was a Mexican Indian, and the horn was situated in the lumbar region on the left side. After growing for three years, it had attained a length of four inches by seven or eight inches in circumference, and was sawn off by the patient's son: in another three years it was submitted to a similar operation; and, at the end of nine or ten years from its first appearance, was extirpated by M. Faget. The portion removed by M. Faget, with the two portions previously cut off, amounted in length to about twelve inches.

In a scarce tract in small quarto, published in 1676, there is "A brief narrative of a strange and wonderful old woman that had a pair of horns growing upon her head." "This strange and stupendous effect," continues the pamphlet, "began first from a soreness" of the back part of the head where the horns grew. "This soreness continued twenty years, in which time it miserably afflicted this good woman, and ripened gradually into a wen near the bigness of a large hen egg, which continued for the space of five years, more sadly tormenting her than before; after which time it was, by a strange operation of nature, changed into horns, which are in show and substance much like ram's horn, solid and wrinkled, but sadly grieving the old woman, especially upon the change of weather." The horns were shed four times: the first "grew long, but as slender as an oaten straw;" the second was thicker, and, on the fall of the latter, two were produced, which were broken off by accident. One of these was presented to the King of France; the other is stated to have been nine inches long and two inches in circumference. The periods of shedding were three, four, and four years and a-half. There is an engraving of this woman in Dr. Charles Leigh's Natural History of Lancashire, Cheshire, and the Peak of Derbyshire. Her portrait, with one of the horns, is in the Ashmolean Museum, and another of the horns is in the British Museum.

Mr. E. Wilson on a Horn, &c.

HORNY TEXTURES.—Horn is known to be an epidermic formation, and necessarily resembles epidermis in its essential characters. That this is the case among all animals, not excluding man himself, is demonstrated by the following account of a human horn, recorded by Mr. Erasmus Wilson:—

"On examining the horn after removal, I found its base to be formed by the deep stratum of the corium, so that it was obviously a cutaneous formation. The base was oval in shape, and measured in its long diameter one inch and a-half, and in the opposite direction one inch and a-quarter. The horn was two inches and three quarters in length by two inches in greatest breadth, and its elevation above the surface was one inch and a quarter. The latter measurement was that of the vertical thickness of the horn; for, in consequence of its mode of growth, its long diameter lay parallel with the surface of the skin. The weight of the horn was six drachms.

"The section of the growth presents all the characters of horn; it is laminated longitudinally, the laminæ being distinctly traced by their difference of tint from the base to the apex of the horn. At the apex, moreover, it is split in the direction of its laminæ, and several external lamellæ are partly separated from those beneath.

"In minute structure it is composed of flattened epithelial cells, closely condensed, and in some parts having a fibrous arrangement. The epithelial scales are somewhat larger than those of the epidermis, and possess nuclei; a circumstance which confirms the analogy between the inflected follicles of the skin and those larger inflections lined by mucous membrane. The flattened cells measured in long diameter from $\frac{1}{700}$ to $\frac{1}{300}$ of an inch, and in the short diameter from $\frac{1}{1000}$ to $\frac{1}{350}$; the average of these measurements being $\frac{1}{300}$ for the long and $\frac{1}{850}$ for the short diameter. The nuclei are for the most part oval in shape, the long diameter measuring $\frac{1}{2500}$, and the short $\frac{1}{3500}$ of an inch. Epidermic cells, according to my observations, have an average admeasurement of $\frac{1}{600}$ by $\frac{1}{800}$; and the epithelial cells of the mouth $\frac{1}{300}$ by $\frac{1}{400}$ of an inch. The nuclei of the latter measured $\frac{1}{2000}$ of an inch.

"I made no chemical analysis of the horn in the present case, but this has been done repeatedly on the continent. M. Dublanc

has published an analysis of human horn in the *Journal de Pharmacie*, and another analysis was made of a horn which is deposited in the Dupuytren Museum. Both analyses go to shew that horn is chiefly composed of albumen, a small quantity of mucus, phosphate of lime and chloride of sodium, and a trace of lactate of soda."

Sebaceous Secretion.—So much of the beauty and sleekness of coat of our domestic animals is due to the unctuous matter poured out by the sebaceous glands into the follicles of the hairs, that the following observations on this substance will not be uninteresting to our readers. The remarks in this extract are especially referrible to man, but they are equally applicable to animals.

"The sebaceous substance is secreted from the blood through the agency of the cells which compose the epithelial lining of the gland, as is the case, probably, with all the secretions of the body; but there is this difference between the sebaceous and other secretions, namely, that the former is semi-solid, while the rest are fluid; the solidity or density of the sebaceous matter being due to the great number of empty and more or less distended cells which compose its mass. The sebaceous cells are developed in the same manner with epithelial cells in other situations, from a cyto-blastema in which the young cells appear. The contents of the cells vary at different periods of their growth: the young cells contain a homogeneous and limpid fluid, which becomes flocculent from coagulation as growth proceeds, and finally granulous; while in the perfect cells minute oil-globules in greater or less numbers may be perceived. The function of the cell, from its earliest period of existence to full maturity, is one of imbibition from the blood of albuminous, oleaginous, and saline elements combined and in solution. Towards maturity these elements separate from each other, and may be detected as granular matter and oil-globules; but when maturity is completed, the function of the cell is reversed, an outgoing or transuding current is established, and its contents become dispersed between the cells and in the excretory cavity of the gland. At the close of this process the cells are more or less emptied of their contents, and many of them are flaccid and flattened.

"From the above description it will be apparent—and the fact may be demonstrated by the microscope—that the sebaceous substance is composed of cytoblasts and cells at every stage of deve-

lopment, of emptied and broken epithelial cells, of oil-globules of various magnitude, of crystals of stearine, of pigment granules, of granules of albuminous matter, of salts which crystallize on desiccation of the secretion, and of more or less of albuminous fluid mingled with the other constituents, and bestowing, with the oil-globules, softness on the mass. The quantity of the sebaceous matter varies in different individuals, as do its density and apparent composition. In persons who possess an actively secreting skin, the quantity of sebaceous substance is considerable: it is soft, homogeneous, and contains numerous full and empty cells. But in those in whom the skin is torpid the secretion is dense; it consists of masses which are modelled on the hairs contained in the follicles, or on the walls of the tubuli of the glands, and the majority of the cells are flattened and condensed into a membranous structure."—*Erasmus Wilson's Account of a Horn developed from the Human Skin, in the Medico-Chirurgical Transactions*, vol. xxvii.

CONTRIBUTIONS TO VETERINARY PATHOLOGY.

By Mr. J. Purves, *V.S., Hon. E. I. C. Service.*

No. 1 of a Series.

Case of Ulceration of the Stomach.

The animal was admitted for an attack of mange, on the 18th October 1836. He was directed to be placed apart from other horses, and to be dressed with the ordinary tar liniment. 17th. Gave physic. 21st. Dressed again, and gave a mild diuretic. Nov. 12th. Dressed again. Dec. 5th. Still some irritation of the skin remaining; dressed again. This dressing appeared to create great excitement of the system. 14th. The animal reported by the farrier major to be a little off his feed, eating his grass well, but does not eat all his gram. 15th. Much the same. 16th. Feeding worse: pulse not at all affected; mouth offensive; tongue furred. ℞ Hyd. submur. ʒss, nit. potas. ʒiij, aloes ʒj, in a ball. 17th. Pulse quickened and weak; conjunctiva reddened. ℞ Digital. pulv. et ant. tartar. āā ʒss in the morning; drank water during the day, and seems in better spirits, and ate a little grass. In the

evening gave spt. æther. nitrici ʒj, and inserted a rowel in the chest: the pulse does not indicate bleeding; perhaps I should have bled yesterday, but not copiously. 18th. In the morning much the same. Give the fever medicine as yesterday, with spts. æther. nit. ʒj. During the day the farrier major reported him to be much better: he had eaten his grass more freely, and drank suttoo water. When I saw him afterwards, about half past four, the appearances were highly unfavourable; the pulse was weaker and quicker; the breathing laboured; the flanks much tucked up; the mouth highly offensive, yet he did not appear at all like a dying horse, for his spirits were good, and he would not allow me to go near him, and he attempted to bite and kick the sycee several times, particularly when he was taking off or putting on his clothing. He was a very irritable and vicious horse at all times, and was, therefore, kept constantly blindfolded. About half past nine, the farrier major reported him to be suddenly taken much worse, and described him as being apparently quite well until just before the hour of nine struck; he had lain down and got up again without difficulty. On my arrival I found he had lain down a second time and could not get up again, although often trying to do so, nor could he be lifted up; the breathing was laborious; the pulse not to be felt; in short, he appeared as if he was dying. I introduced my hand up the rectum, with a view to ascertain in what state his bladder was, and found it full. I pressed it, and a great quantity of urine escaped. There was scarcely any dung in the rectum, and what little there was smelt dreadfully. The animal died just before ten o'clock.

Post-mortem Examination.—Stomach highly diseased; the villous portion ulcerated in five or six different places; the cuticular portion also ulcerated, but apparently of old standing. Some of the ulcers had healed up; but at one part the cuticular lining, with the muscular coat, was completely gone, being ulcerated through, and nothing left but the peritoneal coat, for about an inch and three quarters long by an inch and a quarter broad. I never saw anything like this before. I should think the stomach, in all probability, would have burst had the animal lived. The peritoneum throughout was discoloured and unhealthy; omentum, diseased; spleen a good deal so, and it appeared much discoloured, and tougher than usual; the liver pretty healthy, but the mucous lining of the intestines, particularly that of the larger ones, much

inflamed, and the contents highly offensive; the lungs presented a florid aspect, but the heart was healthy. These lesions would almost warrant the suspicion of some poisonous agent having been administered.

MISCELLANEA.

THE Board of Examiners of the Royal College of Veterinary Surgeons of England consists of Professor Brande, Bransby Cooper, Robert Liston, and Edward Stanley, Esquires; and Messrs. G. Baker, W. Field, E. Gabriel, W. Goodwin, W. Percivall, and J. Turner, as Veterinary Members.

The following are Members *ex-officio*:—Messrs. Sewell, Spooner, Simonds, and Morton, of the Royal Veterinary College, and Mr. F. C. Cherry, Principal Veterinary Surgeon to the Army.

For Scotland the following have been elected:—Drs. Knox, Mercer, and M'Gregor, and Mr. Lyon; with Messrs. Lyon, Mather, Tindall, Williamson, and the Veterinary Surgeon of the Regiment stationed at Edinburgh for the time being. Professor Dick is also a Member *ex-officio*.

NAMES *of* GENTLEMEN *who have obtained their* DIPLOMAS *from the Royal College of Veterinary Surgeons.*

February 26, 1845.

Mr. Edward Mayhew, London.
Mr. Edwin Taylor, Bury St. Edmunds.
Mr. R. H. Dyer, Winchester.

March 5, 1845.

Mr. J. T. Lee, London.
Mr. H. Evans, Liverpool.
Mr. Eben. Hutchinson, Bingham.
Mr. Josiah Hutton, Great Yeldham.

DRAY-HORSES IN INDIA.

SIR Alexander Burnes was deputed a few years since to convey five dray-horses to the Maharajah of Lahore, Runjeet Singh, as a present from the King of England. When the horses were shewn

to the natives on entering the territory of Lahore, their surprise was extreme; for they were little elephants, said they, and not horses. Their manes and tails seemed to please, from their resemblance to the hair of the cow of Thibet; and their colour, a dappled grey, was considered a great beauty. It was not without difficulty that I replied to the numerous questions regarding them; for they believed that the presents of the King of England must be extraordinary in every way; and, for the first time, a dray-horse was expected to gallop, canter, and perform all the evolutions of the most agile animal. Their astonishment reached its height when the feet of the horses were examined; and a particular request was made of me to permit the despatch of one of the shoes to Lahore, as it was found to weigh 100 rupees, or as much as the four shoes of a horse in this country. The curiosity was forthwith despatched by express, and accompanied by that minute measurement of each of the animals for Runjeet Singh's special information.

The dray-horses soon rose to dignities such as no dray-horse ever before reached: they were dressed in cloth of gold, and bore an elephant's saddle on their back. Moreover, in the Maharajah's letter of thanks to the King of England, they are spoken of as being "of superior quality, of singular beauty, of alpine form, and elephantine stature." "By the favour of Sri Akal Poorukh Jee" (God), writes the monarch, "there are in my stables valuable and high-bred horses from the different districts of Hindoostan, from Turkistan, and Persia; but none of them will bear comparison with those presented to me by the King, through your Excellency; for these animals, in beauty, stature, and disposition, surpass the horses of every city and every country in the world. On beholding their shoes, the new moon turned pale with envy, and nearly disappeared from the sky. Such horses the eye of the sun has never before beheld in his course through the universe. Unable to bestow upon them in writing the praises that they merit, I am compelled to throw the reins on the neck of the steed of description, and relinquish the pursuit."

Travels in Bokhara, by Lieut. Alexander Burnes, F.R.S.

R. Knox M.D. del.

J. De C. Sowerby fc.

DESCRIPTION OF PLATE II.

Fig. 1. Displays the anatomy of the nostril, as seen on removing the integuments and cellular substance.

a. Upper lip.

b. Incisive teeth.

d. Alar cartilage, by some considered as two.

e. Infra orbitar branch of the anterior maxillary nerve.

f. Superior maxillary bone.

g. Levator labii inferioris alæque nasi.

h. Nasalis longus.

i. Nasalis brevis.

k, k. Spur-shaped cartilage, and prolongation into which the nasalis brevis is inserted.

Fig. 2. Right nostril—deeper view. In this view the letters employed in describing the preceding figure also apply here.

Fig. 3. Left nostril, seen from the inside, the septum and the right nostril having been removed.

a. Nasal bone and lateral cartilage, or nasal peak.

b, b. Superior turbinated bone.

c, c, c. Inferior turbinated bone, spur-shaped cartilage, and fibrous prolongation.

d. Hard palate.

e. Tongue.

f. Infra-orbital foramen and nerve.

Fig. 4. Same nostril as the preceding, but dissected by stripping off the mucous membrane from

a, a. The spur-shaped cartilage.

b, b. Fan-shaped muscle—the antagonist of the nasalis brevis.

c. Fibro-membranous prolongation from the spur-shaped cartilage, drawn upwards with a hook, in order to put the cartilage and its internal muscle on the stretch.

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CONTRIBUTIONS TO COMPARATIVE ANATOMY.

By DR. KNOX, F.R.S.E., *Corresponding Member of the French Academy of Medicine; Lecturer on Anatomy and Physiology, &c. &c.*

To the Editors of "THE VETERINARY RECORD."

Dear Sirs,—FROM my earliest years I have taken great interest in Comparative Anatomy; and as the anatomy of the horse, when compared with human structure, offers to the student of physiological science the additional advantage of working with materials of great practical worth, I shall be happy to assist, to the utmost of my ability, in maintaining this close union between science and practice, and with this view beg leave to forward the following brief contributions for "The Veterinary Record," a periodical so ably conducted by you.

I am, yours, &c.

Edinburgh, March 1845. R. KNOX.

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1. SOME REMARKS ON THE STRUCTURE OF THE NOSTRILS OF THE HORSE.

WHOEVER looks with an observing eye at the nostrils of man, or any other highly organized animal, will immediately perceive motions going on synchronously with those of breathing or of respiration. He may perceive, in fact, that the nostrils dilate, expand and open at each inspiration, subsiding at each expiration; that the action or contraction of the diaphragm and intercostal muscles is not more regular nor more constant than the movements of the nostrils; that they are, in truth, synchronous and associated actions; that they are functions tending to one end; means used for one purpose, namely, the ready, uninterrupted,

unimpeded admission of fresh air from the circumambient atmosphere into the interior of the lungs, through and by a series of tubes, cavities, and apertures nicely adjusted and adapted to the wants of the animal under every circumstance of life.

This admirable play of the nostrils attracted my attention at a very early period of my anatomical studies. Here is an action, I said—an action of cartilages dependent on muscular action. Now these muscles are of necessity acted on by nerves, the facial nerve or portio dura of the seventh pair, which must unquestionably supply them with a twofold energy, or an energy of two kinds; an energy common to them with all the other branches of the same nerve over which we have a conscious control, and an energy, a respiratory energy, in connexion with the lungs and its nerves, over which we have no control; which acts rythmically, night and day, like the diaphragm and the intercostals. This was my reasoning in 1810: in 1811 I became acquainted with Mr. A. Walker, the most distinguished of all the anatomical lecturers I have ever listened to: his explanation of the phenomenon escapes my recollection at the time, but I think I now know what it must have been;—it would be founded on the original views of Protheska, Albinus, and others of that period, views embracing nearly the whole range of the respiratory vital reflex functions, call them by what name you will. But his explanation at that time escaped me; and in 1812 I had the pleasure of making the acquaintance of that most amiable man and accomplished surgeon, Mr. Samuel Smith, of Leeds, and from him I learned that Mr. Charles Bell, his teacher in 1811, viewed this portio dura as a respiratory nerve, "the respiratory nerve of the face." Thirty-three years have now elapsed since this opinion was stated to me, and I entertain for it the same value I then did; that is, it was trivial, unimportant, and a mere truism; it, in truth, explained nothing. My remarks then were just as they are now. If any one doubts there being muscles associated with the respiratory movements on the face, let him look at the nostrils of a person asleep, and decide by that single remark, not only their existence but their real nature—namely, their entire independence of all voluntary control; and that such muscles acting thus on the nasal cartilages must have nervous twigs supplying them, by means of which they act, and by means of which they may be associated with the respiratory nerves, or eighth pair, no one in the least acquainted with anatomy

could doubt; but the telling me that the portio dura was the respiratory nerve of the face was merely a truism; it explained nothing; it stated what was self-evidently true of some of its branches, leaving unexplained the curious fact, the only curious fact in the whole matter, namely, why some filaments of the nerve should be respiratory and others not. Some ten or twenty years afterwards a physiologist cut this nerve in the horse or the ass as it emerges from the parotid, and discovering that most of the muscles of the face were thereby paralyzed, he asserted it to be merely the *voluntary motor* nerve of the face! He must have forgotten the nostrils, which the reader, I fear, may also think I have forgotten in this seeming digression.

The *reason*, then, why certain filaments only of the *portio dura*, and certain muscles which they supply, are quite involuntary, having never been explained,—let us repose on the fact itself, namely, that there is a cartilaginous, muscular, and nervous apparatus placed at the anterior or inferior extremity of the air tubes, intended to act synchronously with the lungs, diaphragm, and intercostals: such an apparatus, though agreeing in its general elements in the range of animals, must yet differ in many according to the wants, habits, and nature of the animal. My object at present is to speak merely of these structures as they are found in the horse, that animal, in whose conformation the readers of the VETERINARY RECORD naturally are most interested.

The term nostrils is one of rather vague import, and being liable to equivoque, I had better define the terms I intend employing, and the sense it is proposed to use them in. The term nostrils will be used as meaning the whole apparatus of cavities, openings, and passages from the anterior margin of these cavities to the point where they terminate in the pharynx. Now the anterior apertures of this portion of the air-tubes may be called the anterior *openings* of the nostrils, the nostrils themselves being the cavities within. The anterior openings are wide orifices even at the moment of expiration, or after all breathing has ceased, as seen in the horse's head now before me. Selecting the right nostril as the one to be first examined, I observe that on dilating it with the fingers, so as to imitate the dilatation of breathing, it, the orifice, is not only thereby enlarged and dilated in all directions, but the cavity into which it directly leads becomes also evidently enlarged, thus admitting of being examined by its external orifice.

This cavity I venture to call the *vestibule* of the nostrils; it has not, so far as I know, been named as a distinct cavity, and it perhaps does not merit being so especially named, but I find it difficult to continue my description of the deeper structures unless I do so. Now, from this vestibule towards the back and upper part there lead *two orifices* in the horse, both of which are indistinct during expiration or the collapsed state of the parts; nay, perhaps, are even closed hermetically under some circumstances (as when the head is placed entirely under water): these orifices are, first, a superior one leading to "the cavity of the false nostrils," and a second opening differently shaped, and more like an enlarged slit or wide fissure, leading into "the cavity of the true nostrils," this being the name I gave to the remaining part of the tube. This "cavity of the true nostrils" then has two openings, one leading into it, the other out of it; one anteriorly into the "cavity of the vestibule," the other posteriorly into the pharynx. Attentive observation shews that the two openings I have just spoken of, as leading from the vestibule backwards, are to a certain extent separated from each other by a remarkable prolongation of what has usually been called integument, running apparently from near the edge of the external orifice to the inferior turbinated bone; that is, quite across the vestibule. When the *vestibule* is fully dilated, this singular fold is seen to rise up, and by so doing it renders much more apparent the inferior orifice leading into the cavity of the true nostrils; but in the collapsed state this prolongation sinks down, and the orifice, that is the anterior opening of the true nostrils, I speak of is no longer visible. A structure strongly resembling this I had many years ago seen, but on a gigantic scale, in the great northern whale (rorqual), and this led me to look more narrowly into these structures in the horse. I shall speak of that singular structure in the rorqual shortly.

It is easy to see that the orifice by which the false nostril communicates with the vestibule is bounded by, and the lower and inner well of the cavity itself is partly formed by, this fibrous and elastic prolongation already alluded to, which, on being traced, leads to the anterior extremity of the lower turbinated bone to which it is attached. Even without dissection it may be ascertained to be a fold of mucous membrane rolled on itself, and containing evidently two structures;—a true cartilage, also turbinated or rolled on itself, posteriorly; anteriorly, a fibrous cord,

also elastic. Into this spur-like cartilage and prolongation there is inserted a powerful though short semicircular muscle (the nasalis brevis of veterinariane), attached by its other extremity to the maxillary and intermaxillary bones. The action of this muscle is to withdraw the spur-shaped cartilage and its prolongation from the position it usually occupies, filling up nearly the slit-shaped opening leading from the vestibule into the true nostrils, by pulling it upwards and outwards upon the edge of the anterior maxillary bone: in this it is greatly aided by the other muscles acting as dilators of the nostrils, or, to speak more precisely, *dilators of the vestibule*, whose influence, however, is chiefly exerted on the cartilaginous alæ. Whenever I ceased pulling on the muscle, the spur-shaped cartilage with its prolongation returned into its place, shutting up more or less completely the anterior opening of the true nostrils, or that leading into the vestibule. It must be particularly kept in view, that the fibrous prolongation of the spur-shaped cartilage is by its anterior extremity attached to the great alar cartilage, whose slightest motion therefore affects it. Having ascertained these points by repeated and careful examination, and dissected the right and left nostrils from without, I now divided the head vertically into two unequal portions, removing with the left nostril the greater portion of the septum narium: this exposed all the interior of the right vestibule, and true and false nostrils of the same side. I could now ascertain more distinctly than before the structure of "the prolongation" and its attachments, and the influence it exercises in modifying the form of the slit-like aperture of the true chambers of the nostrils. Looking at the right cavity from its inner side in the way I now speak of, it was evident that, whilst undisturbed or in the collapsed state, the spur-shaped cartilage closed in the extremity of the lower meatus of the nostrils; but when raised up by its appropriate muscle, it left this meatus free, shutting in the anterior part of the meatus above it. This curious play was admirable and striking. As covered by mucous membrane undisturbed, it looks like a continuation of the lower turbinated bone, and in one sense no doubt is so; but on stripping off the mucous membrane, a cartilage is discovered, which I have likened to a spur or sickle. This cartilage, which is of considerable length, extends from near the anterior extremity of the lower turbinated bone to a line corresponding to the extremity of the nasal bones.

A fibrous and mucous prolongation extends from its anterior extremity quite to the great alar cartilage, thus completely crossing the vestibule. Previous to this dissection, I had supposed that the spur or sickle-shaped cartilage returned into its place after having been withdrawn by the nasalis brevis, through means of its own elasticity; but although this may be the usual mode in which its replacement is effected, I discovered another muscle so placed as to enable the horse forcibly and on emergencies to pull back the sickle or spur cartilage, and so as more completely to block up the orifice it is intended to protect. This muscle is distinct and large, of a triangular or fan shape, with well-marked fleshy fibres: arising from the inner side of the intermaxillary bone, it is firmly attached to the spur cartilage about the middle. On imitating its action by pulling at it, I found that it depressed very strongly the spur-shaped cartilage and its prolongation; that it was, in fact, the direct antagonist of the nasalis brevis placed on the exterior of the apparatus; that the latter draws the cartilage upwards and outwards; the former, or the internal, as forcibly drew it downwards and backwards.

Reflecting on the probable functions of these parts, and comparing them with man, in whose nostrils analogous and closely resembling structures exist, and with the whale, animals placed in the two extremes, as it were, of those circumstances connected with a defence of the entrance to the air tubes, the following speculative opinions occurred to me:—

The aquatic life of the whale, his mode of breathing, and the danger to which he is of necessity exposed when, plunging to a vast depth in the ocean, he sustains an incredible pressure on the external surface of the nostrils, all require that the protecting apparatus be carried in it to the highest perfection. Accordingly we find it so in the rorqual, the largest of all the whales, and which I have also dissected: the fibro-cartilage filling up the nostrils more resembles a large bolster than any thing else to which I can compare it. When under the water, it rests in the nasal cavities, filling or rather plugging them up hermetically; when he comes to the surface, they are withdrawn by a muscle corresponding to our dilatores narium: the opening into the nostrils from the vestibule is thus cleared; the air rushes into the lungs, following their expansion; the dilators of the nostrils relax; the protecting cartilage returns into the cavity of the nostrils, and the

huge animal again seeks in safety the unfathomable abyss, certain that not a drop of water can reach his nostrils, unless he voluntarily dilates them, which instinct teaches him to avoid.

I have sometimes thought that the very deceptive phenomenon, the supposed "spouting" of the whale, might be explained by an attentive consideration of the nasal structures, although, of course, such opinions must be in the main conjectural. When man places his head entirely under water, after having inspired deeply, he remains for a few seconds with the lungs full, nothing escaping from the nostrils, nor does a drop of water enter these cavities so long as he makes no effort to inspire. But soon bubbles of air appear on the surface of the fluid: this is the air beginning to escape from the lungs, and, passing through the nostrils, gains the surface of the fluid. In this way the lungs may be nearly emptied of air by the gradual escape of portions of the contained air from time to time; but still no water enters the nostrils. But should he "attempt to breathe" whilst under water, the fluid rushes instantly into the nostrils, seeing that "the first act of inspiration is to dilate these cavities," or, at least, to expand that portion of these complex chambers which I have called the vestibule. By which action, as I shall hereafter prove, the anterior opening of the chambers of the true nostrils is also cleared in man, by the elevation of the elastic prolongation similarly placed in him. Now in the whale the arrangement must, I think, be somewhat different. In that animal there is probably no escape of air from the lungs until he reaches the surface, when, discharging it all at once, it gives rise to the appearance of spouting water from his nostrils or blow-holes as they are called;—a false appearance, however, altogether, since no whale really spouts any thing but watery vapour from the lungs.

The arrangement in the horse is somewhat different; but, by means of the muscle I have described, the horse, in all probability, possesses the means of cutting off temporarily all communication between the vestibule and the great or true chambers of the nostrils. This may aid in protecting him somewhat from dust and flies. This, which in the whale is constant, regular, and complete, may be in the horse and man only an occasional occurrence; it being always remembered, however, that the first act of respiration in him, as well as in other animals, is to dilate the vestibule and its orifice, and

to withdraw, by this very dilatation, from the entrance of the true nostrils the spur-shaped cartilage and its prolongation, placed there for its protection. To consider how the nostrils are protected in man under these circumstances would lead me into conjectural digressions, which will find a better place in a "Memoir on the Human Nostrils," which I trust soon to have the pleasure to submit to you.

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2. On a Muscle in the Arm of the Horse corresponding to the Pronator Teres in Man.

Mr. Percivall, in his admirable work on the "Anatomy of the Horse," has described in the bend of the elbow of the horse the following muscles, as connected with the hollow into which the humeral artery and median nerve descend: 1st. The flexor metacarpi internus; 2d. Flexor accessorius sublimis; 3d. The superficial and deep flexors; 4th. Radiális accessorius. Of these some arise from the inner condyle of the humerus, and some do not. Now, on the outer margin of the first large muscle arising from the inner condyle, which Mr. Percivall has called the flexor metacarpi internus, analogous, no doubt, to the flexor carpi radialis of man, whose attachment inferiorly is in him to the second metacarpal bone, or to that belonging to the fore-finger, I find in the horse another muscle—small it is true, but perfectly distinct in the horse's limb now before me—occupying the position of, and in form, connexions, and relations to surrounding parts, being strictly the *analogue* of the *pronator teres* muscle in man. I transmit with this short notice a sketch of the muscle, made however under unfavourable circumstances. Its brief description is as follows:—

Situation—Antero-internal part of the elbow joint.

Form—Obliquely elongated; narrow; about four inches in length.

Attachment—Superiorly to an eminence on the internal condyle of the humerus and rather posteriorly, adhering slightly to the capsule of the joint. Inferiorly to the anterior and internal surface of the radius, below the insertion of the flexor brachii, and close to the lateral ligament.

Relations—Posteriorly and internally with the flexor metacarpi

internus; anteriorly with the lateral ligament and flexor brachii; crossing in its course the median or radial nerve, and radial artery: thus holding to these two important parts the precise relations which the pronator teres does in man. Its action in the horse will, of course, be extremely feeble, and merely to aid the flexors of the fore arm.

On Pleuro-pneumonia Epizootica in Cattle.

By P. Verheyen, *Professor at the Veterinary School, Brussels.*

[Continued from page 195.]

According to official reports, Holland remained exempt from this disease up to 1832. The ravages then committed by it in the provinces of Gueldre, Holland, Dutch Brabant, and Zealand, were such, that the government prohibited the exportation of cattle. It first broke out in the province of Gueldre, to which it confined itself for two years. Towards the end of 1835 and the beginning of 1836, it spread to Southern Holland with great rapidity. In 1837 it prevailed in more than one hundred villages in the last-named province, and in the same year about 7000 head of cattle were carried off by it. In Holland, as in Belgium, the disease still continues its ravages, but with less intensity, and the period when we shall get rid of it seems to be yet far off.

This malady has attracted the attention of many veterinarians, and the symptoms, stages, and pathological anatomy of it have been described with great accuracy; but the cause remains obscure, and the mode of cure uncertain. The nature of this disease has also awakened much discussion, and on the question of its being contagious or not opinions are singularly divided. In Belgium, as elsewhere, it yet remains unsettled: some deny it *in toto*, others contend for its being so; and, again, others allow it, but with certain modifications.

Pleuro-pneumonia will sometimes shew itself in a locality where it becomes impossible to trace its origin to contagion. Healthy animals, brought from districts where the disease never had been known to exist, have been placed by the side of diseased animals, thus securing immediate contact, and they have licked up the mucus

and saliva without becoming affected. On the other hand, oxen coming from the infected districts, and only suspected of being diseased, have become the means of propagating it in places where it was unknown before. These are some of the arguments which the anti-contagonists avail themselves of. Dieterich adds, that the disease does not attack all the cattle on the same farm, but only those that are badly fed and out of condition; while others that are better kept escape, although they may have been in immediate contact with affected animals. Further, that the disease only develops itself in localities where noxious agents exist inherent to the topography and hygien of a district; that careful inoculations have proved to him that pleuro-pneumonia is not contagious; and he concludes by stating that the disease owes its origin to general causes acting on several individuals at the same time.

If, in some cases, the disease has not been transmitted from a diseased animal to a healthy one, this is not a sufficient reason to place it among the non-contagious diseases, particularly when existing facts seem to prove the contrary. Pathology teaches that it is necessary for an individual to receive the impression of a virus, either fixed or volatile, and that the organism must be predisposed to this impression; but this predisposition may not exist in some individuals: these facts constitute the exception, and not the rule, of which every contagious disease offers examples. Dieterich considers the disease in question to be simple inflammation of the pleura involving the parenchyma of the lungs, with a tendency to a special disorganization of the same, which has its source in the plasticity of the blood and the peculiar structure of the lungs in the race *bos;* and he designates it pleuro-pneumonia epizootica. He has, however, made a mistake in the character of the disease, it not being true pneumonia; and this first error makes him commit a second, and then, to be consistent, he denies its contagious nature.

Wagenfeld concurs in the opinion of Dieterich as to the non-contagious nature of pleuro-pneumonia, because he considers it to be a rheumatismal inflammation of the pleura, and designates it by the name of *pleuritis-rheumatica-exudativa.*

The statement that this malady attacks only those animals that are badly fed and in low condition, is incorrect. Those who have watched this disease have agreed that it spares neither age, sex,

nor constitution; that it attacks the strongest as well as the most debilitated animals; that it has prevailed in localities which possessed all the requisites necessary to health, as well as in those which, being low, were damp and unhealthy: in conditions of the atmosphere the most opposed to each other; also whether the food given be green or dry, or the animals were kept in stables or in meadows; and all these circumstances have been alike impotent in checking its progress. One might almost conclude from this that pleuro-pneumonia possesses an independent cause, and is contagious.

The inoculations instituted by Sick, with those made by Dieterich with the mucus from the nose, the saliva, and the blood taken from diseased animals, also the serum obtained from the lungs, and the almost immediate contact of animals by cohabitation, have, however, all had only a negative result. In Hanover, both the mucus and the saliva of diseased animals were applied to the Schneiderian membrane of some healthy animals, and the absorption promoted by friction; likewise setons soaked in the liquids secreted from the same membrane were inserted underneath the skin, but without any effect. If the inoculations by Dieterich and Sick had no effect, and those at Hanover were followed with the like result, would it not warrant us to doubt, and that without further examination, the transmission of pleuro-pneumonia by contagion? But experiments by Vix, subsequently instituted, have proved diametrically opposite in their results. Vix introduced a portion of the diseased lungs, while warm, under the skin of the dewlap of a healthy bull; a second portion of the same lungs, which had been macerated for ten minutes in cold water and afterwards squeezed, was likewise placed in the same part of a cow. On the sixth day both animals were diseased, and presented all the symptoms of pleuro-pneumonia. The cow died on the 13th and the bull on the 18th day after the inoculation. At the sectio cadaveris, all the lesions consequent on pleuro-pneumonia shewed themselves; such as effusion into the chest, increased volume and hepatization of the lungs, these organs being covered throughout with patches and striæ of a darker colour and gangrenous aspect. Their parenchymatous structure, however, was not so dense as it is generally found in this disease, and there was also the absence of the yellow plastic matter commonly seen on the surface; but the cha-

racteristic sign which distinguishes the epizootic pleuro-pneumonia from all other inflammations of these viscera, namely, the marbled aspect, was present.

We have placed in opposition these experiments by Vix and those of Sick and Dieterich, without, however, drawing any conclusion favourable to the contagious nature of the disease; and although agreeing with Niemann, that inoculation alone would be decisive, we think with him, that as yet it has proved nothing, because it has not been repeated often enough, and every necessary precaution has not been taken.

The advocates of contagion are unanimous in agreeing with the opinions of Huzard, which they accept as positive, notwithstanding that he has expressed himself with a wise reserve, which leaves it still an open question, of which the following passage is a proof:—"As to the contagious nature of this disease, so many general causes seem to act simultaneously, that it is difficult to say any thing positive on this head.

"I have made some experiments by inoculation, at Paris, and also on the cohabitation of an affected cow with a healthy one; but the length of time required to obtain any results has rendered it impossible for me to follow the subject up, and it is not likely that private individuals will undertake similar experiments. On the other hand, what can be expected from experiments tried in the very centre of an infected district, and on animals which might have the seeds of the disease within them long before they were submitted to any experiments made on them, such being continually exposed to the influence of the as yet unknown causes of the disease? It is in the veterinary schools, or the rural establishments maintained at the expense of the government, where such investigations can alone be carried out with advantage.

"I possess no positive fact, no unobjectionable experiment, by which to establish the contagious nature of this disease. When we look for instances of contagion, we do not meet with them only in certain localities, but wheresoever pleuro-pneumonia has prevailed, and there it has been transmitted from the sick to the healthy. In analyzing facts, we never find the disease spreading itself suddenly in a herd, but generally attacking one or two individuals, and almost always those which have been recently bought and introduced into the herd. After a short time the number of

cases will increase, and then as gradually diminish, disappearing only when all, or nearly all, the beasts have contracted the disease. Those cultivators of land who rear their own cattle, and who do not stock their stalls by new purchases at fairs and markets, have been, up to the present time, free from the disease; while, in the same locality, those who have been otherwise circumstanced have had their stock decimated by it. In localities where the system of stabling cattle is adopted, the progress of the disease has been slower than where animals have had free communication with each other, as is the case at grass. The first animal attacked communicates the disease to the two nearest to it, on the right and left, and this goes on and does not cease until the death or cure of the last individual in the stable, unless the place is badly ventilated, in which case the infected atmosphere takes a wider range, and acts indiscriminately on all the animals. This slow progress, owing to the virus being but slightly volatile, explains the cause of the existence of the disease in some localities for several months, and even for years.

"It also happens that healthy cattle, placed in stables which have not been disinfected, become diseased. Finally, the possibility of checking the progress of the disease by a well-observed separation, when taken in time, is also in favour of contagion; for when the diseased animals are removed from the healthy ones, the disease is speedily checked, and confines itself to the destruction of a few individuals only."

We will add, however, that we do not think that this disease, in our country at least, owes its origin to contagion, or that it belongs to the class of contagious diseases generally. On the contrary, we think that its development may be spontaneous, and we should direct our attention to general causes which are in operation when we perceive it to be invading, and that in a few days, several stables at the same time, and attacking a greater or less number of individuals. Yet it would seem that in every country where pleuro-pneumonia has existed, numerous instances of the disease arising from contagion have been witnessed: for instance, in Switzerland, Germany, Italy, France, Holland, and Belgium.

The many cases of this disease that were observed by Wirth in Switzerland, in 1823, led him to presume that contagion was the alone cause of the disease; since only those animals contracted

it which had been in immediate contact with affected animals, these being strangers to these localities, either in the stables, at grass, or at the common watering-troughs; and not one head of cattle of those which had been sequestered was attacked. Fey, who had frequent opportunities of observing the pleuro-pneumonia, has seen it confined to a few stables, and even to a few individuals, where the separation was strictly adhered to. This circumstance induced him to consider it a contagious inflammation of the lungs.

In the spring of 1812, Ithen treated this disease in Switzerland. Two cows recently bought and placed in the stable of a farmer, in the month of February, became first affected, and soon fell a sacrifice. Those that stood next to them quickly shewed symptoms of the malady, and also died. The proprietor then sent his herd to the pasture on the Alps, where other cattle were; and all that came in contact with the suspected ones contracted the disease. Ithen succeeded, however, in checking its progress, by carefully separating the healthy animals from the sick and suspected ones.

Gerlach relates that, in the month of November 1835, the pleuro-pneumonia epizootica broke out at a farm in the principality of Anhalt-Dessau, among a herd of sixty head of cattle. Ten cows, bought six weeks previous, had been placed at one end of the shed, separated from the others by a five-feet-wide passage. Of these ten, two became diseased ten days after; and soon six others, three of the old ones and three of the last arrived, shewed symptoms of the malady. On the twentieth day nine new cases occurred, among which were two of the last that arrived; and, dating from that time, they multiplied so fast, that within four weeks of the first outbreak the whole herd was affected.

The information obtained proved that the ten cows had been brought from an infected district; that, after the first day's journey, they had passed the night in a stable occupied by healthy cows, and that these became likewise attacked with the disease four weeks after their departure.

"There arrived at a farm in Bohemia," says Veith, "a beast which soon exhibited signs of the pleuro-pneumonia, and died in consequence. Those animals that were placed next to it soon became diseased, and the affection successively spread from one

to the other as they stood, no precaution being taken, and thus but few escaped. A small number were cured, but they had afterwards to be sent to the butchers to be destroyed on account of it. Fortunately, the disease confined itself to this stable; the cattle of the village, though submitted to the same hygienic regimen, and exposed to the same general influence, remained healthy. This affection, entirely unknown, had never been observed in that district within the memory of man, neither in the pastures nor the habitations; therefore no other cause could be assigned but that of contagion: had there been any other, it would have spread more generally."

The following observations are by Professor Hertwig, of Berlin: taken isolately, they would appear conclusive, but they are also corroborated by a number of other facts:—

"At the farm of Count Hardenberg, in Lichtenberg, there was a herd of eighty cows, two bulls, and about ten head of young stock. For two years previous the whole had been perfectly healthy, and never been heard to cough. They were, moreover, located in spacious and airy stables, being only sent into pasture during the summer months, and then brought into the stables every night. The pastures were on elevated situations, either natural or artificial. Morning and night they had a regular allowance of green clover or grass in the summer, hay in the autumn, and during winter they were fed on the residue of a distillery, to which dry provender was added, all being under the care of a superintendent. In the last day of the month of February, 1827, six cows and one bull, apparently in perfect health, were bought of a strange dealer and placed in the stable. The bull and two of the cows had not been there long before they began to shew symptoms of pleuro-pneumonia; one cow recovered, the other died. In the beginning of April two old cows, which stood next to the abovementioned, were attacked by the disease, and died from the sixth to the tenth day after the attack. From that period the cases multiplied so quickly, that, at the end of July, forty-seven cows had been attacked, and thirty-three out of that number had fallen a sacrifice.

"The superintendent, acting on the opinion of some veterinary surgeon that the disease was not contagious, had neglected the sequestration of the healthy from the diseased animals during the

first fourteen weeks; but afterwards it was strictly enforced, and the disease made no further progress. Hertwig, having at this time three healthy cows at his disposal, resolved to place them in the centre of the infection.

"A piebald cow, six years old, coming from a district not known, was watched from the beginning of April until the 29th of May, during which time she exhibited all the external signs of perfect health. She was then driven to Luhtenberg, a league and a half from Berlin, during fine dry weather, and placed in a spacious stable between two diseased cows, in whom the pleuro-pneumonia was fully developed, and had existed in the febrile stage from one to four days: she was tied up in such a manner as to partly inhale the air expired by her two neighbours. She was also inoculated with the mucous discharge from the nostrils of another cow, in an advanced stage of the disease, on the lining membrane of the nose, and saliva from the same animal was freely applied to the tongue, and two setons, dipped in the blood taken from the jugular, were inserted on the left side of the neck. The subject of this experiment was allowed no other food than that left by the diseased cows, and then only after it had been impregnated by their breath and saliva.

"On the 1st of June one of the two cows died. The body was not removed for twelve hours after, and her place was immediately filled up with another badly diseased cow. Up to the 1st of July nothing remarkable occurred to the piebald cow: the appetite and rumination were natural, the pulsations were 48, and the respiration 12 in the minute; there was no cough, and she gave about eight quarts of milk a-day. On the 5th of July she went to pasture with the other cows, but during the day only; at night she always occupied her place between the two diseased cows. On the 1st of July she was placed next to a cow highly diseased, and which died in thirty-six hours; after which she was removed to her old place.

"On the 8th of July there appeared a hard tumour on the neck, where the setons had been inserted, which was adhering to the skin and subjacent muscles, accompanied with much heat, and occupying the whole inferior region of the neck, exhibiting the cicatrix of the inoculation in its centre. By the 11th the tumour had acquired considerable development, but without any febrile excitement being present.

On the 12th, loss of appetite was present, with dulness and prostration of strength, alternate change of heat and coldness of the skin, &c., occasional cough, pulse above 50, and respiration difficult and accelerated. The same symptoms were observed on the following day, and she died on the 19th of July.

Autopsia.—The tumour on the neck extended from the point of inoculation to the shoulder-blade. On the skin being removed, the muscles appeared paler than natural, except those which were the seat of the tumefaction; the colour of the latter being darker, as well on the surface as within their substance, and surrounded with a quantity of plastic matter, which so completely enveloped the fibres that this texture could hardly be distinguished. All this mass was indurated, and offered much resistance to the knife; notwithstanding which the muscles were easily divided, and these presented the same marbled appearances as lungs which had undergone the disorganization peculiar to the pleuro-pneumonia epizootica. Nothing remarkable existed in the abdominal cavity. The pleura pulmonalis was of a dark red colour, and covered with a thick coat of plastic matter: one-fourth of the anterior portion of the left lobe of the lungs presented a hard, compact, heavy mass, marbled externally as well as internally; the remainder of the lungs was nearly normal: the whole of the surface, however, was abundantly covered with plastic matter; the pericardium and diaphragm were in the same state. The heart, the trachea, the bronchial tubes, and the thoracic portion of the œsophagus, appeared healthy.

A second cow, four years old, was placed, from the 1st of July to the 30th of August, exactly in the same situation as the preceding one, with this exception, the inoculations were not had recourse to. At this date (30th of August) she exhibited all the symptoms of pleuro-pneumonia, when she was subjected to medical treatment, and recovered. The state of convalescence, however, was long, and the loss of flesh considerable; but, under the influence of an abundant and judicious dieting, she at length fattened, and was sold on the 29th of November to a butcher. At the opening of the body, an induration of about four inches in diameter, and inclosed in a tough membrane, was found in the left lobe of the lungs. The tissue of this induration resembled,

in every respect, the peculiar alteration effected by pleuro-pneumonia.

The third subject of experiment was a cow five years old: she was placed in the very focus of infection from the 21st of June to the 14th of July, when she contracted the disease, and, being subjected to treatment, she recovered; but the attempt at fattening was unsuccessful. She was sold on the 30th of November to a butcher, and killed on the next day. The half of the left lobe of the lungs was found hepatized and marbled.

The fourth was a cow eight years old, on which the disease had no effect, although placed in the same conditional circumstances as the preceding cases.

The following observations, added to the foregoing statement, will be another proof of the contagious nature of the pleuro-pneumonia epizootica. Six cows and a bull were bought of the same dealer who sold the former, and were sent into the pastures of Count Hardenberg, at Tempelberg and New Hardenberg. These seven head of cattle sojourned at Lichtenberg till the 20th of March, and from thence were driven to their destination. Some days after their arrival, one cow presented symptoms of pleuro-pneumonia, and died in a few days. Almost directly after this, a second and a third cow contracted the same disease, and these were followed by the remainder of the lot. Towards the middle of April one case appeared among the old stock at Tempelberg, which stood next to the fresh arrivals. She had never been affected with cough or any other symptom of disease previously; and in the month of May the disease extended itself throughout the whole of the stock at Tempelberg and New Hardenberg. In the last named place the healthy animals were separated from the diseased ones from the beginning, and from that time the number of cases diminished; and at the beginning of the month of June the disease had disappeared, while at Tempelberg, where no precaution was taken, the disease continued until the month of August.

Convalescent animals, according to Ernst, can likewise propagate the disease by contagion. It extended in this manner to several districts, where no other cause could be discovered. A fact reported by Gerlach confirms the assertion of Ernst. A farmer

possessing thirty head of cattle placed a convalescent ox between two heifers. On the fourth day after the cohabitation they were attacked by the disease; the ox and the two heifers were removed, and the stable purified by means of chlorine, and no new cases occurred in it.

The whole of the preceding accounts evidently prove that the pleuro-pneumonia epizootica is contagious; but is it equally transmitted by immediate contact? Several veterinary surgeons are of opinion that it is, and Tscheuliur quotes an example:—A Jew purchased an ox which he placed in a stable containing three other beasts. The ox had been there only a few days, when he began to cough, and he died on the twelfth day of pleuro-pneumonia. A few days elapsed when the cow which stood next to him became diseased, and also died; and the two others shared the same fate. The farrier of the village who had treated these cases came frequently in contact with his own cows, which he was in the habit of feeding, and they all contracted the disease, and died.

Professor Delafond, now a believer in contagion, but which at first he doubted, has collected such a number of facts, as have completely convinced him of the contagious nature of this disease. He has classified the facts which he has reported, and which prove that the disease is transmitted both in the stables and in pastures, and through the offal of the carcasses. Other observations confirm the infectious properties of the offal of the carcasses of animals that have died of this epizootic. Hermann, veterinaire, Switzerland, relates a case of an ox affected with pneumonia, which dropped dead as he was led to the common watering-trough: the other cattle smelled him as they passed by; and within from six to eight weeks after twelve of them were attacked with pleuro-pneumonia, and from that time the disease spread and invaded the whole district.

M. Vanderwattyne, veterinary surgeon at Bruges, who has been kind enough to communicate several cases of contagion that he observed in his practice, quotes one in which the disease was evidently to be attributed to cadaverous infection.

From 1832 to 1833 the pleuro-pneumonia broke out among the horned cattle of M. Deville, distiller, at Eerneghem. The same year it also attacked successively those of Hubert van Roose, Pierre Delock, Pierre Vandenberghe, P. Hendryx, the

widow Philippe Viaene, J. Serruys, L. Marque, all small cultivators adjacent to the distillery. The constant mutation of animals necessarily occasioned by these kind of establishments, and which are in general bought in the public fairs and markets, sufficiently explains the manner in which the disease was introduced in the large stables of M. Deville. The major part of the diseased stock of M. Deville was sold to a butcher at Ostend. On one occasion one of them was unable to continue the journey, and fell near the farm of a cultivator, Vergaauwen, at Snaesker. The butcher obtained leave from the farmer to transfer the beast to his farm, where it was slaughtered and cut up. Some time after this the pleuro-pneumonia broke out among the cattle of Vergaauwen, and he lost eleven milch cows, the best part of his young stock; nor did his bulls escape, which were kept in a separate stable.

Confined as it formerly was, M. Delafond observes, to the mountainous districts, the Vosges, the Jura, the Dauphiné, Piedmont, Switzerland, the mountains of Italy, and particularly to the stables of Paris and the Banlieu, the pleuro-pneumonia has for the last ten years extended itself to the plains and the pastures. Its extension by contagion, however slow, goes on increasing: it prevails now in all localities where the mutation of animals is frequent, either for the advantage of fattening, the secretion of milk, or otherwise. In districts where breeding is the object, and consequently changes are rare, as in Basse Normandy, Bretagne (Little), Auvergne, and Limousin, the Mans and the Vendée, cattle have up to the present time remained free from pleuro-pneumonia. This important observation, to which we before alluded, furnishes us with a strong proof of contagion which we have had an opportunity to test in 1832, and it is since that period that our conviction has been confirmed. Two cultivators of Shaffen, a village near Diest, possessed each a large number of cattle: the mutations by buying and selling were frequent with one proprietor, while, on the contrary, another reared his own stock, among which strange cattle were never introduced. The epizootic invaded the stables of the first named, and carried off the whole of his stock, which he renewed three times, without being able to get clear of the scourge. He then resolved to pull down the stables and build new ones, and to stock them with cattle obtained from the second cultivator: from that time the

disease ceased its ravages, while those on the farm of the last named had escaped it altogether.

In the neighbourhood of Tournay the epizootic only prevails among those who buy their cattle in Flanders.

At Waterloo it is unknown to those farmers who breed their own stock; while, on the contrary, it prevails among those who stock their farms with cattle bought at fairs and markets, though they are in the same parish.

It is a well known fact that it is in Flanders the disease has committed the greatest devastations. There is hardly a village or a hamlet where it has not had its victims. With one exception, however: in a letter I received from M. Vanaken, veterinary surgeon at Zele, he informs me that, on the left bank of the Escaut, there is a hamlet on the outskirts of the town of Termonde, named Sint Onulfsbrock, containing about twenty farms, where the importation of fresh cattle is of rare occurrence, but where all the predisposing causes, such as narrow, low, and ill-ventilated stables, acrimonious and sour provender, want of litter, and frequent inundations, exist; notwithstanding which there has not appeared the least trace of the epizootic, while it has committed sad ravages in all the adjacent localities. This fact adds fresh strength to its being contagious.

In the British Isles, where the importation of cattle is prohibited, the pleuro-pneumonia is up to the present time unknown*.

[To be concluded in the next Number.]

COMMUNICATIONS AND EXTRACTS.

A Sinking of the Spine—Sciatica, and diseased and imperforate Gall-Bladder, in a Cow.

By Mr. W. A. Cartwright, *M.R.C.V.S., Whitchurch, Salop.*

Dear Sir,—As some little return for the pleasure I have had in reading the Journal of the "Veterinary Medical Association," I have sent you the accompanying case, as an illustration of rheu-

* This was written before the alteration in the Tariff. Whether the disease has been since introduced, and by that means, might be a subject worthy of investigation.—*Translator.*

matic affections, and a cause of malformation of the pelvis in a patient belonging to your department.

Sincerely wishing you success in your arduous and highly important undertaking, and hoping you and your colleagues are in perfect health,

I remain, dear Sir,

Your's, most respectfully.

J. B. Simonds, Esq.

In the month of April 1844, a six-year old cow, half bred, belonging to Mr. R. D. Smith, of Blacoe, calved and did well after it. About July of the same year she was taken ill, having, as they said, "a thorough cold," from standing, with others, in the canal. There was a general stiffness of the whole frame, but the principal symptom was lameness in the off fore leg, and a quivering of the muscles about the shoulder; but as no foul or other disease could be detected to account for the lameness, it was therefore attributed to rheumatism. I was not in attendance on the case, but am informed that in the course of a few weeks she became pretty well again from the curative means adopted.

In the month of August she was again taken ill and lame, but this time the attack was in the off *hind* leg. There was much quivering, with spasmodic action of the muscles of the extremity, especially on touching the parts, or by leaning against her whilst she was being milked; she had also great difficulty in rising up when she was down. From this time her lameness moved about from one hind leg to the other, and there was a general stiffness in the hinder parts, with quivering of the muscles situated there. About this period also she began to sink in her loins. Her general health and appetite, however, appeared good, and she milked almost as well as any of the cows on the farm.

She was treated upon the hydropathic system, having wet cold bags thrown over her until profuse perspiration had existed for a length of time, after which stimulating liniments were applied, and her clothing gradually taken off. By this treatment she got much better again, but soon after she had a relapse, from which she never recovered.

On the 16th September, 1844, I saw her for the first time. She was grazing heartily in the field, and looked very lively. I

was especially called in to see her in consequence of the great depression or falling in of the spine exactly opposite the hips. When she was purchased she was a remarkably straight cow along the back to the tail, and remained so until August last, when she gradually sank in the loins to the state I now found her in. Her sacrum and hind parts stood considerably higher than across her loins. There was a gradual sinking of the dorsal and lumbar vertebræ, until we came to the union of the last lumbar with the sacrum, at which place it formed a very striking contrast of depression to the sudden projection of the sacrum, which was four or five inches higher than the former. I also observed that the off hip was much enlarged. Upon pointing this out, the owner said he could often hear a grating or cracking of the bones about the hips when she moved.

In consequence of her getting gradually worse, and her symptoms of weakness and debility likewise increasing, it was thought advisable to have her destroyed. She seemed to get worse the heavier she became in calf; and as she had nearly four months to go, there seemed to be but little chance of her surviving; indeed we believed that she would be quite unable to rise even with assistance, and which she could barely do now. We therefore on this day, the 13th January, 1845, had her killed.

Examination.—On removing the abdominal viscera, we were particularly struck with the appearance and small size of the gall-bladder. It was about the length, and almost the shape, of a tolerably sized horse-ball, but more irregular in form. I tried to force its contents out, but could not: I then cut it away from the liver, and again tried to empty it of its contents by squeezing it, but could not force a drop of bile out. I then laid it open, and found it contained about an ounce of dark-coloured fluid, with a little coagulum in it, similar to urine voided by a cow that has black-water, but it had not the least appearance of bile. I could not detect any opening out of it. The inner membrane was coated here and there with particles of ossific matter. It was the smallest gall-bladder I ever saw in the cow, and I should say, most positively, that no bile could get into it. The thickness of its coats was about as usual, but they were materially altered in texture. The liver was next cut into. It was of a firm consist-

ence and of a dark brown colour; but there was not the least appearance of bile to be seen in it: it was small and flat.

The stomachs were healthy, and digestion appeared to be going on well in the intestines. There was not the least constipation of the bowels present.

I had the lumbar vertebræ and pelvis sent home for closer examination, and the following appearances were observed:—

Hip Joints.—When separating the pelvis from the hind extremities, I was aware that there was disease in the joints, but I had no idea to what extent it had gone.

Off Hip.—In the centre of the acetabulum there was an immense cavity, an inch wide, and nearly an inch deeper than natural, and which would hold a walnut. From this cavity, both superiorly and inferiorly, there was a breach, at least an inch wide, extending into the walls of the acetabulum, but which was not very deep. In some places these cavities were covered with extravasated blood; in others the bone was uncovered and carious, but the greater part was covered with a white fibrous membrane. The upper articulating surface of the acetabulum (towards the sacro-sciatic notch) was in a healthy state, and formed a great contrast to the other parts. It was much diseased where the ligamentum teres is inserted, of which I saw scarcely any remains. There was great thickening around the joints, and the parts were very vascular.

Near Hip.—The whole of the centre, and the posterior wall of the acetabulum on this side, was totally void of its cartilaginous covering, instead of which the centre, for an inch in diameter, had a smooth, hard, and polished surface of bone, from friction. For three parts of the circumference of this central portion of bone, there was a distinct narrow demarcation, filled up with a fibro-cartilaginous substance. In other places of the diseased bone there were several deep, rough, carious cavities, partially lined with extravasated blood or fibrous membrane.

At the superior part of the acetabulum there was a similar portion of sound cartilage as in the off-hip joint. The superficial extent of disease in this joint was quite as great as in the other, but ulceration had not gone to such a depth.

The apices of the articulatory surfaces of the heads of the femoral bones were very much flattened and worn away, where they had

been in apposition with the diseased surfaces of the cotyloid cavities. The near one was not at all carious, but it was smooth, flat, and as if it had been polished. The other was also flat, but considerably diseased.

Within the pelvis, and exactly opposite the cotyloid cavities, there was, on the off side, an ossific tumour the size of a man's fist, but that on the near side was not quite so large.

The space within the pelvis, between the two tumours, was only two inches; and I do not believe that the cow, had she gone her full period of utero-gestation, would have been able to calve, in consequence of this malformation; which, no doubt, would have been considerably larger by that time, as she had three or four months to go.

There was also serious disease taking place on the articulatory surface of the head of the radius on the off side.

At the union of the last lumbar vertebra with the sacrum the articulations were in some places rough and abraded, and the capsular ligaments contained but little synovia. There were also sulci formed for the reception of the synovia. I did not lay open the spinal canal, as I wished to preserve the parts entire.

Observations.—On first seeing this cow, I was inclined to attribute her stiffness and lameness behind to the great depression of the spine. My opinion now is, that it was from first to last a decided case of rheumatism, brought on, as the owner suspected, from standing in the canal, or from some atmospheric influence.

However some may doubt the existence of sciatica, or rheumatic affections of the joints, in our patients, I think this case must convince the most sceptical person on the subject. Most likely the spine was also affected. The prolonged and excruciating pain that this poor animal must have suffered, I can well imagine from my own experience of the disease; and so will any one that has had an acute attack of rheumatism.

Since writing the foregoing, I have had the bones of the pelvis boiled; and one would almost think, from the general appearance of the parts about the hip-joints, that there had been a fracture on each side. If there has, I still am inclined to think that the original disease was rheumatism, which might have caused a deposit of soft ossific matter about the joints.

A forcing up of the upper part of the bones of the hips (being diseased), perhaps, may account for the unusual height of the sacrum, and the apparent depression of the loins.

It would have surprised any one how well she walked about just prior to her death, and, indeed, all along.

Cases of supposed Poisoning of three Sturks by common Salt.

By Mr. J. J. Hughes, M.R.C.V.S., Longton, Staffordshire.

On the 30th December I was hurriedly summoned to Sideway farm. On my arrival there I found two sturks very ill, and one dead. Mr. G. had purchased these animals, and others, to the number of fourteen, at a fair held at some little distance; and when they reached home, he perceived that they were affected with some trifling disease of the skin which caused considerable itching. To remove this, he ordered the bailiff to drench each of them with a quantity of salt and water. He drenched three of the lot, and then fortunately stopped, for the one that had the first dose was perceived to be very ill. I arrived soon after, but he was dead; and it was not long before another died.

The symptoms in the remaining one were—pulse 140, and fluttering; respiration nearly 80 per minute; violent spasmodic muscular paroxysms about every five minutes; mucous membranes pale; horns and mouth cold; peculiar prominence and brightness of the eye, indicating extreme pain and excitement; frequent eructations; head turned upon the side at intervals; trismus, and spasmodic contraction of the muscles of the extremities. I immediately opened the jugular vein, abstracted a large quantity of blood, and administered what oil there was in the house. In a few minutes the more urgent symptoms seemed to be alleviated; the horns and mouth became warm, and the mucous membranes injected. The symptoms recurring, I again detracted blood, but to no purpose, for another violent spasmodic attack supervened, and death closed the scene in about an hour and a half from the time of drenching.

Examination immediately after Death.—All the viscera healthy, except the stomach, which contained a considerable quantity of

ingesta. The lining membrane of the rumen, reticulum, and maniplus, was separable from the subjacent tissues with the greatest facility. The mucous membrane of the abomasum was beautifully ecchymosed, the spots varying in size from a sixpence to a mustard seed. There were also two small points of ulceration. I examined analytically a portion of the solution and also of the salt, but could not detect a particle of any thing beyond what we find associated with our common salt, such as the chloride of calcium, &c. I also examined the contents of the stomach, but could detect nothing injurious beyond the salt. There is no cause of death that I can satisfactorily assign, except it be that the salt was given in a state of suspension before it was actually dissolved; and the well known sympathy which exists between the integument and mucous membranes, especially in skin diseases. This view is further corroborated by the fact of what inflammation there was being petechial. It was fortunate that the man desisted at the time he did, otherwise the whole of them might have been sacrificed. I fancied at first that some portion of the solution might have made its way into the trachea, but, on examination, I found such was not the case.

Poisoning of Calves by the Aspidium Lobatum, or close-leaved prickly Shield Fern.

I was sent for, on the 6th August 1844, to Park Hall farm, to examine five yearling calves that had died suddenly, and two others that were nearly dead. They had been feeding on some very hilly land, and, owing to the long-continued drought, there was a great deficiency of grass. There was, however, a large quantity of the above plant growing luxuriantly where they were pastured, and these calves, labouring, probably, under some little irritation of the digestive organs, arising from a scarcity of water, had eaten a quantity of this fern.

The symptoms were, great excitement of the circulatory system; profuse discharge of saliva; urine frequently voided, and in small quantities; fæces consisting of little more than mucus at first, but ultimately becoming bloody and fœtid; the alvine evacuations

caused intense pain; spasmodic twitching of the muscles, &c. The treatment I adopted consisted in the administration of a diffusible stimulant, combined with opium and linseed oil; but death soon terminated their sufferings.

Post-mortem examination presented the stomachs full of dry vegetable matter; the lining membrane easily separable from the subjacent tissues and ecchymosed in patches, the centre of many being ulcerated. The ingesta consisted of this fern principally. The mucous membrane of the intestines and bladder was intensely inflamed, and in many parts of the former half masticated leaves of fern were found sticking. Had these animals partaken of even a larger quantity of this plant mixed with a sufficiency of ordinary herbage, they would probably have been unaffected by it.

The singular Effects produced on the Horse by Eating of Wheat.

By Mr. T. M. Leech, *M.R.C.V.S.*

While residing at Great Yeldham, Essex, my attention was directed to two cases, in which the effects produced by wheat upon the horse were most marked. The history of the cases is as follows:—A horse was sent down to the infirmary to be examined for lameness in the off hind leg. Judging, from the peculiar action, its seat to be the foot, I had the shoe taken off and the sole well thinned, but I could find nothing to account for the severe lameness and evident pain the animal was suffering. During my examination the horse dunged, and my attention was directed to the semi-fluid state of the fæces, in which were numerous grains of wheat. On feeling the pulse, I found it to be beating between 80 and 90 in the minute, and very full; the breathing also was much accelerated. I detracted blood to the amount of six quarts, and gave one ounce of aloes in a soft ball, and ordered a mash diet, notwithstanding the fæcal matter was soft. After the bleeding, the animal seemed considerably relieved; so much so, that he was enabled to walk home, a distance of two miles, with scarcely any lameness, and ultimately got well.

The next case likewise occurred on the same farm, but proved more troublesome, as the sequel will tell. Some time near the close of the evening of the same day, we were called up to the farm to a colt, which, to use their expression, was "stuck fast," and could not move at all. On our arrival, we found the colt to be, as the man had informed us, obstinately standing in one position. Fancying this animal was suffering from the same cause as the other, we emptied the rectum by the hand, and found the fæces completely studded with wheat. The following were the symptoms evinced by the animal:—Pulse 120, and full; breathing greatly accelerated, say 30 in the minute; considerable injection of the visible mucous membranes; ears, feet, and legs, warm, but not hot; the egesta in a natural state, except that it contained wheat. The treatment adopted that night was, bleeding from the jugular to the amount of seven quarts, and the administration of a dose of aloes, accompanied with back-raking and injections of tepid water. On the next morning the animal evinced the following symptoms:—Pulse 100, and very small; breathing still much accelerated; bowels not acted upon in the least, and he obstinately stands in one position; mucous membranes highly injected; ears cold, and likewise the legs. A mustard embrocation was applied to the sides and chest, which had a most remarkable effect, for up to this time the animal could not be made to alter his position; but now he began to pace round his box, and the circulation by this means became considerably increased in tone, as was also the breathing in frequency: during this state of excitement he was bled from the brachial veins until syncope took place, and he fell. After this had passed off, the following draught was exhibited: oleum lini Oiss, spt. æther. nit. ʒij; the rectum was emptied, and clysters ordered to be repeatedly thrown up. The medicine not having operated by the evening, and the colt having resumed his standing position, while as yet but little had been gained from the treatment adopted, another pint of linseed oil was given, the clysters ordered to be continued, and several quarts of gruel were horned down, the animal not having eaten any thing since the attack. The next morning the breathing and pulse were considerably reduced in frequency, and the colt seemed somewhat better; but now his feet became very hot and tender, as if he was labouring under laminitis. In his present state it

was impossible to remove the shoes; he was, therefore, bled from the plantar vessels, which seemed to give considerable relief. On the following morning the medicine began to operate; he was now ordered thick gruel, and any thing he would eat, and he ate a little bran and chaff with clover-hay and some grass. To all appearance he is much better, and we have now hopes of his recovery; but his pulse still keeps up, and his breathing is also quick. The following ball was given every three hours: ℞ ext. belladonna ʒss, pot. nit. ʒiss. On the following day, the purging not being abated, we gave opium in ʒss doses every three hours, until he took six doses. Next day:—We were now enabled to remove the shoes, and the colt appeared much better, having eaten pretty freely, and partaken of thick gruel. The fæces also have become altered in character, being more consolidated. Nothing more was ordered to-day. The colt now gradually improved under good nursing, and the perseverance of the extract of belladonna in conjunction with small doses of the nitrate potassa, until his health became re-established.

Remarks.—It is a strange and unaccountable disease which affects the horse after eating wheat, and many are the opinions advanced with regard to its supposed modus operandi. It may be requisite to pass them in review, with such remarks as they may give rise to. Some persons say that the grain, when in the stomach, is subjected to the influence of heat and moisture, and there undergoes a change analogous to fermentation; and as a consequence of this, it produces inflammation of that viscus, and, by a metastasis of the inflammation, the feet become affected with laminitis: this theory, I confess, is a very plausible one, but I cannot concur with its advocates. It is not my opinion that any fermentation whatever takes place, and, even if it did, what could we expect from the disengagement of some carbonic acid gas, and the formation of little alcohol (for these are the products of the first change during the fermentative process)? Neither have we those symptoms evinced which we might anticipate from the administration either of the former, which acts as a sedative, or of the latter, which is a stimulant. Again; have we not a disease to which ruminants are liable, commonly called "hoven," and which is owing to a disengagement of gaseous compounds from the food undergoing that change which is called fermentation in the rumen,

or first compartment of the digestive organs? But have we in this disease any symptoms similar to those evinced by the horse when labouring under the effects of wheat, and which would warrant us to conclude that it was brought about by the peculiar change that takes place when vegetable matter is exposed to heat and moisture?

There are those who contend that these effects are produced by the grain becoming increased in bulk in the stomach, thus pressing that viscus against the diaphragm, and causing inflammation of the lungs, while that of the feet follows as a secondary effect of the pneumonic inflammation. This opinion I deem unworthy of further notice.

I think, after consideration, either of the above-named cannot be considered as the way in which wheat produces its peculiar action on the horse, yet the way in which it acts I am at a loss to state. I may, however, venture to conjecture that the grain undergoes a change somewhat similar to what rye does when it becomes ergotized; when some peculiar and active principle becomes developed besides carbonic acid and alcohol; that this principle acts on the nervous system; and in consequence the circulation and respiration become deranged, inflammation supervenes, and the feet suffer from metastasis, similar to what often takes place in simple inflammation of the lungs. But the reason why this active principle should affect the system in this particular manner can no more be assigned, than that the ergot of rye possesses a specific action over the uterus, or that aloes should purge.

Case of Paralysis successfully treated with Strychnia and Counter-irritants.

By Mr. T. Taylor, *M.R.C.V.S., Derby.*

My patient was a grey colt, four years old, the property of the Midland Counties Railway Company. I was requested to attend in great haste, the messenger stating that he was fearful I should find him dead. On my arrival, I found the horse in a state of profuse perspiration, unable to move without assistance, and, when made to do so, he suddenly drew up his legs, and if not supported would have fallen: the whole length of the off side was completely paralyzed; the lips were also drawn on one side;

the ears fallen on the neck; the eye retracted within the orbit, and, on pricking him with a pin on the off side, very little sensation was evinced. Pulse 80, and oppressed; respiration not much disturbed.

I took six quarts of blood from the jugular vein, and gave the following draught:—

℞ Aloes ʒix
Opii ʒiss.

Ordered constant fomentations to the back and loins. I saw him again in five hours, and found the pulse 70, and not so much oppressed. I then gave the following ball, with directions for its being repeated every four hours:—

℞ Camphor. ʒss
Pot. Antim. Tart. ʒss
Nitr. Pot. ʒij.

Placed a warm sheepskin over the loins, and directed the diet to consist of gruel and mashes.

On the second day the animal was very ill, indeed in such a state as to dissipate all hopes of recovery. No fæces were passed; and for the three following days he was unable to void any in consequence of the paralytic state of the muscular coat of the intestines, although oleaginous purgatives were freely administered.

6th day.—No change for the better, except that the fæces are in a semifluid state. Pulse 60; the fever balls to be given as before ordered, and allowed a small quantity of scalded hay with gruel.

7th day.—Purged freely; the paralysis remains the same, but the febrile excitement is allayed. Discontinue the sheepskin, blister the back the whole length of the spine, and give the following ball night and morning:—

℞ Strychnia, gr. j.
Pulv. Zingib.
Pulv. Gentian. āā ʒiv.

8th day.—Increased the strychnia 1 gr. each dose; the symptoms remaining the same.

9th day.—Bowels rather inclined to become constipated. Gave a laxative combined with the strychnia, which I gradually increased till the animal took half a scruple daily, and continued it for three weeks. During this period the symptoms gradually disappeared, and the animal is now quite well.

To the Editors of "THE VETERINARY RECORD," &c.

Gentlemen,—Having read with very great interest the first and second Numbers of your new periodical, "THE VETERINARY RECORD," &c., I take this opportunity of stating my high opinion of its merits. It is, indeed, a very valuable addition to veterinary periodical literature, and I have no doubt of seeing it in a short time among the leading veterinary journals of Europe, if it be only carried out in the same spirit that it has commenced; its contents being interesting, varied, and valuable.

I agree with Mr. Litt when he states, that it is the duty, and ought to be the pride, of every practical veterinarian to contribute his quota to the general stock, from which all may glean something interesting or advantageous; for I feel quite certain, that if veterinary practitioners generally would carry out the system of openly and freely contributing an account of any rare and interesting cases they may meet with in their private or general practice, accompanied with their opinions of such cases, they would establish, in a very short time, that unity among practitioners which is of such great advantage to any fraternity or profession, and especially to the veterinary profession. I for one feel quite anxious to contribute my mite, however humble or uninteresting it may be. I therefore take the liberty of forwarding to you the following hastily thrown together remarks, and, if you deem them worthy of a place in your invaluable "RECORD," they are at your service.

ON GONORRHŒA IN CATTLE.

IT is a well known fact that there are many very troublesome and sometimes serious diseases which are common and of almost every-day occurrence, yet they are scarcely ever mentioned in the highest and most respectable veterinary works of the day. I have chosen one of these diseases for the subject of the following paper. Gonorrhœa in horned cattle is commonly known in this county by the name of bull-burn, or clap. I do not contribute this because there is any thing rare or uncommon in the disease, but from knowing that it sometimes prevails to a great extent, and is very troublesome to get rid of; and occasionally it seriously affects the farmer, the dairyman, or the breeder of horned stock; and also

from having had of late a great number of cases of it in my private practice. To this I may add, that I am not aware of any thing having been advanced respecting it either in the standard or periodical veterinary works lately published; and in the justly celebrated and interesting volumes on Cattle written by Youatt, Spooner, and others, the above named disease is, I believe, never mentioned by them.

Gonorrhœa, bull-burn, or clap, in horned cattle, is a local disease affecting the mucous surfaces of the parts of generation, in either male or female. I have frequently met with it in two forms, which, for the sake of distinction, and the reasons hereafter to be given, I will designate simple gonorrhœa and virulent gonorrhœa. Simple gonorrhœa makes its appearance in the female (more frequently in the young than the old) about four or five days after copulation, and is known by the following symptoms:—unhealthy feel of the skin, arched back, diminution of the secretion of milk, shaking and whisking the tail about after voiding urine, redness and fulness of the parts of generation, and a puriform discharge from the vagina. In the male I have known this form of the disease make its appearance in three days after copulation. It is known in the male by the following symptoms:—swelling and redness of the prepuce, or sheath; a continual discharge of matter from the mucous surface of the generative organs, with evident indications of great pain after voiding urine.

The causes of simple gonorrhœa, in my humble opinion, are the following:—the hot, inflamed, and irritated state of the system, of either the male or the female (but more frequently the female), at the time of copulation, and which is sometimes caused by the beast running a long distance before getting to a bull, bellowing and roaring all the way; or the animal may be naturally over-hot at the time: consequently the blood is in an over-heated state; and when the semen of the male (which is naturally of a stimulating nature) falls upon the mucous surface of the vagina of the female while in this overheated and irritated state, it sets up a slight inflammation of the parts, causing a purulent discharge from them, which is infectious. I have known innumerable cases of this kind of gonorrhœa make their appearance in the cow after copulation, and the bull by which she had been served never shewing the least symptom of the disease; but if a bull has had

connexion with a cow that is labouring under this the first form of gonorrhœa, he will be immediately affected with the more acute form of the disease, which I have before designated virulent gonorrhœa, because it is the result of a connexion with a diseased cow. The first form of the disease may make its appearance in either bull or cow after copulation, when both bull and cow were in an healthy state previous to the act of copulation; consequently, when either a healthy male or female comes in contact with a diseased male or female in the act of copulation, the venereal poison is communicated from the infected animal to the healthy one, which poison, if applied to the mucous surfaces, produces inflammation and ulceration, forming a sore which is similar in every respect to the true venereal chancre of the human subject. The symptoms of this form of the disease are similar at the commencement to simple gonorrhœa, or the first form; but as the disease progresses they become aggravated and are more intense. Inflammation first shews itself in the organs of generation, and, if the mucous surfaces be now minutely examined, they will be found to be covered with small red pimples, which in a few days become larger, and, bursting suddenly, form deep-seated ulcers, which, if on the penis of the male, often prove a very serious affair; for if not stopped, two or three of these ulcers will run into one, and in some cases the penis will be partially destroyed by them. When the disease has arrived at this stage, the animal voids his urine with great pain, in small quantities and by jerks, like water from a syringe: the prepuce becomes ulcerated to an alarming degree, the testicles are swollen, and on compressing them the beast gives indications of extreme suffering. The venereal poison now begins to be taken up into the absorbent glands, producing a bubo, and from this being conveyed into the circulation, fatal results most commonly follow; but by a timely application of proper remedial means these may be prevented.

The treatment I have found from practical experience to be the best, and I have now tried it for a number of years, is the following:—If called to a cow that is thus affected, I examine the diseased parts, and ascertain whether it is the first or second form of gonorrhœa; and if it be a case of simple gonorrhœa, I administer a saline purgative, combining with it the nitrate and carbonate of potash. I then order the vagina to be well washed with the following lotion two or three times a-day:—℞ Cupri sulphat. ʒij,

Plumbi acetat. ʒiij, Aquæ Css, misce; the sulphate of lead formed being separated by a filter. If the symptoms are not removed in about three or four days, I order the draught to be repeated; but this is very seldom necessary, for the disease soon yields if attacked in time. If the disease shews itself in a male, I order the same kind of medicine and the like lotion to be thrown into the sheath by means of a syringe twice or thrice a-day; I also detract a little blood. In the male I repeat the purgative draught for three days following, and continue the use of the lotion until the discharge ceases.

When called to a case of virulent gonorrhœa, if a female, I generally find the same treatment to answer very well with the addition of venesection; but if the patient happens to be a male, then comes the most difficult part of the business. As soon as I have ascertained the fact that he is labouring under this, the second form of the disease, which I easily can by the degree of inflammation and the ulceration of the parts affected, I have recourse to blood-letting to syncope; and in about half an hour after I exhibit the abovementioned draught. I next cause the animal to be cast and placed on his back, the penis to be carefully drawn out of the sheath and fomented with warm water for a quarter of an hour, and then well washed with the astringent lotion. I repeat the draught, fomentations, and dressings, for five or six mornings, gradually diminishing the quantity of sulphate of magnesia until I discontinue it altogether. If the ulcers do not seem to heal by the lotion, I touch them with hydrochloric acid once or twice, and this generally proves effectual. I continue the use of the lotion for a day or two afterwards, and commonly I find the disease to yield. I may be permitted to observe, that the practitioner should be very careful when dressing the ulcers, for the matter from them will affect the human skin as well as that of the brute. I will also here state that I have found the best results to follow the repeated exhibition of the carbonate of potash, given in small doses, in long protracted and stubborn cases of virulent gonorrhœa.

I beg to remain, Sirs,

Your obedient servant,

Pendleton, near Manchester. JAMES H. SHENTON.

On the Betel Nut.

In a communication received from Mr. W. Kent, he states that the betel nut, advocated by Mr. Hagger, of the Hon. East India Company's service, as a vermifuge for the horse, is not, as by some botanical writers thought, obtained from the piper-betel, but is the fruit of the areca-indica, from which two kinds of catechu are extracted,—one called *cuttacamboo* and the other *cashcutti*. The word catechu, in the Japanese language, signifies *kate*, a tree; and *chu*, juice. The natives make a preparation composed of this extract, the *leaves* of the piper-betel, which are very juicy, and a peculiar kind of lime: this mixture is generally formed into thick cakes, like nuts flattened, and is by them called "betel."

The fruit of the areca-indica is also sometimes split, and then enveloped in a leaf of the piper-betel, as we cover almonds with sugar. And this, like the other composition, is chewed or sucked; and, from the general use of the areca in one or the other of these ways, it has received the name of the betel-nut. It is considered to act as a tonic and an astringent.

Instances in Old Writers of Ossification of the Brain.

Antonio Vallisnieri has written a treatise upon this subject, which he calls "Considerazioni ed Esperienze intorno al creduto cervello di Bue impietrito, vivente ancor l'Animale, presentato dal' Signr. Verny all' Academia Real di Parigi;" 4to, Padov., 1710. In this treatise the author states that ossifications (or, as he calls them, petrifactions) of the brain were not so uncommon as they were supposed to be. He mentions an ossified brain found at Modena, and one sent to him as a present from Ferrara. A third he saw at Venice, in the possession of M. Teta. A fourth at Bologna, in the museum of Aldrovandus. At Padua, a well-attested case is described as occurring in the ox, and a preparation of which was preserved in the monastery of Justina. Of the first and fourth of these cases Vallisnieri has given representations. He minutely details the appearances presented in another case which was furnished to him by a butcher at Modena, and in which

the ossific matter was about half the size of the cerebrum, and weighed fourteen ounces. But the particular case to which the title of Vallisnieri's book alludes, according to Haller (*Bibliotheca Anatomica*, tom. i, p. 792), was not a true ossification of the cerebrum, but an exostosis. Swedenborg, also, mentions an ossified brain found in Sweden, and preserved in the collection of Bromellius, and which is treated of in the *Acta Upsaliensia*.

The Changes produced on Starch during Digestion.

By Dr. R. D. Thomson, *Glasgow.*

As starch, or substances allied to it, constitutes the basis of the food of many of the animals that come under the care of the veterinary surgeon, the following experiments will not be read without interest:—

"As it appeared to be a matter of importance in the investigation of the changes occurring in the stomach during digestion, in order to prevent complication of the phænomena, that the food should be as simple as possible, I have chosen for the experiments about to be detailed cases in which animals were fed on vegetable food alone. In general, the species of food selected was porridge, or a mixture of oatmeal and water well boiled. In such experiments as I have seen detailed, in reference to the free acid of the stomach, there appears to have been too little attention paid to the possible results which might arise from a difference in the nature of the food: thus the products of the digestion of starch we should naturally expect to be different from those of the digestion of animal fibrin or albumen, since we know that lactic acid can be produced by a modification of starch, although the same change does not attend the decomposition of the animal substances enumerated. For example, in the preparation of starch an acid liquor collects on the surface of the vessels in which the starch is digested, and in the formation of *sowans* from oat-husks and water by steeping, an acid liquor is developed—in both instances a consequence of the production of lactic acid at the expense of starch; while in the German dish, saurkraut, the same acid is

generated by an analogous action. I do not at present intend to discuss the nature of the acid which presents itself in the stomach during the digestion of animal food, but simply to detail the results of a series of experiments upon the changes produced on vegetable food and starch during digestion. I shall merely content myself with stating, that I have never found a volatile acid in the stomachs of animals which were digesting animal food alone, while in these cases I have invariably found an acid to be present which was fixed at the temperature of 212°, and even considerably higher.

"*The nature of the acid developed during the digestion of Starch.*—It does not appear an invariable rule that an acid reaction should always characterise the liquid present in the stomach during digestion, as appears from the following experiment:—On the 11th of July 1844, the different stomachs of a sheep killed twenty-four hours after partaking of grass, contained between two and three pounds of finely-divided green matter, exhibiting a pulpy consistence, but being entirely destitute of either an acid or alkaline reaction. The pulpy masses were tested in each of the stomachs with the same negative result, and they were afterwards mixed together, diluted with distilled water, and filtered, but still without producing any effect on litmus paper. Experience teaches us, that, to determine the presence of a volatile acid in the stomach, great care must be taken in reference to the mode in which the distillation is performed; since if the heat of an open fire is applied to the retort, an indication of the presence of hydrochloric acid will be found in the liquid contained in the receiver by the addition of nitrate of silver. The following experiment affords evidence in favour of this position, and it might be strengthened, if necessary, by the results obtained by other experimenters. The contents of the stomach of a dog which had been fed on porridge made of oatmeal and water, and which afforded an acid reaction with litmus paper, were mixed with distilled water, and filtered. On exposing the distilled liquor to the heat of an open fire in a retort, a fluid passed over, possessing an acid reaction, and becoming opalescent on the addition of a solution of nitrate of silver, and without this appearance in contact with nitric acid; a result plainly indicative of the presence of chlorine in some form

in the liquor of the receiver, but, as appeared by the subsequent inquiries, to be explained by the fact that muriate of ammonia must have been carried over by the vapour of water in consequence of the excess of heat.

"To determine in a satisfactory manner, therefore, the presence of a volatile acid, it is necessary to distil the fluid contents of the stomach in a water-bath. With this consideration in view, the following experiment was made:—June 1844, a pig was fed on potatoes and greens, and was killed in half an hour after the food was swallowed. The stomach was slit open, and as much of the fluid contents as possible were poured off; the solid contents were then digested in cold distilled water. Both fluids were filtered and mixed, each, previous to being united, being found to exhibit an acid reaction with litmus infusion. To ascertain whether the statement made by a French physiologist (Blondlot) is correct,—viz., that the acid of the stomach cannot be saturated with chalk,—a quantity of pure carbonate of lime was prepared by dissolving Irish limestone in hydrochloric acid, precipitating a small portion of phosphate of lime and iron which it contains with caustic ammonia, and then throwing down the lime with carbonate of ammonia, collecting the precipitate on a filter, washing it well with distilled water, and heating it to redness in a platinum crucible. An excess of this chalk was then added to the filtered fluid of the stomach, and the mixture was allowed to remain for twenty-four hours, disturbed only by frequent agitation. It was then filtered, and found to have been completely neutralized. Having often repeated this experiment on various specimens of gastric fluid with the same effect, I can only account for the different result obtained by Blondlot, by supposing that he had attempted to complete his neutralization of the fluid while it was in a heated state; and that possibly, if acetic or lactic acids were present, these acids might resist neutralization at an elevated temperature, since it has been found by manufacturers of pyroligneous acid that they cannot succeed in forming a neutral acetate of lime at a temperature approaching that of the boiling-point by chalk alone, but that they require to add milk of lime in order to overcome the acid reaction. Blondlot has deduced the inference from his experiment, that the stomach owes its acid reaction to the presence of

an acid phosphate of lime; but as the experiments now detailed do not coincide with those of the French physiologist, it is sufficiently obvious that they do not support him in his conclusions.

"Being thus foiled in corroborating the deduction of Blondlot, that phosphoric is the free acid of the stomach, it was requisite to look out for another source of the acidity of the gastric fluid: it was therefore necessary to test the muriatic or hydrochloric acid theory, as propounded by the sagacity of Dr. Prout. (See *Philosophical Magazine*, S. 2, vol. iv, pp. 3 and 120.)

"The contents of the stomach of a pig, which had been fed on porridge two hours before being killed, were mixed with cold distilled water, and filtered. Six ounces of this fluid, which was quite clear and limpid, were introduced into a retort, and distilled in a water-bath. The distillation occupied several hours; three ounces of fluid were distilled over, which possessed the peculiar smell of such fluids, and reddened infusion of litmus slightly. The three ounces of fluid remaining in the retort had a strongly acid reaction, and gave no appearance of acetic acid on the addition of chloride of iron. From twelve ounces of another portion of the same gastric fluid four ounces of fluid were distilled over by the heat of the water-bath, which presented the same characters as those of the distilled fluid just described; but in neither instance could a trace of hydrochloric acid be detected by nitrate of silver.

"With the liquor remaining in the retort, three experiments were made to determine the possible amount of free hydrochloric acid, on the supposition that the preceding experiment did not serve as evidence to prove the impossibility of its presence. Three equal portions of the fluid were measured out, to the extent of two fluid ounces in each portion.

"1. To the first portion a solution of nitrate of silver was added until a precipitate ceased to fall; pure nitric acid was then mixed with the liquid, and the temperature raised to the boiling point. The precipitate was filtered, washed, and weighed.

"2. The second portion was evaporated to dryness, and ignited; the residue was dissolved in water and precipitated by nitrate of silver, the solution being acidulated with nitric acid and brought to the boiling point.

"3. The third portion was exactly neutralized with caustic potash,

evaporated, and ignited; the residue dissolved in water, and the solution precipitated by nitrate of silver.

"The results of these experiments are indicated in the following table in grains:—

Experiments.	Weight of Chloride of Silver.	Weight of Chlorine.	Weight of Hydrochloric Acid.
1.	7.81	1.95	2.00
2.	7.17	1.79	1.84
3.	7.97	1.99	2.04

The atomic weights here employed are Dr. Thomson's:—

Oxygen =1.
Hydrogen = .125
Chlorine =4½
Silver =13½

"The correspondence between the first and third experiments shews that in the first no organic substance had been in union with the silver, which was precipitated by chlorine alone, and that there is no evidence from these results of free muriatic acid being present. The conclusion is the reverse, since, if any free muriatic acid had been neutralized by the potash, the third experiment ought to have given an inferior quantity of chloride of silver, because the sal-ammoniac ought to have been sublimed. The potash which was added, I conceive, in the third experiment, united with an organic acid: the salt formed was decomposed by the incineration, and the potash united to the chlorine previously in union with ammonia; for that sal-ammoniac or a volatile muriate was present is proved by the second result.

"It is well known that Dr. Prout, by similar experiments, drew the conclusion, that free hydrochloric acid was present in the stomach. That distinguished chemist, however, omitted the first experiment which I have described. Indeed, he could not have made it successfully under the circumstances in which he operated, because the gastric juice in his experiments was not exposed to a heat that could coagulate and separate the albuminous matters, which would then have combined with the oxide of silver, and have complicated the result. In the gastric juice employed in the preceding researches, however, nothing was present but soluble starch or dextrin and sugar, which formed obviously no compounds

with silver, insoluble in boiling nitric acid. It is possible, therefore, in the experiments of Dr. Prout, who determined the total amount of chlorine in the gastric fluid by supersaturating with potash, igniting and precipitating with nitrate of silver, that he had formed cyanide of potassium, which would precipitate cyanide of silver along with the chloride, unless the precaution were taken not merely to *add* nitric acid, but to *boil* the solution after the addition of the acid, since cyanide of silver is insoluble, or at least not wholly decomposed by cold nitric acid. I offer this explanation, originally proposed by Leuret and Lassaigne, because, from my knowledge of Dr. Prout, I am quite certain his experiments were most accurately made. Indeed, the testimony of all succeeding experimenters who have obtained the same results is sufficient to establish his accuracy without the addition of any confirmation on my part. It is even possible that, in cases where the food is different, the acid may be of the nature described by Dr. Prout.

"The experiments which have been detailed seem to demonstrate that no free hydrochloric acid existed in the stomach of the animal under the circumstances described, since no acid could be distilled over at a temperature greatly above that at which this acid boils when sufficiently concentrated, while the fluid in the retort became more intensely acid in proportion as the distillation proceeded. A portion of the liquid from the retort was evaporated to dryness, and heated to a temperature exceeding 300° without giving out acid fumes; the residue was digested in water, and still retained an acid reaction. The solution of this residue was easily saturated by carbonate of lime, and was not precipitated by chloride of calcium, indicating the absence of biphosphate of lime (contrary to the views of Blondlot) and likewise of free sulphuric acid.

"In another experiment the gastric juice was evaporated to dryness in the water-bath, and treated with alcohol and oxide of zinc with the necessary precautions: prismatic crystals were obtained corresponding with lactate of zinc, but in too minute quantity to admit of analysis, the only demonstrative argument. The preceding experiments appear to shew, however, that the free acid of the stomach, in the digestion of vegetable matter, at least, of all the known acids, alone corresponds with the lactic. To determine the nature of the volatile acid, which, however, appears to be

present always in minute quantity, a portion of gastric fluid was distilled, and the product was obtained in three distinct receivers. Their characters, as determined by infusion of litmus, were as follow:—

	Infusion of litmus.
1st product of distillation amounted to	1 oz., bright-red colour.
2d ,, ...	1½ oz., paler than preceding.
3d ,, ...	1 oz., slight red colour.

"From these observations, it would therefore appear that the greatest amount of volatile acid was carried over at first, and that as the distillation proceeded its amount in the retort gradually diminished, indicating that the acidity was not due to the decomposition of lactic acid or its eduction by the vapour, but rather to the presence of acetic acid. The quantity present was, however, trifling, since the distilled product of a large amount of gastric fluid could never be detected in a state of effervescence on the addition of carbonate of soda.

"*Dextrin and Soluble Starch found in the Stomach in the Digestion of Starch.*—I have already stated, in a previous part of this paper, that I was unable to detect any traces of starch in the serum of the blood; it was therefore necessary to return to the stomach, and to observe the chemical changes to which the starch was subjected in that viscus. When an animal is fed on porridge, if water be added to the contents of the stomach, the mixture well-stirred and then allowed to stand at rest, the supernatant liquor produces a blue colour with tincture of iodine; but if the liquid be filtered, the colour obtained by mixing the solution of iodine with the filtered liquor is red, indicative of the presence of dextrin, or one of the varieties of soluble starch. I have sometimes found, however, that starch has existed in solution in the gastric fluid even when neither a blue nor a red colour was indicated by iodine. This substance I have isolated by boiling the gastric fluid in order to coagulate the albumen, evaporating to dryness in the water-bath, and then removing the sugar and oil by means of alcohol. The substance thus obtained gave no decided indications with tincture of iodine previous to isolation when dissolved in water, and therefore corresponds with that variety of soluble starch which has frequently been described by chemical writers. It appeared a

point of some importance to ascertain whether the transition of starch into dextrin takes place at once in the stomach, or whether the change commences before the food is swallowed. I accordingly prepared a quantity of porridge by boiling it for upwards of half an hour with distilled water, and on filtering it I obtained distinct evidence of the presence of dextrin in the filtered liquid. It may perhaps, therefore, be legitimate to infer that one of the important purposes to be acquired by cooking starch is to facilitate its conversion into soluble dextrin, and that other form of soluble starch already described; and hence the importance of the boiling being continued for a considerable space of time, when some of the harder species of amylaceous food, as rice, sago, tapioca, are used as articles of diet, and especially when they are administered to the delicate stomachs of the sick.

"The soluble starch was separated in the manner already detailed, and was found to possess the following constitution when subjected to organic analysis:—

7.29	grains	gave	9.86 CO_2
7.11	,,	,,	9.54 CO_2
13.93	,,	,,	7.97 HO
7.29	,,	,,	4.05 HO
7.11	,,	,,	4.03 HO

"The result of these analyses per cent. is as follows:—

	1st.	2d.	3d.
Carbon.....		36.88	36.59
Hydrogen.....	6.31	6.17	6.29
Oxygen.....		56.95	57.12

"This composition does not agree with that of starch, except with wheat starch, in the carbon before that substance has been dried; but, according to the analyses of Prout, the hydrogen in wheat starch is greater in amount than in the present case. The carbon in the substance under consideration agrees with that of sugar of starch, but the hydrogen is much inferior; and the three experiments detailed agree so closely in reference to the hydrogen, that there can be little doubt of the accuracy of the results, more especially as the last analysis was made with oxide of copper and chlorate of potash, and the matter subjected to analysis appeared to be completely burned. The substance appears to have possessed some intermediate characters between those of sugar and starch." *Philosophical Magazine.*

On the Advantage of Reducing the Food of Animals before giving it.

By A. Gyde.

Two horses in good health, in daily work, and as nearly as possible equal in size and age, were selected for the experiment. They were each allowed 5 lbs. of oats (42 lbs. per bushel), and a sufficiency of good hay, of which they consumed about 17 lbs. per diem each horse. The only difference in the feeding consisted in one horse having the oats thoroughly crushed, and the other being allowed the oats uncrushed. On the fourth day of the above mode of feeding the solid excrements of each horse were examined. 100 parts of the dung from the horse fed on crushed oats were found to be deprived of all the nutritious matter contained in the food, and to consist of woody fibre, mixed with the animal secretions and some salts; while 100 parts of the dung from the horse fed on uncrushed oats were found to contain 1·4 per cent. of nutritive matter, consisting of starch and gluten, which had not been acted on by the stomach, mixed with the ordinary constituents of the solid excrements of the animal—this arising from the inability of the horse to perform perfect mastication, and must vary with circumstances, such as age and rapidity of feeding. The same horses were then fed with cut and uncut food, consisting of hay cut into chaff, and hay uncut. At the expiration of the third day the excrements were examined, but no chemical difference in their composition was detected: the food in both instances was found to be equally exhausted of its nutritive matter. The shorter period occupied by the horse in filling its stomach, and consequently greater amount of rest obtained, and the means of mixing food and preventing waste by cutting it into chaff, require no observation from me, but will be material points in this mode of feeding.

Agricultural Gazette.

A New Species of Calculus found in the Kidneys and Ureters of a Bitch.

By M. Lassaigne, *H.A.V.M.A.*

The author of this memoir published in the "Journal de Chimie Médicale for 1828, a detail of the analyses of various urinary concretions occurring in the dog. He shewed that many of these were analogous in composition to those found in the human bladder; and inferred from thence a manifest conformity as regards the different functions of man and certain of the lower animals of similar organization. The remarkable feature in the present research is, that the calculus consisted of two organic principles, one belonging exclusively to the products of the renal or urinary secretion, the other only met with heretofore as a secretion of the liver. He has, therefore, very properly called it *urino-biliary* calculus. This fact, which seems unique in the history of concretions, merits the attention both of the medical practitioner and of the physiologist.

The animal which formed the subject of this observation was a bitch of large size, a sort of bull mastiff, which died in the hospital of the school at Alfort, from dropsy.

The cadaveric inspection was made by M. Prudhomme, who discovered in the kidneys, the ureters, and the bladder, a considerable number of small calculi, very irregular in shape, of a beautiful grass-green colour. Among other changes, it was remarked that the renal substance presented a faint yellowish tint: the liver contained in its texture little whitish granulations of phosphate of lime, and small well-defined cysts, of the bigness of a pea, filled with a soft matter of a greyish green, formed of half coagulated albumen, mixed with a little of the green principle of the bile, phosphate and carbonate of lime.

A portion of these calculi was carefully dried and pulverized; the powder emitted a slight urinous smell, and had a marked greenish yellow hue. In this comminuted state even boiling alcohol did not seem to act sensibly as a solvent, although the liquid assumed a pale green colour. Sulphuric ether afforded the same result. In order to determine the nature of the substance held in

solution by these liquids, they were evaporated after being mixed. The residue after evaporation was a minute quantity of resinous like matter, of a fine green colour, insoluble in water, and which, by contact with dilute nitric acid, immediately changed colour; it became bluish, next violet, and lastly bright rose, by prolonged action at the ordinary temperature: this last colour finally changed to orange yellow. All these effects of successive colouration induced by this acid denote positively that the small quantity of green matter taken up by the boiling alcohol was the green substance of the bile, or *chole-chroïne*.

The feeble action exercised by alcohol on these calculi led to the substitution of a solution of caustic potash; this liquid, even in the cold, dissolved almost in totality the mass, and disengaged at the same time a strong odour of ammonia. The alkaline solution had a fine greenish yellow hue: saturation with acids occasioned a copious flocculent precipitate, of a greenish white, which, left to itself, was found reduced after the lapse of some hours to a greenish crystalline powder, composed of small flattened needles arranged in crosses. Microscopic examination having led to the belief that this was uric acid, the fact was verified by treating it along with nitric acid at a gentle heat, and evaporating to dryness; whereupon the characteristic carmine tint of muroxide was obtained.

The uric acid, which the potash menstruum had dissolved, was combined in these calculi with ammonia, as shewn by its disengagement above. It may be noticed that this acid, which in a state of purity is white, was here evidently combined with a certain quantity of the green colouring matter which neither *water* nor boiling *alcohol* was able to remove. After several attempts, however, it was completely separated by re-dissolving in a minimum of the potash solution, and adding to the liquor eight or nine times its volume of alcohol, at a temperature of 190° Fahr. This caused directly an abundant white flocculent precipitate of super-urate of potash, there being held in solution the green colouring matter combined with potash. By means of filtration and saturation with weak acetic acid, this matter was entirely withdrawn from the uric acid.

The above analysis, carefully repeated on a given portion of

these calculi, yielded the following results, abstractedly of the order in which the principles are combined: uric acid 62·5, green matter of the bile 12·1, ammonia 25·4, traces of phosphate of lime and carbonate of soda, in 100 parts; or, taking the order in which the principles ought to be distributed, urate of ammonia 87·9, green matter of the bile 12·1, phosphate of lime a trace, in 100 parts.

These calculi, then, are not only remarkable for having uric acid as a constituent, a thing of rare occurrence in the canine race, but for having it associated with a principle peculiar to the hepatic secretion. This mixed composition would seem to favour the idea that in certain pathological states the urinary organs and the liver are so closely dependent upon each other, that the functions of the one might sometimes supply those of the other, as indeed certain physiological and pathognomonic phenomena tend to establish.

Medical Gazette, Feb. 7, 1845.

CONTRIBUTIONS TO VETERINARY PATHOLOGY.

By Mr. J. Purves, *V.S., Hon. E. I. C. Service.*

No. II.

Case of Choaking with Gram.

The animal was admitted into the infirmary on the evening of the 7th of January, 1838, and reported to be an uncommonly greedy feeder.

Symptoms:—A peculiar rattle in the throat—coughs, and discharges saliva from the mouth and nose when he coughs; said to have done so since twelve o'clock, when he was fed. It is now 7 P.M. I passed a probang, which brought away with it, or rather it was covered with, particles of gram when withdrawn. The probang was passed with great difficulty, and required force; the horse was also very troublesome, and injured his mouth with the balling-iron. He will not touch a drop of fluid. About half an hour after leaving the stable he vomited a quantity of gram by the nostrils, throwing it two or three yards from him. The rattle and the cough left him after the probang had been passed.

8th.—Still refuses water. Was not allowed any food all night. Ordered to be drenched with water and oil every two hours. Appears to swallow this morning pretty well.

15th.—A dreadful stench has come from the mouth and nostrils for this past week, with a discharge from the off nostril. Steamed the nostrils, and ordered liquid food, and separation from other horses.

21st.—No smell from nostrils, nor any discharge for some days past.

3.—Case of Distention of the Stomach.

This animal was discharged from the infirmary, January the 21st, apparently well (*see* preceding case), with directions that he should be fed sparingly, and have suttoo water for some time. The symptoms now present are those of gastric irritation, accompanied with a tympanic state of the bowels. Give tinct. piperis f. ʒiij, aloës ʒiij, in haustus; throw up enemata; take blood from jugular vein ℔xvj, and scald the belly.

Feb. 10*th.*—Relief has been afforded, but the vomiting has returned as before. Give two seers of suttoo as gruel daily.

15th.—Purulent discharge from the off nostril—vomiting less frequent. Separate from the other horses; diet spare, but nutritious.

20th.—Discharge less—animal's general health now apparently good, and he does not vomit. It is evident the discharge was caused by the food having passed through the nose, irritating its lining membrane. Diet more liberal.

27th.—The discharge has ceased, and the animal has improved in condition, and feeds well.

4.—Case of Inflammation of the Stomach.

Sept. 7th, 1839, 7 A.M.—Sent from the riding-school to the infirmary.

Symptoms:—Cold profuse perspiration—vomiting by the nostrils—lying down and getting up again—conjunctiva clear, and pulse not much quickened, but full. V.S. seven quarts.; gave aloës

℥vj, tinct. piper. f. ℥iij; scalded the belly severely, and threw up clysters.—9 A.M., no better—ears and legs deadly cold—perspiration still more profuse. Repeat blood-letting to the amount of six quarts.—12 Noon: appears a little better.—4 P.M. Decidedly better. The hot water has produced a marked effect on the belly—animal standing quietly.

8th.—Eats a little grass, and the urgent symptoms are no longer present. Allowed gruel, and threw up a clyster occasionally.

9th.—Much the same as yesterday; in fact, convalescent.

16th.—The skin of belly sloughing, but otherwise the animal is apparently well.

5.—Case of Indigestion.

The farrier-major reported this horse about two o'clock. When I saw him, about half past two, he was lying down and rolling—vomiting by the nostrils and mouth—offensive eructations—points of the ears and extremities very cold—conjunctival membrane not injected—mouth natural—breathing laborious—pulse full, strong, and hard, but not much quickened—belly considerably swollen—cold sweats—no trembling of muscles—pupils not dilated, but eyes glassy in appearance.

Diagnosis.—Distention of stomach from indigestion, but am afraid that it may be a case of rupture of that viscus. Gave tinct. piperis nig. f. ℥vij, sol. aloës f. ℥iv. Bled till the pulse intermitted and the animal was ready to fall. Scalded belly and threw up clysters, which brought away a large quantity of fæcal matter. When I left him (about an hour after I saw him) I believed his stomach to be ruptured; for, after the bleeding, the ears became deadly cold and the conjunctival membrane pale; but in the evening he was getting better, and the next morning was apparently well. To be fed sparing, and suttoo water given.

6.—Case of Indigestion.

Admitted 4th March, 1838, at 11 A.M.

Symptoms.—Breathing hurried and pulse slightly quickened—belly much swollen. Gave aloës ℥iv, tinct. piperis f. ℥vj; at 1 P.M., spts. etheris nitric ℥j.—3 P.M. no better. Repeat draught,

ordered in the morning.—4 P.M. threw up aloës ʒj in a clyster: after this he voided an immense quantity of wind.—6 P.M. scald belly.—10 P.M. V.S. five quarts. Despite all our efforts, the animal died during the night.

Post-mortem appearances.—Stomach highly inflamed and distended with gram—small intestines inflamed—colon filled with dry undigested food, inflamed, and very much discoloured. I attribute this horse's death to want of exercise and bad grass. A number of horses (nine) were attacked at the same time, and with exactly the same symptoms; but all these got well.

THE VETERINARY MEDICAL ASSOCIATION.

JANUARY 7, 1845.

THE Members resumed their Meetings this evening, pursuant to adjournment over the Christmas holidays.

The PRESIDENT in the Chair.

Mr. Jeffraeson presented to the Library his work on "Ophthalmia," and on the table were laid the Continental Journals for the months of November and December 1844.

CASE OF ENCYSTED PILARY TUMOUR.

By Mr. R. READ, *M.R.C.V.S.*

My dear Sirs, *Crediton, December* 28, 1844.

I HAVE sent you an *encysted pilary tumour*, and will endeavour to give you my opinion of the formation of these growths, more particularly since cases of the kind must be rare at the College.

This tumour was taken out, about a week since, from the shoulder of a cow, embedded in the centre of the muscle of the shoulder, and leaving, when removed, a corresponding concavity. It had no connexion with the external skin. I have not disturbed its contents, as I have had two or three opportunities of examining others so as to ascertain their nature. The hair in these cysts is white, and there is the same detachment of the hair annually as

takes place from the skin externally. Mixed with the hair in the cyst is also the same kind of sebaceous matter as externally secreted—the dandriff, or exfoliation of the epithelium of the skin. You will also have the successive moultings or periodically detached portions; and the hair is so very singularly conglobated that, if you carefully untwist the mass, and then take the aggregate number of the pilary exfoliations and divide by the number 2, you will have nearly the number of years the cyst has been forming. I have seen them from the size of a walnut to the present one. In the very small ones it is easy to calculate their age, but in this one you will have some trouble.

Reasoning from analogy, it is probable that this tumour would have attained a very considerable size had not the animal been slaughtered; since every year would have increased its volume, as the hair could not have been expelled or absorbed; yet there is no doubt but that some of the liquids of the cyst might have been taken up by the absorbents. It is singular, also, that the hair in those cysts conglobates, similar to those hair-balls or Ægagropilies which are found in the stomachs of ruminants.

I trust this subject will prove of sufficient interest to appear in THE VETERINARY RECORD.

I am, your's truly.

The President.—All the tumours of this nature which I have examined, I have found to exist either in the cellular interstices of the muscles, or in the subcutaneous cellular membrane; and I have met with many of them not only in the ox, but also in the dog, horse, and other animals. The manner of their formation has not, I think, up to the present time, been satisfactorily explained. Some have imagined the hair to be first forced among the softer structures by external violence, and afterwards to be there confined by the healing of the orifice through which they entered. Such an hypothesis, however, shews but little ingenuity of thought, and it is open to so many and such obvious objections, that it cannot even claim a moment's consideration. Mr. Read's theory I am inclined to view as correct; and that I should do so is not, perhaps, surprising, when our Secretary can witness for me that I have for years entertained similar opinions concerning the de-

velopment of these singular growths. In this case, as in the one I noticed at a previous meeting, the sac has taken on an integumental character, and from its inner surface the hair is seen to be growing as from the true skin. From this, as from other parts, the hair would, we have every reason to conclude, be subject to the shedding process; and thus its accumulation in the sac is rendered easy of explanation, because from its nature hair is incapable of being absorbed, and very resistant of ordinary decomposing influences. Mr. Read's opinions in all respects deserve attention; but he says that the hair of pilary tumours is always white—a remark which does not exactly accord with my observations, I having found it rather pale-coloured than altogether devoid of tint, though in every case thin and weak. Mr. Read also ingeniously supposes that the shedding within the sac regularly takes place with the moulting of the external coat, and thus he states with confidence that the length of time which one of these pilary tumours may have existed can be easily ascertained by observing the different layers of deposit. I, however, cannot in the present instance perceive the arrangement to which he refers; nor have I ever remarked it in other tumours of this character which I have examined. I therefore should require further proof before I fully acquiesced in this view. The coat of an animal is at particular seasons shed and reproduced, and while it is obvious that the hair is also shed from the inner surface of these sacs, yet I think we are not warranted in assuming that this process takes place in the same order as from the true skin; for although these abnormal structures simulate integument, yet they essentially differ from it in being removed from all the influences and exciting agents to which the outer covering of the body is exposed. Nevertheless such speculations deserve attention, and by the investigation which they challenge are of benefit to science.

[We believe that Mr. Read is the first English veterinarian who has placed on record an instance of these singular growths, and the continental journals are almost silent respecting them. Conversing with Dr. Goodfellow about their formation, he kindly offered to institute an examination of the one we were put in possession of, the result of which is as follows:—]

London Fever Hospital, 10th May, 1845.

My dear Sir,—I have carefully examined the hairs contained in the tumour, a part of which you were so good as to send me, as well as those that were still attached to the wall of the cyst. I find them to possess the usual anatomical constituents of the normal hair belonging to one of the order of animals from which the tumour was removed.

The attached extremity is of a bulbous form, and is lodged in a membranous capsule or follicle. From its attachment to the cyst it gradually diminishes in size, and terminates at its free extremity in a mere point. Along the centre of the hair is a tube which extends from near the bulb to within a short distance of the free extremity, its diameter being greatest near the bulb, and gradually becoming less in its course towards the apex. The wall of the tube is structureless, except at a short distance from the bulbous enlargement, where may be observed a few longitudinal and very delicate creasings, and it is covered by irregular quadrilateral scales, which encircle the hair in a series of rows, extending from the root to the apex; the scales being largest near the former, and diminishing in a ratio with that of the other constituents of the hair as they proceed towards the latter.

With respect to the Structure of the Cyst itself.—On its free or internal surface there is a layer of epithelium, the flattened cells of which have a polygonal form. This layer of epithelium rests upon a transparent homogeneous membrane, which appears analogous to, and closely resembles the basement layer of serous and mucous membranes. Attached to the layer immediately external to it, the principal thickness of the wall of the cyst chiefly, if not entirely, consists of a series of layers of the white fibrous element; for on submitting a thin layer of it to the influence of acetic acid, the beautiful wavy and longitudinal fibrous appearance was entirely destroyed. No other structure could be detected. The tissue by which this cyst was attached to the surrounding parts, I found to possess all the usual characters of true filamentous tissue.

The contents of the tumour appear to be of a fatty nature. When submitted to the microscope, a crystalline mass may be observed, resembling the flakes of stearine thrown down from a

solution of this substance in boiling alcohol on cooling, except that it has a yellowish colour. Perhaps a chemical analysis would lead to some interesting result as to its composition.

Regretting that time will not allow me to enter more fully into this subject, I remain, my dear Sir,

Your's very truly,

W. J. T. Morton, Esq. S. J. Goodfellow.

A Case of Obstruction at the Base of the Cœcum caused by a large Carcinomatous Growth.

The President.—Most of the members present are aware that the morbid parts before me were taken from a horse which was destroyed yesterday in this infirmary. The case is one possessing much interest, and well deserving your attention. The horse was thirty years of age. He had been the property of his last owner fourteen years, during the whole of which period he had frequently come under my observation, as he was regularly shod at the College, and I knew him to be a remarkably healthy animal up to within about six months, when he was observed to fall off in condition, though his appetite still continued to be good. He was sent to the College to be treated, simply on account of loss of condition. As no symptoms of acute disease could be detected, it was suspected that some irregularity of the molar teeth might interfere with mastication. The most careful examination of the mouth, however, developed nothing confirmatory of this view. The loss of condition was therefore attributed to a want of tone in the organs of digestion, consequent upon extreme old age. His corn was ordered to be bruised, and the food otherwise prepared, and such medical treatment was adopted as seemed likely to invigorate the system, and, when the animal left the infirmary, he was in some degree improved. From that time up to a day or two before he was destroyed the horse continued at work, and it was remarked that only within the last three or four months had the signs of general decay become more conspicuous. The animal then rapidly fell off in condition, presenting, nevertheless, no symptoms of acute

suffering, nor loss of appetite, save only, as the coachman states, that three or four days before he was brought to the College for the last time, he observed that during the night the animal was restless, pawed, and exhibited some general symptoms of abdominal pain, which, however, quickly passed off.

On his admission to the infirmary, the pulse was by no means accelerated, nor deficient in tone; yet I could not but be struck by the emaciated aspect he presented as contrasted with the condition in which I had so long known him. Taking, therefore, into consideration the extreme age of the animal, conjoined with the rapid loss of flesh he had of late exhibited, I felt convinced that there was no hope of restoration by any mode of treatment which could be adopted, and I advised the owner to have him destroyed. This advice was followed, and those of you who were present at the post-mortem examination saw that the viscera generally exhibited no signs of inflammatory action, but presented rather a blanched appearance than otherwise; and the lungs, as is usual in old animals, were atrophied. Had I been contented with a casual inspection of the parts, nothing was sufficiently marked to have attracted my attention; but feeling interested in the case, a more minute investigation enabled me to discern some slight indications of subacute inflammation, with fluid effused beneath the peritoneum upon the surface of the cœcum, and, on opening this intestine, its coats were found to be much thickened, and the body of the gut filled with thick, dark, grumous matter, having a fetid odour. This, certainly, cannot have been derived from the ingesta, for neither the husk of the oat nor the undigested particles of hay, which characterize the fæces of the horse, can be detected amongst it. Its presence, therefore, must be attributed to a morbid secretion taking place from the inner surface of the cœcum itself, which by long retention had thus become fetid and partially inspissated. Seeking for the cause which had imprisoned and induced this extraordinary change in the natural secretion of the intestine, I traced the gut throughout its course, and at its base I perceived a large carcinomatous growth, which had produced such constriction of the tube, that it was only with difficulty a single finger could be forced through what was once a channel sufficiently capacious to have received the head of an ordinary sized man. Posterior

to this growth is the cœcum caput coli, from which the colon originates, and in which the ileum terminates; and on the mucous lining membrane of these parts we observe no sign of inflammation: indeed, the interior of this isolated portion of the cœcum exhibits no symptom whatever of disease.

Now as the cul de sac we term the cœcum caput coli is intermediate between the ileum and the colon, and as the communication with the body of the cœcum was by this morbid growth cut off, the ingesta must have passed, not through the body of the cœcum, but from the ileum almost directly into the colon. The cœcum had thus been thrown entirely out of use, and whatever its function may be, it had not been performed for some time; since the nature of the disease convinces me it must have existed for a longer period even than three months. How clearly, then, does this case shew the extent to which chronic disease may go without the manifestation of any acute symptoms! In the very neighbourhood of a malignant tumour of such magnitude as to cause all but strangulation of one of the largest intestines, the parts appear not in the least affected. The ingesta taken from the cœcum caput coli seems of its natural character. I inquired of the coachman if the dung of the animal had ever been discoloured, or if any of this grumous matter had been voided with the fæces, and his reply was, that nothing of the kind had been observed by him. It is impossible to ascertain for how long a time this altered secretion has been accumulating; but the fact of its having been pent up in this large and peculiarly constructed part of the alimentary canal, and necessarily, as it were, cut off from the digestive system, awakens reflections on the use of this intestine.

The size, the position, and the peculiarity of the connexions of the cœcum in the horse throw a mystery around its function. In some animals this gut is small—in many of the carnivora so small as to become a mere pouch-like appendix to the common canal. Some physiologists have asserted that it was formed to receive the fluids drank by the animal, and in accordance with this opinion it has been very generally called the "water-gut." Looking, however, from opinions to facts, we see that the sheep and the ox both ruminate; but the first animal, which drinks less than the last named, has the largest cœcum; and the hare, that

seldom partakes of fluids, has the same intestine of extraordinary length and magnitude; while the dog, whose thirst often induces him to drink largely, has an extremely small cœcum.

In the case now under consideration, nothing but the semifluid matter beforementioned was found in this gut; yet the animal, although deprived by disease of the use of this portion of the intestines, fed and drank well, and shewed no signs whatever of approaching death. I therefore infer from this, that the water he drank did not pass into the cœcum, and I certainly think that the opinion which holds it to be the especial receptacle of fluids stands in need of proof for substantiation. Liquids, in common with other solid and more nutrient matters, doubtless in the normal state of parts pass through this intestine, but this portion of the canal I cannot consider as alone formed for the reception and retention of fluids. The cœcum exists as a cavity or pouch developed at the termination of the small intestines, through which the ingesta is known to pass with great rapidity, and at the commencement of the large ones, where it is retained for some time, thus dividing the alimentary canal into two portions, each having a separate and distinct action on the food taken in.

I now proceed to notice another peculiarity which the case presents, and which is worthy of even more than a passing remark. The horse was a confirmed crib-biter. I have opened the bodies of hundreds of horses which during life manifested this habit, but I never met with a case that did not shew some lesion in some part of the alimentary canal, and this has generally been in the stomach. My respected colleague, Mr. Sewell is, I believe, of opinion that crib-biting always arises from ulceration of the stomach. I am rather inclined to regard it as arising from functional derangement of the digestive organs in the first instance, proceeding to structural disease as the habit becomes more confirmed. In this case the stomach presented an unhealthy appearance, and its parietes were irregularly developed, being more dense in some parts than in others. The œsophagus, likewise, was dilated in places, and where dilated much attenuated in its coats. This atrophy of the œsophagus is the cause which renders crib-biters so liable to be choaked, from the food becoming lodged there. And since crib-biting is thus found to be associated with disease, and, moreover, exposes the animal addicted to it to danger, I cannot view it otherwise than unsoundness.

On the Use of the Solution of Indian Rubber for Open Joints.

By Mr. H. King.

It is unnecessary I should enlarge upon the difficulty experienced in treating open joints, this arising from the almost impossibility of applying bandages to the injured parts so as to confine the suitable remedies. Any agent, therefore, that will aid our endeavours in this direction must be of value; and my brother, it is well known to most present, has used a solution of Indian rubber in these cases with marked success. He has, also, derived considerable benefit from its application to parts where pressure was desirable, and where it was difficult to retain a bandage, or to give pressure by any of the ordinary means. A case that has lately occurred is, I think, worthy of being brought before the notice of this Association.

A grey mare was purchased by a gentleman of Edinburgh for a large sum, and, with other horses, was put into the train on her journey from Melton Mowbray to Newcastle. When she arrived at the latter place, and was being taken from the box, the animal's foot slipped through the boards, and a wound upon the hock, opposite to the cuboid bone, was the consequence. My brother's attendance was soon after requested. He found synovia escaping from the joint; and perceiving it was useless to attempt bandaging the part in the ordinary way, he at once had recourse to the solution of Indian rubber, which he applied in the manner he has described in his recent communication to The Veterinary Record; with this he conjoined the usual treatment, giving the animal physic and using local counter-irritation. The Indian rubber, as is invariably the case with this agent, adhered firmly; and for the first six days the mare appeared to be going on remarkably well. However, on visiting her on the seventh day, the patient for the first time exhibited indications of pain, although the hock was not much swollen. The means adopted gave no relief, and the animal continued to get worse, until at length she could not put her foot to the ground. The owner, therefore, determined to sell her for whatever price she in her deplorable condition would fetch. My brother, unwilling the case should pass into other hands, and

anxious to test the full effect of the agent he had employed, became the purchaser; and the mare was accordingly sent to his stables.

As counter-irritation in all its forms had been previously tried, suspicions were now entertained that a foreign agent might be lodged within the wound; for instance, a splinter might have entered at the time of the accident. Impressed with this idea, the wound was again opened, but no foreign body could be discovered: all the diseased portions were carefully dissected out, the edges of the wound brought together, and, over all, the Indian rubber solution was once more applied. Five or six days after the operation the mare for the first time during four or five weeks, put her foot to the ground, and from that period she continued, day by day, to improve, and is now at grass perfectly sound. All further comment on the case is superfluous.

JANUARY 16, 1845.

The PRESIDENT in the Chair.

Messrs. Dunsford, Hooper, and Wright, students, were elected Members.

On the table several morbid specimens were laid.

CASE OF CARCINOMATOUS TUMOURS WITHIN THE NASAL CAVITIES OF A MARE.

By Mr. F. M. CASE, *M.R.C.V.S.*

Dear Sir, *Huntingdon, January* 5, 1845.

I HAVE forwarded the head of a mare, respecting which I was requested to give my opinion a few days since. A discharge of blood had taken place from her nostrils for some time past, and on examination I perceived them to be filled with malignant tumours, but whether of the nature of polypi I am not prepared to say: I rather think they are not. But, whatever be their nature, they interrupted, and that very considerably, the passage of the air in and out of the lungs; indeed, so much so, that the animal, when

feeding, would frequently turn round and put her head out of the stable door for several minutes, so as to respire more freely. As she was rapidly losing flesh, I at once recommended the owner to have her destroyed, which was done yesterday.

Mr. M. informs me, that he bought the animal when a foal, and she did well till within these last eight or nine months, when her breathing appeared to be slightly affected; but as she was apparently in good health, and kept up her condition, being not fat, but in good working order, no notice was taken of this; although occasionally, when she was drawing a heavy load, there would be a small quantity of blood trickle from the nostrils, but not sufficient to awaken any apprehensions. She was about nine years old, and had a foal last summer, when she was turned to grass for several months; and it was when she came up in the autumn that the diseased state of the nostrils was discovered. The foal was immediately taken away, and she was put into a place by herself. She was now fast losing flesh, and the breathing had become very considerably impeded. It was in consequence of this sudden change that I was requested to see her: the result I have told you.

Mr. M. can form no idea as to the cause of the disease, she never having received any local injury that he is aware of. The above is all the information I have been able to obtain respecting the case, and I regret it is so meagre.

Will you give me your opinion as to whether there is any probability of the foal becoming affected?

I am, dear Sir,

To Professor Spooner. Your's truly.

The President remarked, that he had seen some few cases of peduncular polypi in the nostrils of the horse, and he had recently laid before the Association some interesting specimens of malignant tumours occupying the frontal and maxillary sinuses; but the morbid growths now upon the table were altogether different from these, both with regard to their nature and situation, and such as he had never before witnessed. There were several tumours, evidently of a carcinomatous nature, occupying nearly the whole of the inferior area of both nostrils, attached to the septum and alæ nasi and inferior turbinated bones, some of which were scirrhous,

while others presented the ulcerous stage of carcinoma. The surrounding veins were very turgescent, and in some parts the ravages of the ulcerative process had extended even through their coats, thereby occasioning the hæmorrhage, described by Mr. Case, and giving rise to the large clots of sanguineous coaguli which were still adherent to the ragged edges of the ulcers. The Schneiderian membrane presented an inflammatory blush for a short distance upwards; but this gradually disappeared, leaving the upper chambers of the nose, together with the frontal sinuses, in a perfectly healthy state. The inter-maxillary lymphatic glands were somewhat enlarged, and evidenced a slightly increased vascularity; their cellular connexions, however, were normal, being quite free, and loose in their attachments to the surrounding tissues. It appeared from Mr. Case's statement, that the mare had, for several months past, shewn slight symptoms of impeded respiration, with occasional hæmorrhage from the nostrils; but that, until recently, she had not fallen off in condition, and her general health was unimpaired, when, somewhat suddenly, the symptoms became more aggravated, and the animal rapidly fell into a state of emaciation. This change was evidently occasioned by the disease assuming a more malignant type, the more frequent recurrence of hæmorrhage, and the constant state of irritation kept up by the increased impediment to the respiratory function. Remedial measures had been too long deferred; and he had no hesitation in stating that, when Mr. Case was first professionally consulted, the disease had extended beyond all hope of cure; he, therefore, commended him for his decision in at once recommending his employer to have the mare destroyed. He, however, had no doubt that this formidable malady had its origin in a simple local injury; and, in all probability, if the timely aid of the veterinary surgeon had been called in, it would have readily yielded to a judicious mode of treatment. This was a case which might have been mistaken for glanders, as, indeed, many *local* diseases attended with a discharge from the nostrils had been; but an inquiry into its history, and a careful observance of the symptoms, at once prove it to have been altogether distinct from that contagious disorder.

In answer to Mr. Case's inquiry, "Whether there is any probability of the foal becoming affected," he should say—No.

The Treasurer said he perfectly agreed with the President as to the nature of the disease; and he should not have risen to make any observation on the case had he not been struck by the remark, that it might have been mistaken for one of glanders. He had once been consulted upon a case thought to be glanders, and where hæmorrhage from the nostrils was a prominent symptom. In that instance there was observable a bulging at the inferior part of the frontal bones, more especially on the right side; and the application of pressure produced pain accompanied with a slight discharge of blood from the nostrils. He had no difficulty in deciding that the disease was not of the nature supposed, and gave it as his opinion that the bony structures of the nasal cavities were affected, probably the ethmoidal cells and superior turbinated bones. The post-mortem examination corroborated this opinion: the ethmoidal cells were found to be greatly increased in size, the membrane thickened and abnormally vascular, associated with accumulations of blood in a semi-coagulated state; while the turbinated bones were partially absorbed. Now, it is not unusual for glanders, when the ulcerative process goes on rapidly, to be accompanied with a discharge of blood from the nostrils; hence the cause of the mistake made in this instance; but which nevertheless, possesses some interest, as shewing that one of the symptoms of that most dreaded disease may spring from very different causes. When polypi are present, they seldom are found to occupy both nasal chambers, and the occasional bleeding will therefore be found to come only from that cavity which is affected. The tumours in the case before us are of a fleshy structure, and probably owe their origin to injury: they appear to have been developed internally to the Schneiderian membrane, which ultimately by their pressure becoming absorbed, hæmorrhage, from the denuded and vascular surface thus exposed, was the natural result.

A Case of Fractured Pelvis.

The President.—I have before me the os innominatum and femur of a mare which was yesterday destroyed in this infirmary. The history of the case is briefly this:—Three months ago, while in the shafts of an ice-cart, the mare slipped on the wood pavement, but regained her footing without falling, and immediately became

so lame that she was unable to walk home: she was, consequently, taken to the nearest stable, and a farrier was called in to treat her, who pronounced the hock to be the seat of injury, and he blistered the whole of the lower part of the limb, promising very confidently that he would "soon make all right again." The mare, however, after some few weeks had elapsed, not getting much better, the owner became dissatisfied with his treatment, and, being a subscriber to the College, he sent the animal here for our inspection and opinion. On examining the case, I was struck by the difference of bulk exhibited in the two haunches. After long continued lameness, however, no matter where the seat, this difference is often observable, resulting from the muscles being thrown out of use and becoming atrophied; but in this case the wasting was of greater extent than the duration of the lameness, since the accident, accounted for. The ileum was also considerably depressed, and opposite the acetabulum joint there was a large cicatrix of long standing. I was further enabled by manipulation to discover the existence of a fracture of the os innominatum; but I gave it as my decided opinion, that the fracture which had recently been produced was not the primary or only injury to which the parts had been subjected. I concluded that the bone had been previously broken and subsequently reunited; and that the mare, when she slipped on the wood pavement, had again torn the callus asunder by the violence of muscular action. The vastus internus muscle was also in an atrophied state, and the patella was partially luxated upwards and outwards when the limb was put in action, thus hindering its extension under the body. The gentleman to whom the animal belonged informed me that when he bought the mare he observed no difference in her haunches, nor did he detect any impediment in her gait; but that amounts to nothing, as there are hundreds of horses now working and considered sound which have had their ileums fractured. Considering the advanced age and little value of the mare, it appeared to me that the case was not one which warranted treatment, and by my advice the animal was destroyed.

The post-mortem examination proves the judgment I formed was correct. The neck of the ileum is fractured, and around the seat of the fracture there is an accumulation of a semi-cartilaginous substance; but the surfaces of the bone, though in apposition, ap-

pear to have had no tendency to unite by the ossific process; on the contrary, they have become smooth, and taken on the character somewhat of a false joint. The muscles surrounding the acetabulum are lacerated and atrophied, while within the joint there exists but little synovia, and the head of the femur is partially denuded of cartilage. The patella can be easily passed over the outer condyle of the femur, and the synovia is here rather superabundant than otherwise. The vastus internus muscle having suffered injury explains the luxation of the patella during life, as the vastus externus muscle was acting unopposed.

This case is interesting, as it proves that after fracture of a large and important bone a horse may be a serviceable animal; but it also shews that the deformity which may remain is liable to predispose to a second fracture, even after perfect union has taken place.

Mr. Gregory remarked, that he had seen several cases of fracture of the ileum which had done well. Only last summer, a coach-horse fell and sustained a fracture of this kind. Little other treatment than that required to allay the inflammatory symptoms was adopted, and the animal was now at work.

Mr. Robb related the case of a horse sold by him, which he afterwards saw, and perceived to be "down in the hip." The owner assured him the animal had not received any injury, nor had ever betrayed lameness during the change of structure, which had been very gradual.

Resumed Debate on Influenza in Horses.

[Extract from a Letter from Mr. Fishwick, V.S.]

Oldham, January 10th, 1845.

* * * * * * * * *

Influenza has been very prevalent in this locality. When called in, I always administer a laxative, whether the bowels be relaxed or otherwise: this is followed by a febrifuge draught, containing the spt. etheris nitrici, which, if need be, is repeated every night and morning during the febrile stage. In a few instances, when I suspected there was some derangement of the

liver, I have given small doses of calomel, and with great benefit. As it respects the giving of aloes, I have had above a hundred cases, and in every one I have not given less than from ʒij to ʒiij of this drug. I have had them under treatment in every stage, and I depend principally upon getting the bowels gently relaxed by this agent. I incline to the opinion, that, if I had not given aloes, I should not have been so fortunate as I have, for I have lost only three cases. I place great confidence also in passing a long seton in the course of the trachea; and where I have not been called in until late, when the disease has put on the appearance of congestion, I have at once blistered the throat and larynx, and well stimulated the extremities.

* * * * * * * *

Mr. Ernes.—Oftentimes it is difficult to distinguish between attacks of influenza and pneumonia, or to determine whether the lungs are involved, and a complication of disease exists. I have seen instances of influenza which have exhibited many of the symptoms of pneumonia, and have also treated cases of influenza that have terminated in pneumonia. I am still of opinion that aloes in this disease is a dangerous drug, and that rowels when introduced are frequently attended with sloughing. While stating this, it must not be forgotten by you, that my remarks more especially apply to the heavier breed of horses. The cart-horse is an animal which, having no representative among the wild beasts of his kind, we may regard as the product of artificial treatment. The natural light and active body of the original horse has in him been by artificial means rendered ponderous and heavy. There is in his frame an excess of cellular tissue—a tendency to fatten, and a general want of action. Among my patients, there are some whose weight cannot be estimated at less than a ton. I attach importance to weight, because animals of such enormous and unnatural size cannot endure depletion; the system being, as it were, burdened with the sustenance of an overgrown body. The quantity of food such horses necessarily consume, added to the condition in which they are kept, render them sensitive to causes that might but little affect an animal of a lighter description. Such horses exist in a wholly artificial state, and their condition is only kept up by constant stimulants and exercise. Many are out eighteen hours in the day, and some never lie down when in the

stable. Often such horses are destroyed by the slightest illness: not because of the disease or the importance of the parts affected, but because the powers of life cannot be maintained when stimulants and exercise are upon compulsion withheld, their systems being then unable to endure the smallest constitutional irritation. I feel confident that no purgative is required in such cases, and certainly no medicine of a drastic nature can with safety be exhibited during this disease, because violent and obstinate diarrhœa is frequently one of its symptoms. Again, there is in influenza great susceptibility on the part of the mucous membranes to take on morbid action; yet I would not, as some have done, assert the disease is confined to these structures. No. The cellular tissue of the body is likewise involved, and the general system so much implicated, that it is most difficult to say what particular part is more especially the seat of the malady. Pain in the hind extremities has been always present; frequently the attack is ushered in by shivering; indeed, I think closer observation would prove this to be invariably the primary symptom. There is also one symptom present which I have not observed during any other affection, namely, that after a few days only the hairs of the mane and tail loosen, and may be plucked out with the slightest force, being a proof of the debilitating effect of this disease. I have bled in some few cases; but the result was not such as to warrant me in the continuance of the practice, and I found that the period of convalescence was by depletion considerably protracted. In such cases as by the symptoms evinced there was danger to be apprehended from the lungs becoming affected, I have had recourse to revulsives, employing cantharides for that purpose. But I have frequently found the action of those agents, during influenza, to be greater than I desired, and the consequent blemish has caused me to regret their employment. Mustard, also, is too violent; for effusion and anasarca will sometimes ensue upon its use. I wish to be understood as not advocating any specific mode of treatment. I do not believe that any arbitrary plan that will meet every case can be laid down. Judgment is required in this disorder, which in different breeds of horses assumes different characters, and demands different kinds of treatment. Though there may be some agents that are dangerous, yet experience alone can determine what should be given, and

when it should be administered. On this account it is that the early attendance of the veterinary surgeon is important, and the owner who delays to seek his aid at the first appearance of the attack may with greater reason complain of his own delay than of the practitioner's want of skill should the patient be lost.

Mr. Daws.—I have observed that, during the recent prevalence of influenza, there has been fewer cases of pneumonia than usually occur at this period. I am inclined to trace the cause of the disease to some peculiar condition of the atmosphere; and, with regard to the treatment I have pursued, I will suppose a case:—I am sent for to look at a horse which the owner perceives to be ill. When I arrive I find the pulse is 90, the eyes are tumefied, and the tongue is furred. I inquire if any thing has been given to the animal, and am told the horse has had no medicine. I immediately order the patient to be removed to a loose box. I see that the legs are well bandaged and the body clothed, attending most especially to the comforts of the animal. I then administer an enema, and give a little fever medicine. The next day, should the tumefaction of the eyes have increased, I extract blood from the jugular vein, and as the febrile excitement lessens and the animal improves I throw in vegetable tonics.

Now another horse in the same stable shall be attacked. The pulse in this case may be but 46; and here I give an aperient. The action that may follow its exhibition I do not fear, as I find the disease is very manageable. I have had some hundreds of cases, and never lost one. Where I require a counter-irritant, I employ an acetous solution of capsicine, which, if not used carefully, will blister the hand that applies it.

Mr. White.—Referring to the origin of influenza, I cannot but reflect on the kind of weather we had during the last summer. In the spring which preceded it, in April last, instead of grass on the land, we saw the meadows barren, or where there was any vegetation, to speak generally it was unhealthy. The oat and barley crop was short. Seeds failed to germinate, and the hay was so deficient as often not to repay the labour expended in collecting it. Any one last summer might have foreseen the prevalence of disease of some kind, since the prospect for the stock during the winter was most gloomy. Poor food, and that deficient in quantity, joined to cold and changeable weather, may, in my opinion, be regarded as

the natural cause of this or any other disease which may, under certain conditional circumstances, break out.

Mr. Hallen.—Such causes could not affect the horses of my regiment, which were always well supplied; yet, notwithstanding, they were attacked with influenza. It is true, my practice has been limited to the horses of my own regiment, and, when the disease appeared amongst them, I looked carefully to the animals that were not affected. Equally with the cure of the diseased, the preservation of the healthy was an object of solicitude with me, and much may be done in that respect by regulating the food, and otherwise attending to the peculiarity of constitution of the animal. Of those which were suffering from the disorder, many required but little treatment. It was in the worst cases only that I passed setons, especially if the trachea or larynx shewed any signs of irritation—using not one long seton, but several short ones, so as to reach from between the jaw to the chest, and in no one instance have I observed any disposition to slough ensue upon their insertion. When making this assertion, however, I must add, that my practice is confined to the lighter breed of horses, and therefore can in no manner be opposed to Mr. Ernes' experience among the heavier kind of horse. The medicines I administered were of little moment. A mild diuretic conjoined to dieting and nursing were my curative measures. Yet some of the cases I thus treated were of a very severe nature, and a large coach-proprietor who saw them could in many of them perceive no hope of recovery, declaring the animals must die. Nevertheless, continuing the plan I have laid down, not a single horse was lost. The person to whom I have alluded, seeing the success of my practice, said, he would adopt it should influenza visit his stables. It was not long before the disease appeared among his horses; but, alarmed by the symptoms, and beset by entreaties and prophecies, his resolution failed: he permitted what are called "active measures" to be employed, and the death of many of his horses was the consequence.

Mr. Hall.—I am of opinion that this disease, when it attacks the lighter description of horse, puts on so different a character to what it does in the heavier kind of animal, that he may almost be said to be suffering under another disorder. My practice has been chiefly among the heavier breed. I have never given a

drachm of aloes, yet out of two hundred cases seven have terminated in death. I have known horses to be attacked by influenza three times, and have had horses die in the same stable in which my own were, yet these were not affected. I have employed mustard as my counter-irritant, taking care to rub it well in the contrary way of the hair. Influenza, in my opinion, has generally a tendency to involve the lungs.

Mr. Shirley.—A practitioner in attendance upon the horses of a large brewery in London told me he had employed aloes, and lost but very few cases; but, at the same time, he added, that he varied his treatment in different animals, depending on circumstances.

Mr. Cartwright.—I have had a few cases of influenza under my care: to them I gave aloes, and they all did well.

Mr. Dunsford.—I have been called upon to treat both the light and heavy kind of horse. To one of the lighter description I have given aloes ʒij, and, though the bowels responded quickly, yet by limiting the water I found the violence of the action could be subdued. But when administering the same agent to cart-horses, it has certainly been followed by more action than I could have desired; yet, by the timely use of flour-gruel and dry food, any unpleasant consequences have been prevented. I have not ventured to exhibit any medicine of a cathartic nature where the pulse was weak, and where much cellular effusion was present; but in such cases I have given stimulants combined with tonics. I have seen only one post-mortem examination, and in that there was no appearance so marked as to attract my attention or characterize the disease.

JANUARY 21, 1845.

The TREASURER in the Chair.

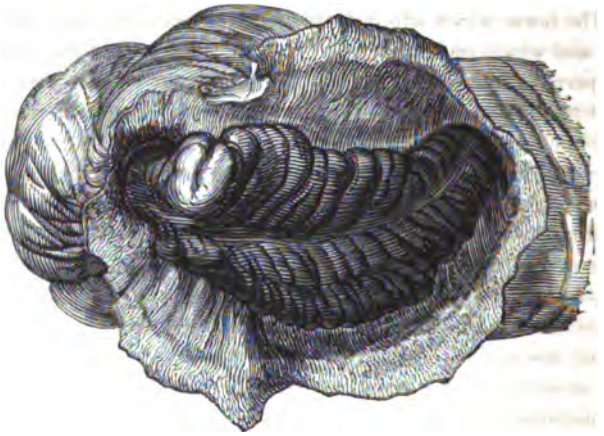
Mr. Hardman presented to the Library Dr. Franz's work on the Eye.

Messrs. R. Keene and R. Mead, students, were elected Members.

Case of Introsuscepted Cœcum in the Horse.

By Mr. W. Robinson, *M.R.C.V.S.*

Tamworth, Jan. 17*th*, 1845.



My dear Sir,—I have sent by the train this evening a basket containing the most extraordinary morbid specimen of the large intestines I have ever met with. It appears to consist of an inverted cœcum, which by some means has become lodged within the colon. Its apex seems to have been lifted up by the power of inverted action, and passed through the common opening at its other extremity into the colon, as you will find it. The horse died this morning, shewing spasms of the bowels.

I only saw him a few hours before death. The post-mortem examination presented sufficient inflammatory mischief in the ileum and colon fully to account for his death: but for a time I could not find the cœcum, and was about to declare its absence, or the want of it, when I felt a substance in the colon, which upon opening proved to be the missing intestine. I will give you (as soon as I obtain it) a full history of this case; but trust this hurried notice will be sufficient to call the attention of the members of the Association to its singular character.

I am, in haste,

Your's very truly.

Tamworth, June 12th, 1845.

Dear Sir,—I will now endeavour to give you as much of the history of the case (of introsusception of the cœcum into the colon) as I have been able to collect.

The horse which afforded the morbid specimen above alluded to, and which was transmitted to you some time back, was the property of L. Haughan, Esq., a gentleman at that time on a visit to Captain Desooun, at Drakelow-park. I have been informed that the horse had three drachms of Barb. aloes given to him on Tuesday afternoon, 14th of January; the weather being at that time frosty, with every appearance that Wednesday would not prove a hunting-day: however, a change took place in the night, accompanied with a heavy fall of rain. The next morning, Jan. 15th, the fox-hounds met at Bone Hill-house, a distance of twelve miles from Drakelow, to which Mr. Haughan rode this horse to cover, the rain falling heavily all the way.

I observed the horse on his arrival at Bone-hill was very relaxed in his bowels, and was informed he had been in that state for four or five miles on the road. On his way home the animal had warm gruel given to him, and he was fed at Tamworth.

He travelled back to Drakelow without evincing any pain or uneasiness, although his bowels were still very relaxed. On his arrival at home, and before the groom had finished dressing him, the animal shewed symptoms of spasms: he laid down, rolled over and upon his back, and appeared to suffer much pain.

The groom instantly bled him, and gave some antispasmodic mixture: from this treatment he appeared to experience relief for a few hours, when the pain and general symptoms returned with increased violence. At ten, P.M., Mr. Kent, V.S., Burton, attended, and the animal was again bled by his direction, and also had given to him the agents Mr. Kent usually administers in such cases. Mr. Kent informs me that he left him, at midnight, much relieved.

I saw the horse the next day, accompanied by Mr. Friend, jun., V.S., of Walsall: he was then cool and tranquil, but I found on examination that his pulse was quick and small; mouth and tongue foul; legs cold; with a peculiar heaviness in his eyes. These obser-

vations had scarcely been made, when he again became restless, looked anxiously back to his flank and side, and, in a short time, laid down, rolled upon his back, which position he had chosen during every paroxysm. Thus he lay fighting violently with his hinder and fore legs in the air for several minutes, with evident contraction of the abdominal muscles, and a seeming effort to expel some offending matter from the bowels. Suddenly he arose, stared wildly, and forced his head high up against the wall: after this he again became calm and easy; the pulse and respiration, which had been excessively hurried by these painful efforts, also quickly resumed their former state. He had suffered from similar attacks, and at the same intervals, since three, P.M. From this time there was a recurrence of these painful paroxysms, till death closed the scene about midnight. The post-mortem appearances I think I gave you when I forwarded the morbid specimen to the Royal Veterinary College. I dare not trust myself at this time to make any remarks upon this singular case, further than to hope it may lead to a more correct physiology of the cœcum, which from its peculiar conformation we must, I think, believe performs a more important part in the animal economy of the horse than has hitherto been allotted to it. I remain, dear Sir,

Your's very faithfully,

W. J. T. Morton, Esq., R.V.C. W. ROBINSON.

Mr. Simonds.—In this interesting specimen, for which we are indebted to Mr. Robinson, we perceive the body of the cœcum to be introsuscepted, or turned within itself, so that the peritoneal covering forms the lining membrane of the sac, while the displaced intestine occupies the interior of the colon. Intussusception, or this abnormal change of position in the intestines, often results from a reverted peristaltic action, which generally is preceded by spasmodic contractions of the muscular coat of the intestines. In colic a reverted action is by no means unusual, and by it, perhaps, we could account for the state of parts now before us. But, before arriving at any conclusion with regard to morbid appearances, it is always right to take a retrospective view, and ask

ourselves what is the normal function of the organ we find diseased. Now the base of the cœcum is continuous with the cœcum caput coli, forming here a blind pouch; from this part its apex extends, forming another blind pouch. The cœcum, therefore, forms a sac at both extremities, but has a free communication with the colon by a large opening. From the peculiarity of its shape, it would appear that the ingesta which travels to its apex has to be returned from thence into the colon by a motion of its muscular coat, somewhat analogous to reverted peristaltic action. Now spasm, fortunately, is seldom found to attack the large intestines, but none can question that in this disease inordinate and long continuous muscular contraction takes place; and as the cœcum has normally a double kind of peristaltic action to perform, this action under the influence of such a disease becomes greatly increased: hence probably the cause of this singular inversion. The thickened condition of the coats of the cœcum also deserves some notice. The apex, which part it is fair to presume was first inverted, has its parietes much increased by infiltration of blood between its coats, while that part of the gut which is continued towards the cœcum caput coli becomes less and less dense. Such thickening is the consequence of congestion, and the variations it presents are dependent on the longer or shorter periods that such congestion has existed.

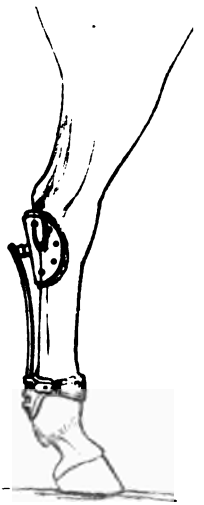
The symptoms which the animal in the first instance exhibited are said to be similar to those observed in gripes; and although no treatment can be expected to afford relief in a case of this nature, yet, to enable the practitioner to form a correct diagnosis, every peculiar symptom becomes of importance in these cases of abdominal disease. It happens that a similar instance occurred some years ago in my practice; and, in order that the symptoms may be compared in these cases, I will briefly relate the particulars. The subject was a black pony. One evening the animal, after returning from work, was attacked with abdominal pain, which was supposed to arise from gripes, and this was rendered the more likely by his having partaken freely of cold water at a stream a short distance from home. Some remedies of a stimulating nature were given, but, these affording no relief, I was requested to attend.

I found the animal in much pain and very restless, lying down,

rolling on his back, then quickly rising again; he looked round at his side; the abdomen was tympanitic; the pulse full, and rather increased in number. These symptoms, however, are generally present in spasm; but accompanying them there was a peculiarity which attracted my attention. When the animal got up, instead of shaking himself as horses commonly do when suffering from spasmodic colic, this pony would raise his head, thrust his nose into the rack, and remain in that position for several minutes, breathing stertorously during the time. Then the pain would recommence with greater acuteness; he would now turn his head towards the abdomen, bite at his flank, and once more lie down, and roll upon his back; but I soon found that his manner of lying down was devoid of the recklessness that characterises spasm, having an appearance not only of consciousness but of care. My opinion was, that some acute affection of the stomach caused these symptoms, and, as sedatives failed to afford any relief, and the patient was gradually becoming worse, I gave the owner but little hope of his recovery. In two days he died. The post-mortem examination shewed all the viscera healthy, with the exception of the cœcum, the apex of which was inverted six or eight inches, and much strangulated. The history of the case now under consideration is at present somewhat imperfect, but Mr. Robinson has promised to send us full particulars at his earliest convenience, and then we shall learn whether any similarity existed in these two cases with reference to the symptoms which the animals evinced. Of course, I do not conceive that they are strictly pathognomonic. We know that different animals express the same feeling by different signs; yet often we may trace a similarity when the disease arises from the same cause. Between inversion and enteritis the duration of the disease will often give us some clue to a correct diagnosis; and I can easily conceive that, with an inverted cœcum, as spasm does not originate in inflammation, the horse may survive three or four days: but in enteritis death usually takes place in eight-and-forty hours.

An Apparatus either to give Pressure, or for the Application of topical Remedies, to Curbs.

Presented by Mr. Robb.



Mr. Robb.—A curb is often viewed as a very simple affair by some persons, and it may be so to a horse used only for slow work; but to a hunter, during the season, it is of serious moment. The usual treatment for curbs may be said to consist in blistering and firing. Pressure, however, has been repeatedly suggested, and, on a horse of my own, I once endeavoured to obtain it by employing sheet lead, and to some extent I succeeded. That the experiment did not succeed perfectly, I attribute to the difficulty I had of fixing any substance upon the hock-joint, and the object of the apparatus I now present to the Association is to overcome this obstacle. It is the invention of an old friend of mine, Mr. Aird, of Glasgow, a gentleman well known in the hunting-field. By means of this instrument he readily obtains pressure, and, as he conceives, gets rid of the lameness arising from a curb, without depriving the animal of that walking exercise which is so essential to the maintenance of a hunter in condition. The instrument almost speaks for itself: it consists of an iron-plate curved in some

measure to the form of the posterior part of the hock, and supported by an iron bar, which is attached to the plate by means of a hinge. The lower end of the bar is inserted into a strap, which is fixed around the inferior part of the metatarsal bone, and above the pastern joint. On either side of the plate there are holes by which it is fastened around the hock, and by which the pressure can be regulated. By inserting any substance between the joint and the plate, pressure to any extent, and equable on every part, may be gained; or, if this be contra-indicated, we are enabled to keep a wet sponge upon the part, or apply any agent we desire.

I think the invention merits attention; and I am assured by those who have tried this instrument, that by its use horses have been able to follow the hounds, which only a week before had sprung a curb. During the hunting season, therefore, its employment must be of service; but when the summer came, I should fire the horse, and turn him out.

Mr. Dunsford.—This invention can only be looked upon as an adjuvant to other treatment, and I do not conceive it can supercede the use of other and more active measures in combatting the evil effects of curbs, though it may in some instances be found of service.

In some hunting stables the hydrochlorate of ammonia is applied to curbs, which, being less active than a blister, does not necessarily prevent the horse from following the hounds. Besides which, when that agent is employed, no blemish is seen, as the old hair never falls off till the new hair has grown up beneath.

Concluding Debate on Influenza in Horses.

Mr. Simonds.—Although I may have nothing new to advance respecting the disease now under discussion, still I may be permitted to offer a few observations on it: if, however, the views I may advocate should appear to clash with the opinions of previous speakers, it will be remembered that I have not been able to be present during the whole of the debate. The name given to this disease, in common with many others, I consider is unfortunate, as it expresses so little and withal is so general in its application, that sometimes serious inconvenience results from its use: for in-

stance, if pneumonia or pleuro-pneumonia should prevail in a district, we hear of it under the term of influenza, and are told that it has proved very destructive, and requires from the very onset the most bold and decisive treatment to prevent its fatal tendency; while probably we learn from other quarters that the malady is mild in its nature, never assumes any active inflammatory character, and consequently prompt depletive measures are not called for. It is only in this way that we can account for the great differences of description which reach us from different localities; and these will continue so long as this indefinite term is retained by us.

On the first evening of this debate some attempts were made to trace influenza to a particular cause. Many views were then advanced, and Professor Sewell seemed inclined to regard it, and all diseases of this nature, as arising from certain mephitic vapours or gaseous compounds of a volcanic origin. These vapours he conjectured to travel within the earth, escaping from its surface as they progressed onwards, and thus generating disease. Quadrupeds he thought were first affected because their respiratory organs are placed nearer to the ground, especially when depastured: thus the nearer the earth, the greater the danger; for he says that persons inhabiting cellars are far more liable to these disorders than those who, living in attics, are further removed from the source of the pestilence. I am not inclined to regard this view as correct, because all the arguments adduced to support it are merely inferences, and the phenomena attending these outbreaks can be otherwise, and to me more satisfactorily, accounted for. The existence of animalculæ, the presence of miasmata, and also a peculiar electrical condition of the atmosphere, have each been stated as the cause of the disease, and many supporters to these several opinions have been found. The first two, however, are of that nature which, did they exist, would admit, to a certain extent, of demonstration; and with regard to the last I am not aware that any particular electrical phenomenon did either precede or has accompanied the present outbreak of influenza, a disease which, in my opinion, cannot be safely attributed to any one specific cause.

I regard influenza as endemic in its nature, and think it may with greater reason be traced to those changes of the weather, and to the great humidity of the atmosphere which characterised the re-

cent season. That it has some connexion with these causes, its appearance in London first upon the banks of the Thames seems to prove; and the circumstance of its having run its course among the cart-horses there located, while those away from the metropolis were comparatively free from its attacks, may be advanced in support of this view of its origin. I therefore consider the cause not as specific but general in its nature; and believe that cart-horses are the first attacked, because their peculiar lax conformation and the artificial condition in which they are kept predispose them to become affected.

In this infirmary we are, perhaps, not so often consulted respecting cart-horses as others; and numerous as our patients have been, in the majority of the cases they were among the lighter and more valuable breeds of horses. Judging from my observations and experience, I should say the present form of influenza affects the mucous membranes generally, but especially those connected with the respiratory organs. The disease may be called inflammatory, if you like the term; but it is from the first unattended with any discharge from the nostrils, like ordinary catarrh, although an occasional cough is present. The membranes are of a pale colour, having a yellow tinge, denoting the chylopoiëtic viscera to be involved in the general derangement. Associated with this state of the mucous membranes we find febrile symptoms, such as quickened breathing and accelerated pulse, but not of that character which demands the withdrawal of blood. Venesection, in fact, is found in very many instances to increase the debility, which always exists to a greater or less extent. I consider, nevertheless, that although the disorder commences in the mucous membranes, it will, if unchecked, extend to the serous cavities; and I have seen cases in which the post-mortem examination has shewn the pleura to have been inflamed, with a deposition of lymph upon its surface. This result must not be allowed, however, to disguise the true nature of the affection, but be regarded only as another instance of the tendency of every morbid action, if not checked by proper measures, to spread and involve other structures beside those originally diseased.

Speaking generally, then, these cases will not endure depletion; for after a few days the disease will have extended to the superficial cellular tissue, and infiltration of the serous parts of the blood into

the eyelids, the legs, and under the abdomen, is observed; which shews that influenza has a tendency rapidly to involve the sub-tissues generally. Whenever the cellular membrane is likely to be affected with dropsical effusions, depletives should be used with the greatest caution. In very few cases have I dared to bleed, and in fewer still have I ventured to repeat it.

With regard to purging, certain agents used by us for that purpose have, in the course of this debate, been strongly objected to. We are told of animals that have been destroyed by the exhibition of a small quantity of aloes, amounting to no more than two or three drachms; and Mr. Ernes has found fatal effects to follow the giving of this drug to cart-horses. Yet I cannot believe that the danger applies to every description of horse, for the author of the Essay says that he has given aloes with advantage; and, in the College infirmary, to every case of this kind requiring a laxative this agent has been administered, and that without any ill effects having resulted in a single instance.

In the treatment of influenza I certainly should not adopt active depletive measures, and especially would I avoid any and all agents calculated to excite the mucous membranes into much increased ordinate action; yet I esteem aloes, in this disorder, to be as safe an aperient as any that can be employed, especially when it is exhibited in solution: for all will allow that the constipation of the bowels which exists in the early stages of influenza must be overcome before any hope can be entertained of a return to health. In those cases where no constipation attends the attack, then, of course, no aperient is indicated. It is the use, and not the abuse, of an agent that most concerns us.

When influenza prevailed, four or five years ago, the disease was far more fatal than it is now. In the years 1836 and 1837, influenza appeared as a true epizootic, attacking every description of horse: its symptoms were marked by the presence of much fever, which led many practitioners to have recourse to blood-letting, and many horses were lost in consequence. The lesson then learnt must not be now forgotten:—Don't do too much; watch well the patient; observe the symptoms; and if blood-letting is necessary to subdue their severity, then bleed; if not, let him alone, and become more the nurse than the surgeon. The disease,

it seems, will run its course. I have seen cases in which no treatment appeared to make any impression. The horse kept getting worse, despite all the measures adopted, up to a certain time, when a change took place, and the recovery became gradual but certain. Do not, therefore, despair even in extreme cases, but throughout the attack attend well to the patient's comforts, and do all in your power to husband the animal's strength.

Mr. Ernes.—The opinion I have before advanced respecting the propriety of giving aloes, appears to me to be fully borne out by the experience that was gained in the treatment of influenza during the years 1836 and 1837. I have always remarked that the use of this agent has been followed by the most baneful effects. Last summer, having occasion to leave London, Mr. Braby kindly undertook the charge of my establishment during my absence. To save that gentleman trouble, I had a quantity of aloetic balls, containing six drachms each, prepared before I quitted town. When influenza first appeared, the owners of horses became alarmed, and applied for a dose of physic, hoping by its timely administration to save their animals from an attack. These balls were given to them, but there appeared to be some peculiar susceptibility present, for within twelve hours the horses were actually purging, and that violently too.

After this, they could venture only on the use of half doses. This shews that during the prevalence of certain diseases, there is a remarkable difference attending the action of particular medicines, and I think the fact merits some attention. My conviction being thus based on observation, I have asserted that aloes is not required in the treatment of influenza; and I would ask, is not that medicine also considered injurious in other diseases? Are we not agreed that it should not be administered in pneumonia? I refer to the drug being so employed as to produce purgation.

I cannot approve of the practice which holds it imperative to purge in every disease. Medical treatment surely consists of other duties than the mere administration of drugs. The comfort and the diet of the patient are necessary to the eradication of disease, and, being so, ought no less to be the study of the practitioner. The owners of horses are, however, too frequently impatient to see something done, and the firmness of the veterinary surgeon is

often put to the test between his sense of duty and the demands of his employer.

Mr. Cox.—I have had some experience in the treatment of influenza, and, as that appears to differ from the course pursued by other practitioners, I am induced to state it. My treatment has been, when called in early, generally to extract blood. When the state of the pulse indicated that the system would not endure venesection from the jugular vein, I have bled from the foot, and this has been followed with good effect. Counter-irritants, in the form of blisters, I have applied to the trachea, throat, and chest; but to the use of setons or rowels in this disease I have a strong objection. Mashes and gruel I have always found sufficient to bring about a relaxed state of the bowels, therefore I employ but little purgative medicine. I give a little nitre, either in the form of ball, or dissolved in the animal's water, taking especial care that a comfortable box, if possible, be provided for the patient, and seeing the body is warmly clothed. Aloes I have found a dangerous medicine in this complaint; but influenza, I think, at different times assumes different forms, and therefore demands different treatment. In proof of this, when influenza prevailed during the year 1836, I then was accustomed to exhibit from ʒj to ʒiij of aloes, and never had any reason to regret having done so. But recently, in 1840 and in 1841, when this disease again appeared, and I then had many cases entrusted to my care, I soon found that aloes, even in very small quantities, was no longer a safe agent. In many it produced speedy and distressing superpurgation, and, in some instances, death resulted from its administration. My opinion now is, that aloes had better be altogether dispensed with in the treatment of this disorder, which I cannot regard otherwise than as infectious; for, on several occasions, I have known animals introduced into a neighbourhood where the disease was previously not present carry away the infection with them, and communicate the disease to an entire stable.

Mr. Ernes.—I cannot but think stronger proofs are called for before any conclusion can be arrived at respecting the infectious nature of influenza. When influenza most prevailed, two horses were brought to my infirmary for an operation, and they were placed in the stable which two others affected with influenza had recently occupied, and only one of them became diseased. In

a stable which held fourteen horses, seven were attacked, and the remainder escaped. In another stable, occupied by seven horses, four were affected, and three remained well. A gentleman, whose horses I attend, has stables at Rotherhithe and at Limehouse. Now, although the horses went constantly from one place to the other, the disease was not communicated, yet all the animals in one stable were attacked, while those in the other escaped. I have here stated facts, and I leave you to draw your own conclusions.

Mr. Woodger.—I have every reason to believe influenza to be highly infectious. At Fulham, I had three loose boxes, the doors of which communicated with a paddock in which there were several healthy horses. In these boxes I placed some animals suffering under influenza, and, for the admission of pure air, left the upper part of the doors open. The healthy horses would come and place their heads frequently within the boxes; and the result was, that every one of the originally healthy animals that were in the paddock became affected with influenza. I have known only one instance in which horses were exposed to the infection, and have not caught the disorder. On the first outbreak, from the number of patients, and perhaps at that time a want of thorough conviction on this point, I placed the animals attacked with influenza in the same stable with my own horses, and of these not one escaped.

Mr. Kent.—In almost every case of influenza which I have seen, the progress of the disease has been as follows:—In the evening you leave the horse to all appearance in perfect health, but on entering the stable the following morning you find him with his neck extended; his breathing somewhat laboured; pulse from 70 to 80 beats in the minute—and generally a seeming degree of unconsciousness present, in which state, if not disturbed, he will stand for hours, perhaps never altering his position, which (although it may be particularizing too far) is generally with the tail turned toward the manger. Should you attempt to move your patient, he will stagger from debility. Sometimes there is a nasty husky cough present.

The extremities will be found cold, or three of them hot and one cold, or *vice versâ*. On the second day, an injected state of the mucous membranes is invariably present, accompanied with

sore throat; and should a cough be attendant upon this, the animal's suffering is great. There is also a discharge from the nose consisting of mucus of a greenish yellow colour.

When found in this state, the treatment I have seen adopted with the most marked success has been as follows:—Remove the patient to a loose box, take off the shoes, bed down well with soft litter, clothe the body warmly, apply warm flannel bandages to the legs, and abstract blood. I have seen two cases in which the patient fell as if shot the moment the blood followed the lancet, certainly before half a pint was taken; but in all other instances it always relieved the patient very much. The medicine administered consisted of the potassio-tartrate of antimony and nitrate of potash, given once or twice a-day as the case required. For the soreness of the throat, local warmth, by means of hot rugs or boiled hay, is the best remedy. After this good nursing is alone required. If, however, there be still present laborious breathing, &c., apply a stimulant composed of water of ammonia, turpentine, and olive oil, or soft soap, of each equal parts, over the chest and sides. Should, as I have seen in three or four cases, the legs become swollen, on or about the third day, insert a seton in the throat, and apply to the legs the liniment of ammonia. The disease seems to run its course in about three weeks generally. The age most susceptible of attack seems to be from two to six years. With regard to aloes, I would observe, that I have seen it administered several times, and as often seen superpurgation follow, and that of rather a serious character: in all it proved very difficult to check, always debilitated the patient very much, and, in my opinion, tended to bring about his dissolution. The quantity given was two or three drachms only. To reconcile the difference of opinion respecting the use of this drug, we must take into consideration the habits of the different animals. The half or perhaps the thoroughbred horse, lives upon the dryest and at the same time the most nourishing food; while the other may, as dray-horses often do, partake of the grain left after brewing, of boiled potatoes, and other watery and relaxing food, all of which assuredly will tend to increase the action of aloes.

In a communication I have received from Mr. John Kent, V.S., Bristol, he says, influenza is such an indefinite term, as to comprehend almost any obscure complaint, according to the wish or fancy of the person who makes use of it.

The symptoms I have observed are, swelling of the head, legs, &c.; the bowels almost always constipated, and the pulse at the onset rarely much accelerated. In such cases I do not bleed, not because I am afraid of bleeding, but because I think it unnecessary.

I have never seen an instance in which aloes has not proved beneficial; and in severe cases, where there is laborious breathing at the commencement of the attack, I do not hesitate to give this drug, combined with the carbonate of ammonia, for the first dose, and afterwards watch the state of the bowels, as a guide to my further treatment. It is true I have seen superpurgation follow the exhibition of aloes, but death more frequently from withholding this agent; for the bowels must be regulated by aperients of some kind, and I have not seen any so controllable as aloes. Calomel I never give; and oil is bulky, dirty, and very uncertain in its action.

Saline compounds are also very uncertain and inconvenient. Enemas certainly no man so strongly condemns as I do as effectual remedies; they are only calculated to please our employers, when all other treatment is useless. If the pulse should be much accelerated, I would bleed any horse in the early stage, when purging was not present: in later stages, in my opinion, it only produces death more certainly.

JANUARY 28, 1845.

Mr. J. Gregson, V.P., in the Chair.

On the table were laid the morbid parts taken from a horse that had died of the prevailing influenza, forwarded by Mr. Woodger. The history of the case presented no marked features beyond that of the lungs with their investing membrane having become implicated; inflammation of these organs being the immediate cause of death.

Remarks on Dentition.

By Mr. W. Shirley.

Firstly, I shall describe the progress of the teeth in their growth from a mere germ or vesicle, situated between the plates of the maxillary bones, up to the period of their full development

in the mouth. Secondly, consider the subsequent changes which take place in them as the animal advances in years; my main object being to shew how far a thorough and practical acquaintance with these subjects will assist us in deciding as to the age of the horse. At the age of maturity, the horse is possessed of forty teeth, ranged in pairs, in their respective alveolar cavities, each cavity being separated by a transverse septum of bone. The mare, as a general rule, possesses but thirty-six teeth, she wanting the cuspidati or tushes. But I believe that, although they do not usually protrude through the gums, the rudiments of them may generally be found in their respective bony sockets. These forty teeth are divided into incisores, molares, and cuspidati. The incisores are the six superior and six inferior teeth, seen on separating the lips in the front of the mouth. The superior ones being situated in the inter-maxillary bones, and the inferior ones in the posterior maxilla. The molares are the six superior and six inferior teeth, occupying each ramus of the jaws. They are laterally and more posteriorly placed, being but partially visible when the head is thrown back and the mouth wide open; whilst the cuspidati are the projecting ones from each space, between the last incisor and the first molar, those in the superior jaw being placed about an inch behind those in the inferior. Each tooth is divided into crown, body, neck, and root or fang, which latter part is firmly implanted, by what is called union by gomphosis, into the alveolar cavities of the maxillary bones. The molar teeth are constituted by three distinct substances of an entirely different nature and appearance, viz., an inner, an outer, and a middle substance. The incisores and tushes are made up of but two substances. The inner substance resembles bone, but is of greater hardness, and is called ivory; the external is a still harder substance, called enamel, being thickest at the crowns, and tapering over the body, becoming entirely lost in the neck: whilst the middle substance is called crusta petrosa, and is the connecting medium of the several processes afterwards to be described. It also constitutes the molar teeth; but this is by no means its only office; for had the molar teeth been made up of but one substance throughout, although uneven at first, they would soon have become smooth by the attrition to which they are subjected, and consequently unfit to perform that important office of grinding the

corn, &c., for which the uneven surface is admirably fitted, and which, I need not say, is essential to the well-doing of the horse. The crusta petrosa, from being of a softer nature than the enamel, is more readily worn away, consequently, it is always a little lower than that substance, thus insuring an uneven or grinding surface. The enamel dips into the different ridges on the crowns of the incisors of the horse, forming the *mark*, as it is termed, or infundibulum; but in the incisors of ruminants, a different arrangement was necessary, and in them we find that the enamel merely surrounds the ivory, and as the latter substance is more readily worn away than the former, a cutting edge, so essential to those animals having no opposing incisors in the upper jaw, the same laws being in operation to produce it as the uneven surface of the molars to be retained. The teeth are firmly held in their situations by their fangs, by a reflection of periosteum from their sockets, and by the gums, which closely invest them at their necks.

At an early period of utero-gestation, the alveoli are first observed in the form of small hollows or cavities, into each of which is deposited a pulpy gelatinous mass, surrounded by a double and highly vascular membrane: this constitutes the germ of the future tooth. The vessels of these germs communicate so as insure and regulate the growth of the teeth as they advance in development; the alveolar cavities become gradually more enlarged, and at length the surface of the pulp begins to harden, consequent upon a secretion from the internal membrane. The ossification does not, however, proceed alike in all the pulps, but commences by one point in the cuspidati and incisores, and by four or five points in the molares; and, as before observed, it is the uniting together of these different substances that constitutes one of the uses of the crusta petrosa.

The ossification now gradually continues until the whole of the pulp is removed, and its place supplied by the harder constituents of the tooth. The process of enamelling is now commenced by the outer membrane of the pulp taking on the power of secreting at first a substance in a semifluid state, but which subsequently appears to crystallize on the external part of the ivory, which process is always completed before the tooth leaves the gum, which it does consequent upon the lengthening of its fang backwards,

thus mechanically pushing the body of the tooth forwards. The enamel is now as hard as at any future period. What causes these several changes to take place is not, I believe, at present known; and I think they will, like many other of the beautiful provisions of nature, always be too intricate for the limited faculty of man fully to comprehend, much less to be able to explain. I have hitherto mentioned only the development of the temporary teeth; but the formation of the permanent ones is so similar, that they require no separate consideration further than this,—the capsules containing the germs of the permanent teeth are situated immediately under the temporary ones, to which they are attached by what is called the gubernaculum dentis; this attachment only exists between the first three molares, as the permanent incisores come up in a separate cavity, posterior to the temporary ones.

I shall now proceed to a description, as far as is practicable, of the appearances exhibited by the mouth at the different periods of the horse's age, from birth upwards.

I propose to adopt a numerical arrangement of the incisores, the same as the molares, by first dividing them into two sides, and proceeding outwards from the centre, terming them, first, second, and third, which, I think, will be better understood than the course usually adopted of designating them the anterior, middle, and corner. The colt is generally foaled with the first pair of incisores projecting in the superior jaw, and the inferior ones make their appearance in a few days afterwards; these teeth, however, will occasionally vary in their development; but, as a general rule, they will all four be cut within a week after birth; the superior ones, nine times out of ten, presenting themselves first.

At a month or six weeks the second incisores are cut, but they do not usually get up level with the first pairs until upwards of two months, and between seven and nine months the third or corner teeth are cut. These teeth are much slower in their growth after being cut than the preceding ones, looking shell-like, and very much resembling, save in size, the rising five year old corner teeth when first put up; indeed, the mouth at this period bears a general resemblance to one rising five years old, and might at a first glance be mistaken for that age. I once knew a pretty good judge of the age of horses, who exchanged his horse for a pony, thinking him to be rising five; but when he came to examine

him more at his leisure, he found him to be no more than a yearling. The mouth, however, at this period is much smaller; the teeth also, which are now only temporary, are whiter and smoother on their anterior faces, and appearances of the animal generally, if well observed, are sufficient to guard against this error.

On the attainment of the twelfth month, the first incisores will shew slight marks of wear on their crowns; still being sharp on their anterior edges, and close together, and there will be a cavity or infundibulum on their surfaces.

As the colt approaches his eighteenth month, the second incisores will present marks of wear, and at two years old they will all have a more even surface, and commence contracting at their necks, which process will continue increasing until nearly thirty months, when they will often appear considerably separated from each other: the gums at the roots of the first incisores will inflame and become enlarged, shewing the spot at which the permanent incisores will make their appearance; and when the fang of the temporary tooth is sufficiently absorbed, the crown will be shed, which will happen, as a general rule, at about the thirtieth month.

The appearance of the mouth cannot now be mistaken, and the superior teeth will generally be through before the inferior. If, therefore, it should be necessary to examine a horse as to his age in the autumn, and his first incisores are found just through, you may be sure that he was two years old in the previous spring, and reckon him an early or late foal, according to the appearance of his mouth at that time, taking into consideration the history of his previous treatment.

The colt is now thirty months old. The time between the temporary teeth being shed and the permanent ones becoming level is generally upwards of a month.

From this period there will not be any material difference until the beginning of the third year; but should any difficulty arise, it is easily obviated, by remembering the time of year, always supposing the colt to have been foaled in the spring: at this time the permanent teeth will be broader, larger, and slightly worn on their surface.

These different marks of wear will continue increasing on the surface of the first permanent incisores, until the colt is nearly three and a half years old, when the fangs of the second temporary

teeth will be sufficiently absorbed to cause their shedding, and the second permanent incisores will appear similar to the first, which will take place about the forty-second or forty-third month from the time of birth; so that, should the veterinary surgeon now be called upon to give his opinion as to the age of the horse, there will be no difficulty.

From this time until four years old, these teeth undergo the same change as the first pairs of incisores, from which latter period until four years and a half they continue to undergo additional changes, by the attrition to which their surfaces are subjected, and by the development of their bodies, when the gums at the roots of the third incisores inflame, and, those teeth dropping out, are replaced by the permanent ones. At this time, or generally a month or two earlier, the cuspidati or tushes make their appearance, which several changes will, as a general rule, be completed by the fifty-fourth or fifty-sixth month after the birth of the animal. At five years old the corner or third incisor will be up level with the other incisores, and the tush considerably more developed than at four years and a half.

Mistakes are often made between the fifth and sixth year, by directing the attention too exclusively to the first pairs of incisores, which will often, even at five years old, be so much worn, that the mark is entirely obliterated: particular attention, should, therefore, in all such cases, be paid to the third incisor and tushes, the appearances of which are a much safer guide to the true age of the horse than are any of the other teeth. At six years old, the cavity in the third incisor will have become nearly filled up, the mark in the first incisor generally obliterated, and the tush by this time will be much longer and broader, but still quite sharp internally.

At seven years old the mark is nearly obliterated from the second incisor, and the tush is nothing like so sharp as before, while it will commonly be entirely smooth on its internal surface, and the mark from the third incisor is gone at eight years old.

The latter are, of course, only *general* rules, for I have seen horses at ten and twelve years old, who had not then lost the mark in their corner teeth: there is, however, always some peculiarity in the appearances of such mouths, which cannot fail to strike the eye of an experienced practitioner, and he will give his opinion accordingly.

From this period, upwards, there is very much uncertainty connected with the age of horses, which I shall not enter upon: there are, however, those who have attempted to describe the age by reference to the teeth, at all periods of their lives, from colthood up to sixty years, and who have been at the expense of publishing their views on this subject. It now becomes necessary to describe the appearances of the molar teeth, which I consider are much better described separately, as it appears to me that the mixing them up with a description of the incisores creates a little confusion, and makes the subject more difficult of comprehension. In describing the changes to which the molares are subject, it will be desirable to refer at all times to the state of the incisores, which, having been already fully understood, will render the whole clear and intelligible.

As before stated, there are at birth three molares on each side of the mouth superiorly and inferiorly, making in all twelve, these being all temporary.

At one year old, the colt cuts one tooth posterior to these which is permanent, and consequently is the first permanent tooth that he cuts, being the fourth in situation.

Immediately preceding the completion of his second year, he cuts another tooth posterior to the fourth, being, of course, the fifth in situation. About his thirtieth month, being the same that he cuts his two first incisors, he sheds his first temporary molar, and a permanent one comes up in its place.

At thirty-four or thirty-six months the same happens to his second molar in position, whilst the third and sixth molares in position are cut about the forty-second month. I have never seen a head in which these two pairs of teeth were not fully up by four years old.

REPORT OF THE COUNCIL OF THE ROYAL COLLEGE OF VETERINARY SURGEONS TO THE MEMBERS OF THE PROFESSION.

The Council of the "Royal College of Veterinary Surgeons" have great pleasure in presenting to the members of the profession the first Report of their proceedings, a measure they have been induced to adopt, in order that the utmost publicity

may be given to the arrangements they have thought it essential to make for the advancement and good government of the body of which they are the representatives, and for maturing the liberal and enlightened views contained in the Charter of the infant Institution.

It has been a subject of sincere congratulation to the Council that the Charter itself has met with the unqualified approbation of nearly every member of the profession, and not from them only, but from the members of the medical profession also, as well as from the heads of departments well qualified to form an opinion on the subject, but who could scarcely have been expected to have had either inclination or leisure to examine its merits. By some of its own members proofs have been given of the sincerity of their approbation too significant to be mistaken: we allude to the loans so handsomely made when pecuniary resources were indispensable, and to the liberal donations with which those loans were followed up by various practitioners; and it is a pleasure as well as a duty of the Council to return their sincere thanks to those gentlemen who so liberally came forward, and they doubt not they shall ultimately have to do the same to every member of the profession, although, as yet, there are some whose names they regret not seeing in the list of contributors.

On entering on the duties of their office, your Council felt that two points required their immediate attention: the first was, the making such temporary arrangements and appointing such officers as were essential to the working out of the Charter. The arrangements made may or may not have been the best that could have been adopted; for, in carrying out any new and important measure, without any precedent to work by or time to give mature deliberation to the subject, it could not be expected but that the best suggestions of the moment were those that must be acted on, and they accordingly were so; with what effect, the slight alterations only that have since been made in them afford the best proof. The officers elected were six Vice-Presidents, a Treasurer, and Secretary; Messrs. Sewell, Cherry, E. Turner, J. Goodwin, C. Spooner, and J. Turner were elected Vice-Presidents; Mr. F. King, jun., of Stanmore, Treasurer; and Mr. Gabriel, Secretary. The second point was, providing for the examination of the students then studying at the Royal Veterinary College of London and the

Veterinary College of Edinburgh: accordingly, it was resolved that the examinations for the session just then about to terminate should be conducted agreeably to the plan already pursued at those institutions; and, in order to effect this, they elected a temporary Board of Examiners for each School, in which they included those gentlemen who had already officiated for that purpose, with the addition of a certain number of veterinary surgeons in the place of those disqualified as teachers from examining.

The first of these examinations took place at the Veterinary College of Edinburgh immediately after the election of your Council: at this examination a deputation consisting of Professor Spooner, Mr. Gabriel, and Mr. T. W. Mayer, attended on behalf of the Council, and the Report of the Deputation was by no means satisfactory to the Council. Forty-five pupils presented themselves for examination, of whom forty-one were passed, and four rejected. It appeared that there was no examination on Chemistry—none on Materia Medica—none on Physiology—none on the Diseases of Cattle that deserved the name: there were by far too many leading questions, and the examinations were very unequal. The Report expressed a hope that the necessity of practical knowledge should be kept prominently in view in future examinations. It appeared to the Deputation that Professor Dick was willing and anxious to carry out any suggestions that might be offered for the improvement of his School, and with many of his plans the Deputation expressed their approval.

By the liberality of Professor Dick, two Silver Medals are annually given,—one to the pupil who passes the best examination, and the other to the one that produces the best anatomical preparation. Some irregularities occurred at this examination which the Council thought proper to notice: these were, allowing parties not appointed by your Council to take part in the examinations, and Professor Dick walking round to each Examiner, and, in a whisper, taking his opinion as to the qualification or disqualification of the student.

After a long correspondence on these points, the Council, considering that, owing to their having been elected only a few days previous, and that they had not had sufficient time to issue needful instructions to the examiners, resolved not to take any further notice of the proceedings. They derived, however, great plea-

sure from the support they received in their views on these subjects from the veterinary surgeons in Glasgow; and they cannot omit taking this opportunity of returning their thanks to them, and many other of their friends in Scotland, for the manner in which they came forward and avowed their sentiments on this occasion: these gentlemen not only expressed themselves in the highest terms in praise of the Charter, but they called a meeting of the profession in Scotland, to take into consideration the grievous state of veterinary education in the North, and explained, by a Memorial to the Council, adopted by them at this meeting, their views of this subject in plain and forcible language, and added many valuable hints for consideration; a liberal subscription, at the same time, having been entered into to carry out the object of the Charter.

The examinations of the students of the Royal Veterinary College of London took place immediately after the examinations in Scotland: out of fifty-six examined, forty-one passed and fifteen were rejected; and here, again, the Board would have been well pleased to have reported equally favourably of the division of cattle pathology as of the others preceding it: on all other points, however, the pupils passed a far better and more extended examination than their *confrères* in the North.

The Council received with much surprise a communication from the Home Office, dated July the 10th, 1844, containing copies of two petitions which had been presented to Sir James Graham from the Royal Veterinary College of London. Copies of these petitions, with the answer of your Council, have already appeared in "The Veterinarian," and it was a source of much pleasure to the Council to have it in their power to refute by a plain statement of facts the unfounded assertions lodged against them: they regret, however, that the Governors of the Royal Veterinary College should have been so far misled as to have made the statements contained in their petitions without proper inquiry from those most capable of giving them information.

The annoyance which this matter occasioned was increased in consequence of the Highland Agricultural Society of Scotland petitioning for a distinct veterinary charter upon equally untenable grounds.

The attention of the Council was, however, withdrawn from the

consideration of those painful subjects by matters of far more interest to themselves and consequence to the profession, viz. the formation of Bye-Laws and Regulations for the governance of the body politic and corporate. In the consideration of this important subject they kept steadily in view two distinct objects; first, justice to the present and future pupils of the two veterinary colleges; and, secondly, the well-being and good of the profession. After much consideration, the Bye-Laws already before the profession were adopted by the Council; and although these are not such as they hope finally to make them, yet the results already derived from their adoption, and the manner in which they have been received by the profession, have been such as to afford the Council unmixed satisfaction. Immediately after the adoption of these Bye-Laws, the Council appointed a permanent Board of Examiners, a board composed of gentlemen whose names stand high in the medical and veterinary professions:—E. Stanley, Esq., Chairman, Member of the Board of Examiners of the R. C. S. L.; Prof. Brande, of the Royal Institution; B. Cooper, Esq., of Guy's and St. Thomas's; R. Liston, Esq., of the London University College; Messrs. Percivall, J. Turner, W. Field, W. Goodwin, G. Baker, and E. N. Gabriel, for England; and Drs. Knox and Mercer, of Edinburgh; Drs. McGregor and Lyon, of Glasgow; and Messrs. Williamson, Mather, Edinburgh; Tindall, Glasgow; Lyon, Forfar; Thomson, Beith; with the veterinary surgeon of the regiment then stationed at Edinburgh, for Scotland. Their anxiety for the good of the profession, their labour for the advancement of veterinary science, and their desire to render the examinations such as the Council wish them to be, have given the greatest satisfaction, and the Council cannot refrain from expressing the sense they entertain of their valuable services.

Aware of the great responsibility imposed upon them, and feeling most anxious to carry out the views of the Council, they have again and again deliberated on the best mode of ascertaining the extent of information possessed by those candidates who might appear before them. Two points have received their especial consideration—the extent of the pupils' knowledge of chemistry and of cattle pathology; the first not only as applied to the knowledge of medicines and the principles of veterinary prescriptions, but as applicable also to the nature of the various soils and the

different kinds of manures, as possessing the most fertilizing properties in their application to them. The great advantages that have already arisen from the combination of chemistry with agricultural operations are too well known to require further comment.

The second, the knowledge of cattle pathology, is an object also of grave importance, for hitherto the diseases of cattle and other domesticated animals have been most lamentably neglected: the knowledge of this fact alone would have been sufficient to induce the Board to institute a strict inquiry as to how far this defalcation had been attempted to be supplied, even had not the two influential and important bodies, namely, the Royal Agricultural Society of England and the Highland Agricultural Society of Scotland made this one of their prominent objects. The Highland Agricultural Society has already come forward to assist the Council in their endeavours to advance the education of the pupil on these important subjects, by giving a Silver Medal to the pupil who shall pass the best examination in Chemistry, and this, too, be it remembered, in the face of a protest from the Professor of the school they patronize and protect against such a subject being taught in his class, several of its members also paying the greatest attention to the investigation of the pupil in the department of Cattle Pathology. The English Agricultural Society, again, has declared that this latter branch demands the most scrutinizing test on the part of those empowered to qualify a student to become a member of the veterinary profession.

The results that may be expected to accrue from the altered state of affairs brought about by the Charter, and from the system now adopted by the Board of Examiners, may, in some measure, be seen in a review of the examinations that have taken place in London and Edinburgh during the last few months. Up to March 25th the examinations were conducted on the same plan as those of the Board elected by the Royal Veterinary College of St. Pancras. Two or three gentlemen took each pupil and examined him on the different branches of his studies; but it was found frequently to happen, either from the nature of the questions or the inaptitude of the pupil to answer, that one branch occupied an undue portion of time, to the unfair curtailment and too often neglect of those to follow, and a very unequal examination was the result. To remedy this evil, the President of the Royal College of Veterinary Surgeons, the Chairman of the Board of Examiners, and the

Secretary, had a meeting at the Royal College of Surgeons to ascertain the plan there acted on, and to decide how far it was applicable to our own Board: the Report was favourable, and the Secretary was requested to make himself master of the system there adopted, which was declared both by Mr. Stanley, one of their Examiners and Chairman of our Board, and Mr. Belfour, their Secretary, to work most admirably, and to be very superior to any before had recourse to. It was accordingly brought under the notice of our Board, at its meeting on the 15th of May, and is as follows:— Instead of each pupil appearing before the whole Board at once, the Board is distributed at four tables, one devoted to chemistry, a second to anatomy and physiology, a third to the pathology of the horse, and the fourth to cattle pathology. Each pupil is examined for a quarter of an hour at each table, thus having to appear in rotation before the whole of the Examiners, and to go through a well-divided examination of one hour.

Owing, however, to some opposition from the Professors and Teachers of the Royal Veterinary College of St. Pancras, this plan was only partially carried out, three tables being substituted for four, and three quarters of an hour for the hour's examination. So well, however, did even this defective adoption of the plan work, that both the Examiners and the examined declared it a very great improvement on the old system; and, as a consequence, the entire plan was brought into operation at the meeting of the Board on the 21st of May, after some further slight attempts at opposition from the Lecturers at the Veterinary College of St. Pancras, and the result was most happy. Every pupil underwent an equal and searching examination on every branch of his education: chemistry and cattle pathology received their due share of consideration, and must, consequently, in future be considered important parts of the curriculum of education. Every member of the Board engaged was satisfied and delighted with the result, and every pupil who appeared before it acknowledged its efficiency and entire freedom from restraint or annoyance. The number of students already examined this year is forty-one; of whom thirty-three were passed and eight rejected.

The examinations at Edinburgh of this year, although not brought to the same degree of systematic regularity, were very considerably improved. The same principle was acted on as in London, one Examiner taking each candidate on one of the before-

named branches of education. The number examined was twenty; of these, seventeen were passed and three rejected. This difference, however, in the proportion to last year was not owing to any falling off in the qualifications of the pupils, who, as a body, were very superior to their predecessors, but to the much more stringent and extensive course of examination they had to undergo.

Your Council, therefore, rely with the greatest confidence on the Board of Examiners, well knowing that their best exertions and undivided attention will be given to the ascertaining the qualifications of the student, thereby rendering your diploma a valuable and efficient guarantee for the capability of its holder; to the cautious but firm rejection of the candidate who from carelessness, inattention, or incapacity, shall not have acquired those attainments they consider so essential to his future well-doing; and to the keeping pace in their examinations with the onward progress of science and practical information.

In conclusion, the Council beg to express to the members generally their satisfaction at the results already derived from the Charter: they feel it their duty to endeavour, by every means at their disposal, to render its benefits of greater utility to the profession; and, while they are determined to maintain the charter inviolate, it is their wish to listen to any suggestion, to consider any project, to adopt any plans that may be thought desirable for the interest of veterinary science; and they will at all times be ready to receive the co-operation of those influential Institutions, already alluded to, that so kindly take an interest in their proceedings for this purpose; in the firm conviction that they, the Royal Agricultural Society of England and the Highland Agricultural Society of Scotland, will thus be materially assisted in carrying out their own enlarged and important intentions; while the Royal College of Veterinary Surgeons will receive an impress from their support and co-operation that will go far to sustain it in that independent, but, at the same time, efficient and useful position, in which it will always be its proudest boast to be placed, but which education and science alone can enable it permanently and honourably to retain.

London, June 6th, 1845. E. N. GABRIEL, *Secretary.*

Minute of Council, June 6th, 1845.

"That the Report now read be adopted, and that the Editors of THE VETERINARIAN and THE VETERINARY RECORD be requested to insert the same in their respective Journals."

E. N. GABRIEL, *Secretary.*

NAMES *of those who have obtained their* DIPLOMAS *from the* ROYAL COLLEGE OF VETERINARY SURGEONS, *late Pupils of the Royal Veterinary College, London.*

May 16, 1845.

Mr. William Cox, Ellastone, Staffordshire.
Mr. James Broad, Winsley, near Bath.
Mr. George Robb, Glasgow.
Mr. A. Burke, Cahir, county Tipperary.
Mr. H. J. Cartwright, Liverpool.
Mr. E. C. Crowly, Cork.
Mr. Henry King, Morpeth.
Mr. J. J. Hazell, Great Bromley.

May 21.

Mr. Thomas Overton, Harboro' Parva.
Mr. John Gregson, Liverpool.
Mr. William Shirley, Staines.
Mr. Abraham Fowler, Shrivenham, Berks.
Mr. Alexander B. Henderson, London.
Mr. Thomas Wright, Brighton.
Mr. T. D. Gregory, Chard.
Mr. John Jekyll, Lincoln.
Mr. Anthony E. B. Green, March, Cambridgeshire.
Mr. Alfred Williams, Bristol.
Mr. Augustus Crook, Eaton, near Norwich.

June 4.

Mr. William Johnson, Lincoln.
Mr. Matthew B. Brake, London.
Mr. George Stowe, Warwick.
Mr. Charles Edward Short, Blandford.
Mr. Brand Garner, Foxton, Cambridge.

June 11.

Mr. James Fenner, Clare.
Mr. Charles Scarr, Stortford.
Mr. W. C. Crabbe, Bungay.
Mr. Thomas Jones, Wrexham.
Mr. William Dyer, Croydon.
Mr. William Helmore, Exeter.

THE

VETERINARY RECORD, &c.

VOL. I.] OCTOBER 1845. [No. 4.

ON THE USE OF THE CHIOCOCCA RACEMOSA, THE CAINCA OF BRAZIL, FOR "CHARBON" IN THE HORSE.

By RICARDO DE GUMBLETON DAUNT, M.D. *Edinburgh*, and L.M. *Rio de Janeiro*.

To the Editors of THE VETERINARY RECORD.

Gentlemen,—ALTHOUGH entirely unacquainted with comparative pathology and therapeutics, yet the importance, in a politico-economical sense, of the multiplication and conservation of the domestic animals has caused me often to notice any thing peculiar respecting them wherever offering itself. In this way I became acquainted with the fact I now make known to you, in the belief that it will prove of use. During a residence, in the latter part of the past year, in the district of San John de Macahé in this empire, I found that the "Pustule Maligne," or "Charbon," was a frequent disease among the under-bred and poorly kept horses of that district, and that the peasantry combated it with general success by the internal administration of the shrub known here as the Caïnca, the "Chiococca Racemosa" of naturalists. Knowing the fatality of this disease among cattle in many European countries, and its fearfully contagious nature, it being most commonly fatal to those employed about such animals, it has appeared to me that the Caïnca (which may be procured in the European drug-market, and which, as the chiococca racemosa of the family of the Rubiaceæ, is described in the *Histoire Naturelle Medicale* of Professor Richard, and in the *Materia Medica* of Messrs. Merat and Delens) deserves a fair trial. I could not

learn whether this drug was likewise applied to cases of this disease occurring in the human subject in this country. In giving it to animals, the dose must be apportioned in the first trials by an approximative relation founded on the statements given by the two French authors named of its dose for the human subject. That the caïnca possesses most powerful properties is not to be doubted, it being most popular among the natives in all cases where a general corruption of the circulating fluids exists, as in all diffuse cellular inflammations, &c.; and probably it might not be without action in equinia. It decidedly merits a more extended trial in Europe than the efforts of M. de Langsdorff obtained for it about sixteen years ago, when his attention was called to it during his travels in the interior of Brazil.

I have the honour to be,
Gentlemen,
Your most obedient servant.

Campinas, Interior of the Province of San Paulo, Brazil, 20th January, 1845.

Sir W. Hooker, in his *Exotic Flora*, tab. 93, says, "The Chiococcum racemosum is a moderate sized shrub, growing, according to Browne, in Jamaica, St. Domingo, and Barbadoes; also at Carthagena, and, according to Michaux and Pursh, in Georgia and Florida. It attains the height of seven or eight feet; is much branched, and the branches are opposite, round, smooth, and so slender as to require support. Leaves one or two inches long, ovate, tapering at each end, with a short footstalk; shining, subcoriaceous, waved and entire at their margins, with a distinct central rib, but very obscure lateral veins.

"The flowers are produced from the axilæ of the upper leaves, in small but graceful drooping racemes: they are secund. The calyx of five brown erect teeth; the corolla infundibuliform, pale yellow; its tube somewhat angular, and the limb of five spreading ovate segments; stamens, five united at their bases, shorter than the corolla; anthers pale yellow; germen compressed, roundish-ovate, obscurely two-lobed, two-celled inferior. Style filiform, longer than the tube of the calyx. Stigma clavate, bifid. Berry snow-white, roundish, slightly compressed, pulpy, crowned with

the teeth of the calyx. Seeds one in each cell, compressed, pendent by a short stalk.

" Was introduced to our stoves (where, however, it does not ripen its fruit) by Dr. Sherard, in 1729. The root in its native climate is employed as a strong resolutive and attenuant: it resembles seneka snakewort, and has a bitter acrid taste."

Chiococcum racemosum is also mentioned in Loudon's *Hortus Britannicus*, p. 80, and by Professor Burnett, in his *Outlines of Botany*, vol. ii, p. 912.

MM. Merat and De Lens, *Dictionnaire Universelle de Matière Medicale*, under the head of *Chiococca racemosa*, states, " It is called Caïnca by pharmacologists. This tree grows in Brazil, the Antilles, &c. The root is " *tracante*," fibrous, covered with a brown bark, marked with annular rings, and has a disagreeable volatile scent, like that of valerian. The taste is aromatic, bitter, and very nauseous. The woody part is whitish. A weak infusion produces only purging; when stronger, it is drastic, vomitive, and causes sweating. From these properties it may be employed in apoplexy, paralysis, " la demence," &c., and especially in " hydropisie."

Professor Spitta has administered it successfully (*Bull. des Scien. Med. Ferussac XII*, 76); and the same magazine records two cases, where it was given in the dose of two " gross" to nine ounces of water, of which the patients took two " cuillerées a bouche" four times a-day. In the Antilles, where it is known under the name of Petit Branda, it is employed (says Mr. Browne) in syphilis, rheumatism, &c. Dr. Soares, of Meirelles, says, that in Brazil it is employed in pica, to which the negroes are very subject: also in amenorrhœa (*Journ. de Chimie Medicale*, 1826, p. 239). M. Langdorff regards it as a diuretic and sialagogue. It is particularly in lymphatic and exanthematous affections that he thinks it preferable to sarsaparilla, and to lobelia in " les indurations viscerales." He has cured three cases of " migraines hysteriques" with it, and employed it in powder in ulcers of unhealthy character. The caïnca is " desobstruant, resolutif et purgatif," according to the dose. The dose is commonly of two to four grains in a pint of boiling water, and not of two ounces, as stated by some. In powder, it is given in doses

of twenty to thirty grains; its less efficacious extract from thirty-six to seventy-two grains. Mr. R. Brande has analysed it, and finds a new alkaline principle approaching emetine in it (*Journ. de Chimie Med.* 1829, p. 75). Two grains given to a puppy two months old produced only vomiting and agitation (*Bull. de Sc. Med. Feruss. XVIII*, 110). It is to be observed, that all we have said of *C. racemosa*, M. Martius attributes to his *C. anguifuga*. This root is not yet an article of commerce: it has been obtained for a year or two "par la voie d'Hamburg," in small quantities, under the "nom vicieux" of root of Cairea.

According to Professor Brande (*Manual of Chemistry*, p. 1199), Pelletier and Caventon obtained an organic acid from the cortical part of the caïnca root. It is procured by dropping hydrochloric acid into a decoction of the root, when it is gradually deposited in small crystals; or more perfectly by evaporating a strong alcoholic tincture of the root to dryness, dissolving the residuum in water, precipitating by lime, and decomposing the calcareous salt that falls by oxalic acid: the caïncic acid must then be purified by re-crystallization.

Caïncic acid is intensely bitter, and requires 600 parts of water for its solution; but it is very soluble in alcohol, and the solution, if saturated when hot, deposits the acid in tufts of crystals as it cools. Ether dissolves it as sparingly as water. With ammonia, potassa, lime, and baryta, it forms soluble neutral salts, which are not crystallizable, from which the acids throw down the caïncic acid.

From Liebig's analysis, this acid appears to consist of—

Carbon	15	90	57·0
Hydrogen	12	12	7·6
Oxygen	7	56	35·4
Caïncic acid	1	158	100·0

On Charbon.

By Mr. W. Ernes, *M.R.C.V.S.*

Charbon, or Anthrax, is a disease of an inflammatory and gangrenous nature; its characteristic, the formation of an irregularly shaped hard tumour underneath the skin, involving only a small portion of the contiguous cellular tissue. It is surrounded by a margin more or less elevated, and is somewhat depressed in its centre, which is sometimes perforated with an almost imperceptible opening. At first it appears but little raised above the skin, but it becomes, and that very quickly, of an enormous size, and is accompanied by great heat and acute pain. Irritative fever quickly supervenes, and gangrene first shews itself in the centre of the tumour, extending to its circumference with incredible rapidity, and leaving an eschar or scab of a blackish colour, similar in appearance to extinguished charcoal; hence the name given to the disease, "charbon." This eschar is sometimes several inches in diameter. It is almost always preceded by phlyctænæ, which form a vesicular areola around it, sometimes with and at other times without inflammation. Whether this areola exist or not, the eschar is generally associated with more or less œdematous swelling, arising both from emphysema and an infiltration of serum or sero-gelatine into the cellular tissue, which crepitates under the fingers when pressed. The virulence of this disease is often so great, that the animal falls a sacrifice in less than twenty-four hours after the attack: rarely does it last more than thirty-six hours.

This disease is frequently met with in hot climates, and I have reason to believe it is very prevalent in the tropics, but it is not unknown in more northern latitudes. The affection designated black quarter in cattle, in this country, is true charbon. Blain, or glosso-anthrax, is another variety, differing only in the seat. Cases occasionally occur in other animals in cold countries, but the disease does not assume the same form nor is it so intense as in hotter climates. A case occurred in my practice in 1841, in a grey gelding. I was sent for about eleven o'clock at night to see the patient, which I found sinking, having a charbonous tumour

on the outer coronet of the off hind foot. Although the case was beyond the reach of remedies, I was anxious to trace the progress of the disease, and therefore I called the next morning, when I found the animal had died suddenly a few hours after my visit. I was informed that the horse was very well a short time previous, but, being itchy about the legs, they had dressed them with an infusion of tobacco, and they thought that had poisoned the part; but as I have frequently dressed horses in the same way without any such result occurring, I concluded that the tumour was true charbon, in which gangrene had taken place when I saw it.

Hurtrel d'Arboval observes, "That all domestic animals, more particularly the herbivorous, are subject to charbon; but it varies in character, not only according to the kind of animal, but also as to the parts attacked. Being highly contagious, it is transmitted with the greatest facility not only from one animal to another, but also from animals to man, whenever the surface of the tumour is brought in contact with an abraded part of the body, especially the mucous membranes. The charbonous tumour, which is generally single in the monodactyles, in the didactyles is often met with in numbers. Sometimes it presents the appearance of a cellular infiltration, occupying a great extent both in length and breadth, on which appear several phlyctænæ, which are soon converted into eschars. It is in this way that sheep are frequently attacked about the inguinal and axillary glands; the tumours extending over the inner surface of the thighs and arms, and under the thorax and abdomen. This form of disease often causes great losses among the flocks, and is therefore of importance to be well known. The same variety sometimes attacks oxen and swine, and by the inhabitants of the country is called *charbon blanc*. In the ruminants it appears to be a deep-seated disease of the cellular tissue, or a charbonous typhus, which gives rise to a sanguino-gelatinous accumulation in the panniculus carnosus, followed by gangrene of this muscle, with infiltration. The affected parts become almost instantaneously disorganized; the skin appears as if inflated or detached, giving way to the pressure of the fingers, when a certain degree of crepitus is heard. These lesions are accompanied with a general loss of strength; rigors supervene, and soon an icy coldness of the horns and ears is felt; all the excretions are suspended; an infectious odour is exhaled

from the pores of the skin; and meteorization, or a colicky diarrhœa, takes place, which soon terminates in death. The carcasses of all animals that have fallen a sacrifice to this disease exhale a most offensive and peculiar smell, difficult to bear, and this process of putrefaction is always very rapid. It appears that fetid humidity arising from the emanation of drains, slaughter-yards, and other sources of infection; a prolonged sojourn in low and damp localities, in the midst of animal and vegetable exhalations during the heat of summer; marshy lands, where animals pass the cold nights, preceded by hot days; are causes favourable to the spontaneous development of charbon. The more direct influences which produce it are the immediate contact, or a kind of accidental inoculation; exhaustion from long journies, or excessive labour; the infected air communicated from the sick to the healthy animal under the same roof, or an otherwise contaminated atmosphere; in other words, contagion. Charbon is enzootic in low, damp, and marshy districts, and becomes epizootic under general exciting causes.

It is a well known fact that the introduction of gangrenous matter, or of putrifying animal substance, in the subcutaneous cellular tissue of the horse, is sometimes followed by gangrene, and at others by the development of a tumour similar to that produced by the inoculation with charbon; consequent on which the animal dies in a few days. Similar accidents have resulted from the application of setons and the actual cautery.

Charbon may manifest itself without any other symptoms than those that follow its invasion, or it may be preceded by dulness, loss of appetite, thirst, great prostration of strength, and violent agitation of the flanks. These indications are followed by the appearance of the tumour, which is firmly adherent. The inflammation produced by the tumour renders the integument tense, and gangrene soon follows. Sometimes the almost imperceptible opening in the centre is mistaken for a core, and this may be the reason why it is not thrown out. At other times the skin ulcerates, and a greater or less number of openings are formed on the surface, from which escapes a blackish serosity, a true ichor, in which resides the infectious principle. This ichor sets up gangrenous action in every part it comes in contact with, from which result large ulcers with everted edges more or less thick and callous, red and

inflamed, but as often black and livid. These ulcers never furnish healthy pus, but discharge a bloody serosity more or less acrid, and which acts with more or less virulence on the surrounding parts. In the more simple cases, when no opening presents itself, resolution apparently takes place; but the tumour really progresses inwardly, and a metastasis of the inflammation follows, some organ becoming attacked, and the animal is in the greatest danger. In either case, when the disease has reached this point, a general reaction succeeds to the gangrene of the charbon; the pulse becomes small, accelerated, and wiry; the mucous membranes are injected, diarrhœa supervenes, the body becomes cold, the strength exhausted, and the patient succumbs to the violence of the attack. In some cases, when the tumours have had their seat in the region of the larynx or pharynx, they have given rise to symptoms of phrensy and hydrophobia previous to death.

The charbonous tumours present other characters which are not less remarkable. We have seen them small in animals still in good health, and then increase rapidly in size, attended with great pain in their centres. We have seen their circumference associated with much œdematous swelling, and crepitation present. We may also add, that, if an incision be made, a black liquid is discharged, which is nothing more than altered blood: afterwards, the centre of the tumour loses its elevated temperature, becomes cold, and insensible to pressure, while the circumference remains painful. The crepitation perceived on pressure exists in the subcutaneous cellular tissue, and indicates the presence of gas. Charbon, likewise, presents some peculiarities in its course and progress. The heat is not always proportionate to the intensity of the pain, which only exists when the tumour has reached a certain degree of development; but, as soon as it has acquired its due volume, both the pain and heat disappear, and sphacelus shews itself. The general symptoms follow a similar course. The charbonous tumour, having reached one-third or half its size, the morbid phenomena of inflammation and anxiety manifest themselves and reach their climax of intensity. It is then that we find the furious look, the haggard eye, the inflamed conjunctival membrane, and the strong and accelerated pulse; but these phenomena last only a short time,—they disappear as soon as the gangrene of the tumour has commenced: then the prostration of strength is complete,

the pulse becomes feeble and intermitting, and the animal sinks. Sometimes the vital powers seem to rally, but this is only a surer sign of speedy dissolution.

Charbon may affect different parts of the body, but there are particular regions where it is more generally met with, such as the head, and more especially the tongue, the neck, the front and sides of the thorax, the external parietes of the abdomen, the scrotum, the thighs, the shoulders, and the feet. When the head is attacked it becomes swollen to an enormous size, the tumefaction occasionally existing only on one side. When charbon shews itself in the mouth under the tongue, it is designated glosso-anthrax. It is seldom seen on the palate, but frequently on the larynx, where it produces the same form of disease. In the horse, and likewise among fowls, it attacks the eyes, and assumes the form of livid infiltration, which extends to the pituitary membrane, and even, it is said, to the brain. Not unfrequently in the sheep it fixes on one ear, and proceeds to the interior of the head. Charbon has also been observed to attack, within a short interval of time, both hind feet; the hoofs becoming detached, and the animal dying in two or three days after.

But, without stopping to examine these isolated facts, let us proceed to consider it in the different species of our domestic animals, with the exception, however, of sheep, to which a separate article will be devoted.

In the horse the tumour is always hot and painful. It may develop itself on any part of the external surface of the body, but is found more particularly under the tongue, constituting glossanthrax (on which we do not intend to enter now) on the chest, thighs, and feet. At the chest charbon shews itself by a tumour, which increases in size with so much rapidity as to acquire, in a few hours, a diameter of nine or ten inches. It is hot and painful at the onset; but gangrene soon sets in, when it becomes cold and insensible: the pulse becomes frequent—the respiration laborious—the eye wild—the strength quickly fails,—and death takes place in twenty-four hours. This variety is by the vulgar called *anticor*. At the thighs charbon presents the same characters, runs the same course, and is of the like duration as when it attacks the chest; its increase is almost recognizable by the eye. As soon as the tumour is established the thigh becomes of an enormous size, fever

supervenes, the vital and organic faculties seem to be annihilated, and the horse dies within a period of from twelve to twenty-four hours after the attack.

Of the feet, the hinder ones are almost alone liable to be attacked; however, I have once seen it at the coronet of the fore foot, but it was impossible to trace the progress of the disease, as the horse was dying when I was requested to attend: still the tumour had not acquired any great degree of development. Charbon has been observed to attack the two hind feet, and in a short time both hoofs have sloughed off, and the animal has died in the short space of from ten to twelve hours: sometimes he will live two or three days, enduring the most violent local pains, irritative fever, &c. In general these attacks are spontaneous. It is said that this disease will sometimes occur after punctures from nails in shoeing, &c. It is of frequent occurrence in hot countries, and horses often die of charbon after an attack of tetanus.

In ruminants the charbonous tumours are generally numerous, but small in size, and often without perforations: they also assume different shapes, and occupy particular situations.

Charbon in the genus Bos may develop itself on any part of the body, and is of two varieties, one of which affects principally the dorsal region, the external abdominal parietes, and the costal region; and the other, the shoulders, the dewlap, and chest. The tumours of the first variety are not always visible: tumefaction may be felt under the skin without raising it, and which penetrates into the muscles without presenting the appearance of tumours externally. Their existence, however, is easily detected by hardness and rotundity of form, and from a small depression being caused by pressure, also by crepitation of the skin. The name of charbon blanc, or white charbon, has been given to this variety of the disease.

The second variety, ably described by Chabert, appears in the shape of very small tumours, which make such progress that, in the space of half an hour, they often attain the size of the human head. They extend in an equally rapid degree in all directions, favoured by the loose cellular tissue, under the belly, along the spine, neck, and throat. The patient now becomes stiff all over; the arteries are full and distended, without action *per se;* the beatings of the heart are violent, not only to the sight and touch, but

they may be heard at some distance. As soon as the animal falls, he dies.

Without speaking of that horrid pest the typhous charbon, which, as it were, at one single blow strikes whole herds of cattle dead, there is another variety of the same disease which announces itself by the appearance of livid or blackish spots. These seem to be only in the skin, which they raise and detach, causing it to crackle: gangrene quickly supervenes underneath, and the disease is equally fatal, though it progresses with less rapidity.

In swine, charbon is generally considered not to present any marked difference with the same disease in the ox, except when it is situated in the region of the neck, where it offers peculiarities worthy of our attention. Its seat is at the side of the neck near the head. At this part there is first seen a black spot on the skin, about an inch and a half in diameter; the bristles covering it are stiff and erect, and their bulbs seem to be shortened :—but we intend to devote an article to this disease in swine.

Among fowls, charbon presents itself by gangrenous spots and tumours on the digital region. Some geese which, according to Chabert, were attacked in the commune of Maralles, near Montereau, in 1730, and perished in great numbers, presented the following symptoms :—fever—general prostration of strength—loss of appetite—claudication—irregularity in the motion of the head—setting up of the back—and extreme suffering in the extremities. Shortly after the beak became black, and gangrene manifested itself at the tumefaction of the web between the toes, and colicky diarrhœa preceded death only a short time.

The causes of this epizootic were referred to the excessive heat and dryness of the season, the want of cleanliness, and a vitiated atmosphere; also to impregnated water falling from roofs of houses, and the fetidness of that of the stagnant pools to which these birds had access; and, lastly, to the altered state of the vegetables and grains on which they were fed, arising from the peculiarities of the season.

The anatomical lesions are of two sorts,—local and sympathetic. One can easily detect the first by seeing the tumours covered with a blackened eschar, around which the inflammation had not been able to form a circle, which would have tended to separate the living from the dead parts, owing to the rapid progress of the dis-

ease. The cellular tissue surrounding the tumours, although not gangrenous, is gorged with a sero-gelatinous fluid mixed with blood, and oftentimes is distended with a fetid gas, the result of putrefaction going on in the parts.

The infiltration of serum extends in proportion to the depth of the tumour; and the blood, being of a dark black colour, communicates this tinge to the subjacent muscles. The cellular tissue also presents, here and there, spots of ecchymosis.

The sympathetic lesions, according to Chabert, are extensive. He has found them in the cranial, thoracic, and abdominal cavities, and also in the alimentary tube from the mouth to the anus. We have several times, when conducting an autopsia cadaveris, met with traces of this peculiar inflammation in the gastro-intestinal mucous membrane; and the same has also been observed at the veterinary school at Lyons, according to statements in the *Comptes Rendu*.

Much valuable time would be lost if we were only to direct our attention to calm the inflammatory indications by the ordinary remedies, such as venesection, emollients externally applied, and other antiphlogistics. The rapid progress of the disease demands the most energetic measures, but unfortunately we are obliged to confess that the best devised treatment is, in the majority of cases, altogether useless. It is true that the veterinary surgeon is generally called in too late to make a trial of means that might otherwise be adopted, such as boiling oil, setons—topical agents of divers kind, as caustics, vesicatories, points made with the red hot iron or in lines, so as to confine the tumour. Scarifications have proved altogether insufficient. The extirpation of the tumour by the actual cautery remains to be tried after excision, either as an effectual cure or an auxiliary; but it should be adopted at once. Incisions made into the tumour have the effect of relieving at once the congestion which keeps up irritation, and of facilitating the evacuation of the imprisoned fluids, and, at the same time, rendering the topical applications more effective. The incisions must be deep and in a crucial form; the wound should then be strongly pressed, in order to evacuate the contents of the tumour. This mode of incision, however, offers less chance of success than the extirpation of the tumour, and it is only practised when the extent of the charbonous deposit does not allow of

its extirpation without danger. But, before we proceed farther, we feel it necessary to give some important advice to the operator—that is, to have his hands well protected with gloves whenever he is obliged to touch the tumours, either when about to explore or to operate on them. This precaution we have never neglected, and have never met with any accident.

The excision of the tumours must be complete, and in a circular or elliptic form. In extirpating them it is necessary to extend the incisions beyond the limits of the tumours themselves into the healthy tissues. But whichever of the two processes is resorted to, it will frequently be without effect unless seconded by the application of the actual cautery, followed by suitable topical dressings.

The cautery must be applied without fear, so as to destroy all the affected tissues, and penetrate into the healthy ones. The best shape or form of the cautery is an ovoid of considerable thickness, heated to a white heat. The intention is to produce a new eschar, and consequently a wound of a different and healthy nature. This result, it may easily be conceived, could not be obtained in enormous charbonous tumours, unless the use of the cautery is preceded by that of the scalpel.

The actual cautery is also useful as an auxiliary to penetrate into sinuses which cannot be reached by the scalpel, for instance, when openings exist in the tumour, as is frequently the case. The pointed cautery must then be repeatedly used, and heated every time to a white heat, taking care to introduce it to the bottom of the sinus, and in a direction so as to make a pendent orifice, to allow of the evacuation of the fluids.

Among the topical agents to be applied after the operation, boiling vinegar, the essential oil of turpentine or of lavender, blistering ointment, liniment of ammonia, with ammoniacal frictions, camphorated tincture of aloes, &c. have been particularly recommended; but none of these are preferable to the chloride of soda or lime of M. Labarraque, used either pure or diluted with a certain quantity of water. MM. Bouley, Roupp, sen., Panon, and Desbassyns, have been most successful in the application of it; the first in cases of charbon consequent on the inconsiderate introduction of setons during an epizootic raging among horses, the others in cases of pure charbon. M. Bouley directed injections of the chloride to be used every hour after the cautery had been

applied, and the parts to be dressed immediately after with dry tow; the good effect of which was that the progress of the disease was checked, and healthy suppuration followed on the third or fourth day, when all danger disappeared. M. Roupp had a charbonous affection to combat in a mare, and had reason to fear a fatal termination: he concentrated eight ounces of chlorinated lime in water, which was injected hourly into the wound after the operation by extirpation, and the amendment was sudden and decided. In the Isle of Bourbon, where the charbon makes frightful ravages amongst the mules, M. Desbassyns administered the concentrated chloruret three times a-day, the dose being a tea-spoonful each time diluted with a pint of water. The progress of the disease was thereby arrested, and the alarming symptoms disappeared in three or four days. Although the effect of the chloruret of lime cannot be denied in these cases, we participate without reserve in the opinion of M. Bouley, that this agent alone is not sufficient, but it must be considered merely as an excellent auxiliary; of which the foregoing facts would seem to authorise the conclusion. Thus, after the extirpation and the judicious cauterization of the tumours, instead of filling the wound with less effectual topical agents, it is more advantageous to put every part in contact with the chloruret, either pure or diluted with water, in the form of injection or lotion, or by dipping pledgets of tow in it and applying them to the surface of the wound, according to the exigency of the case. When the newly-formed eschars come off, the surface of the wound will be of a vermilion colour, and healthy suppuration soon after established; this forms the basis of a good cicatrization. When these favourable signs are present, it will only be requisite to dress the wound with diluted alcohol, in which aloes and camphor may be dissolved. If, on the contrary, the chloruret is continued, it should be largely diluted in proportion as the cure progresses to completion, until the dressing consists of dry tow only.

It sometimes occurs that, after the extirpation of the tumours, fresh ones appear; but in this case the same treatment must be pursued, and the new comers excised and treated in every respect in the same manner as the former ones. Frequently, too, the excision of the charbonous mass is followed by a great deal of œdematous tumefaction, which extends more or less. It will be necessary in such cases to penetrate its substance with the

actual cautery, and apply the same dressing as already recommended. We do not deny that these active means are likely to be productive of considerable local inflammation, and a general excitement of the system more or less powerful, particularly if the situation of the tumour is in a tender part, or of great size, and the operation has necessarily caused great loss of substance; but in these desperate cases is it not better to attempt the cure, though the result may be uncertain, than to abandon the patient to certain death? No treatment, however, should be adopted which is likely to terminate fatally in a few hours, and perhaps even before the departure of the veterinary surgeon; but if the disease is likely to last two or three days, judicious internal remedies should be resorted to, conjoined with topical remedies, though at the risk of failure. The most important point is to decide on the circumstances which either favour or militate against the employment of remedies. Charbon never confines its effects to the tissues in which it is located, whether it be extensive or deep-seated, has arisen spontaneously or is the result of contagion, or is produced by the inoculation of a septic agent; but it invariably gives rise to general disease, which presents itself under two different forms; namely, indications of irritation and inflammation of the principal organs, and general symptoms of asthenia. We will not attempt to explain the causes of this marked difference in the effects of one and the same disease, but we will take advantage of the knowledge of the fact to establish precepts for a general treatment of the malady. If the inflammatory symptoms, either local or general, run high, it is to the antiphlogistic treatment that recourse must be had. A restricted diet, mucilaginous and acidulated drinks, nitre, the vapour bath, enemas either simple or medicated, &c., these are the general elements of this treatment. We except, however, blood-letting, which experience teaches us has always been contra-indicated, and in many instances it has proved fatal. We find this also holds good in many, indeed most, epizootic diseases, and even in the contagious typhus. If, on the contrary, the disease is attended with but little excitement of the system, if there is indication of its influence on the vital organs being rather more of a depressing than irritating nature, then antiseptics should be employed; that is to say, medicines possessing stimulating properties, such as camphor, gentian, sulphate of quinine, given in

infusions of aromatic plants, or in strong beef tea, cider, or wine. If, on the other hand, it is found that the local and sympathetic phenomena have the same intensity, then the therapeutic treatment should be mixed.

We have but little to add relative to the treatment of charbon when it attacks particular situations. When it is at the anterior part of the thorax, ablation of the tumour will be the best plan that can be adopted. If in the mouth, when the tumour is situated between the jaws, it is necessary to make the incision below and externally, and in the direction of the tumour, and cauterise it with some mineral acid: the dressing to be made use of is the same as in the other cases, namely, the chloruret, either in the form of injection, or of pledgets of tow dipped in the solution. The same process is to be followed in cases where the tumour is situated at the palate. If the bones be affected, the best plan is to facilitate their exfoliation by the aid of acids.

Charbon, when situated on the exterior of the head, must be deeply scarified in a transverse direction, and it will sometimes be necessary to extirpate the tumour in cases where the tissues are already much involved. It is always good practice to amputate the ear, and to extract the eye, when affected with charbon, especially if there be no other means of arresting the progress of the gangrene. At the thigh, charbon does not call for any particular treatment, except when in the shape of a tumefied mass on the inside of the limb; in which case the cauterization must be deep and extensive, and afterwards the parts are to be dressed with solutions, the first consisting of the undiluted chloruret of lime or soda, and the second more or less diluted, these being applied several times in the day. Charbon within the hoof requires that part of the hoof to be removed where percussion will lead to the detection of the seat of it, and which the blackened tissue, after the hoof is taken away, will confirm. If the frog is the seat of the disease, which occurs frequently in the horse and mule, no time should be lost in removing all the horny substance even beyond the part affected; after which the whole of the affected frog should be detached, the parts freely cauterized with the mineral acids, and the dressings subsequently used should consist of the chlorurets, and the bandages be so applied as to give a certain degree of pressure to the parts. Charbon situated at the

digital region of fowls and geese must be either scarified or extirpated, according to the case, and the parts afterwards soaked in diluted chloruret, or pledgets of tow saturated with it applied.

We cannot conclude without recommending the greatest caution to the veterinary attendant who may have to treat or operate in cases of charbon. The slightest wound with the scalpel during the act of incision, or when exploring the tumour with excoriated hands, or only when they are in a state of perspiration, may inoculate this dreadful poison. The hands should be protected by strong gloves made of some substance that does not allow the ichorous fluids to penetrate through them to the skin. Many have fallen victims from not having taken this necessary precaution, and facts are not wanting to substantiate what is here advanced, were it necessary to adduce them; but we will content ourselves with one, that of the unfortunate Narcisse Girard, the hope of veterinary science, who died in the prime of life, from having made a post-mortem examination of a dead horse affected with charbon.

The following article is from the *Courier des Ardennes*, of the 21st of September 1837:—About a month since, a dreadful disease carried on its ravages in the Departement de la haute Vienne, de la Creuse et de la Corrèze. The mortality is almost general, particularly on the borders of streams and marshy situations. It suddenly seizes animals which up to the time have not shewn the least symptom of illness; and some seem to succumb under their loads. This is principally the case with millers' horses; others fall down at plough, or in the wagons; but the greater number die in the stables, where they are found in the morning black and swollen. We may add, that all the dogs that have fed on the flesh of these dead animals have perished in a short time afterwards, and even several wolves have been found dead in the neighbourhood, which were supposed to have eaten of the carcasses.

This form of charbon shews itself by swelling of the limbs, or other parts of the body; the animals cross their legs, and can hardly be made to move; the extremities become stiff; the coat stares; the belly is tympanitic, and the swelling quickly extends to different parts of the body. If the tumours are cut with a scalpel

or bistoury, a sort of vapour or mephitic gas escapes from the incision with considerable noise, similar to that of a fusee burning; the eyes lose their lustre, the sight is gone, the animal reels, and suddenly falls to rise no more. After death the body continues to swell until a state of perfect putrefaction is set up, which occurs almost immediately. No time, therefore, should be lost in removing the dead bodies, as great danger would arise from the least neglect in this particular, and they should be buried as deep as possible.

On Pleuro-pneumonia Epizootica in Cattle.

By P. Verheyen, *Professor at the Veterinary School, Brussels.*

[Concluded from page 225.]

The contagious or non-contagious Nature of the Disease considered.

MM. Leroi and Rodet are of opinion that in its milder forms it is not contagious, but that it becomes so when the disease passes into the gangrenous stage. At the time these remarks were made, the epizootic had not been studied sufficiently, so as to ascertain the fact that it never terminates in gangrene. Nevertheless Brugnone and Toggia had already declared themselves in favour of contagion, grounding their opinion on the facts stated by the German veterinary surgeons. Laurin observed the disease in Lombardy, and although he declared himself a contagionist, he at the same time opposed the opinion of Leroi.

When the pleuro-pneumonia broke out in Holland, Vanispen, President of the Committee of Agriculture, assisted by the veterinary surgeons of Groeningen and Mowen, instituted an inquiry with a view to ascertain the origin of the disease. Public rumours accused Vanderbosh, a distiller, of having bought some oxen that were taken out of the pastures of Mehr and Niel, in the Prussian territory, on the frontiers of Holland, where a great many cattle had fallen victims to the disease. The inquiries confirmed the fact of the importation of the oxen, and also the first appearance of the disease in his stables. In the month of November 1833, the pleuro-pneumonia attacked the cattle of J. Vandepaverd, at Leuth, parish of Gueldre, near the Prussian

frontier, while they were in the pastures. The first case occurred in a milch cow ;—a week after a second was attacked: both died. It then disappeared for six weeks, after which another cow was attacked. The number diseased now increased to thirty, of which twenty-six died, and the disease continued in the stable the whole of the winter; and at the time his cattle was sent into the pastures, on the 11th of June, two cows were still labouring under it. About that period, Dirk Hendricks, the nearest neighbour to Vandepaverd, lost six beasts. From thence the disease extended to Panerden, and appeared among the cattle of Dirk Vandesand. From thence it reached a farm about a mile distant; after which it broke out among the stock of Willem Vandesand, brother to the former, whom he had often visited, and also assisted in administering medicines to the diseased animals.

In the beginning of May the epizootic appeared at Groesse, in the parish of Duiven. It first broke out in the stables of Tendringen, where it attacked a cow which had been bought in the spring. The disease successively invaded several parishes. On following the progress of the malady, it would be found to attack an animal suspected to be brought from an infected place, then a herd of healthy cattle, but which had been in contact with an infected herd of a neighbouring village while at pasture.

The pleuro-pneumonia epizootica prevailed for two whole years in Gueldre, extending gradually its ravages from farm to farm, and from village to village. In the month of December 1835, and of January 1836, it suddenly invaded Middle Holland, and appeared in the parishes of Lier, Maisland, Maeslais, Naelwyk, Groeneveld, S'gravesande, the Isle of Rozenburg, and afterwards the whole of the province became infected.

Did the general causes of epizootics give birth to the pleuro-pneumonia in Holland? If so, why was it confined from November 1833 to June the following year to the cattle of John Vandepaverd? We find it extending as soon as the pasture lands favoured the communication of animals. Everywhere the disease breaks out, and you may easily trace its march. It is confined for two years to one province only; it then approaches another province extremely rich in cattle, invades it, and causes a frightful mortality. But how did the disease get to Holland? If we consult the *General Veterinäre Bericht des Königlichen Rhein*

Medecinal Collegii über die Jahre 1829-30-31-32, we find that for a long time it had prevailed in Prussia, on the frontiers of the Netherlands; and that during the above named years it had not discontinued its ravages in the neighbourhood of Cologne, Coblentz, Bonu, Treves, Bittburg, Dhaun, Adenau, Zell, and several other districts.

M. Vanderwattyn, who traced the origin and progress of the disease in Flanders with considerable attention, and who has been kind enough to communicate to us the result of his observations, attributes the origin of it in his province to a herd of horned cattle brought from the Campine, where the disease had manifested itself in several localities in 1828. At a public auction at Shepdale, one of the suburbs of Bruges, in 1828, the Sieur Bulcke, cultivator at Ramsu, Cappelle, and two gardeners of Bruges, made purchases; the first of three heifers, the latter of a milch cow each. A short time after the introduction of the heifers into the pasture, Bulcke perceived the appearance of the pleuro-pneumonia among his stock. The three heifers were its first victims, and the two milch cows purchased by the gardeners of Bruges died of the same affection, having been in their possession only a very short time.

Such were the circumstances, observes M. Vanderwattyn, which preceded and accompanied the first cases of the pleuro-pneumonia epizootica in Flanders. Some months after, in 1829, the disease broke out among the stock of the cultivators Pentelon of Ramscappelle, Malefeson of Dudzeele, and J. Desmet of Oostkerke, all neighbours of the cultivator Bulcke: and in this manner it proceeded from village to village in rotation as they were more or less distant from the one where it first manifested itself.

In 1832 the pleuro-pneumonia broke out among the stock of H. Dyonghe, at Coolkerke. This farmer having lost several cows through it, bought a milch cow apparently perfectly healthy to supply milk to his household. About from the tenth to the eleventh day after her admission she exhibited all the symptoms of pleuro-pneumonia, of which she died.

Two sucking calves were bought by Vandevelde, cultivator at Oudebourg, and put into his stables during the prevalence of the pleuro-pneumonia: they also both died of the same complaint. J. Van Isacker, cultivator at Cortemark, found the pleuro-pneu-

monia breaking out among his stock after he had been appointed to value a neighbour's stock which was affected with the disease. This man was very careful in the duties of his office, and never valued a beast without having minutely examined it, and he used to attend his own cattle.

The burgomaster, Mabesoone, of Oostkerke, having, without his knowledge, admitted to pasture with his own a herd which was suspected, the pleuro-pneumonia, after having attacked them, spread to other cattle, among which it committed great havoc.

During the summer of 1834, the live stock of the deceased widow Dewitte, of Oudelappelle, in the district of Dixmusde, were sold by public auction. Before the sale some of them had been carried off by the epizootic, and others were suspected to be diseased. In November the same year, and in April 1835, M. Vandewattyne was sent to Steenkerke, district of Furnes, to the cultivators Loones and Deren: all the information obtained convinced him that the epizootic had its origin from the cattle bought at the abovenamed sale.

The cow bought by Loones still lived, and in the opinion of the proprietor was healthy; but M. Vandewattyne pronounced her infected, and his prognosis was soon confirmed.

All the cows sold at the sale died of the epizootic.

The pleuro-pneumonia appeared for the first time among the cattle of J. Gillen, cultivator at Uyskirke, after the introduction among them of a lean cow brought from an infected herd in the neighbourhood of Ostend. During the prevalence of the disease among the cattle of Gelliaert, cultivator at Etteghem, he bought a healthy cow coming from a district where the disease was unknown. As soon as she was brought in contact with an infected beast she contracted the same disease, and died. In the month of September 1840 the epizootic broke out among the herds of Calan, cultivator, at West Cappelle, which were at pasture in the parish of St. Anne (Holland): two of the beasts belonged to another individual, who, on being informed of it, had them removed, and, thinking them free from the infection, sent them into the common pasture at Knocke, which contained at the time above 100 head of cattle, of which 67 belonged to Landschoot. This was the origin of the epizootic at Knocke. The two cows abovementioned were its first victims; the majority of the herd of Landschoot perished.

Some of the proprietors of cattle had them removed from the pasturage on the first outbreak, but it was too late: they communicated the disease to those of other cultivators; and the number of animals attacked by the disease since September 1840 to February 1842, in this small locality, amounted to 156. In the month of October 1840 we went to see a cow in the stables of G. Hardies, cowkeeper, rue du Nord, Bruxelles. The cough was characteristic, and this, in addition to the other symptoms, enabled us to recognise the pleuro-pneumonia epizootica. This cow had been bought at the market of Malines a short time before; she had often been heard to cough. He had two other cows which had been eighteen months in his stable, and never during that time ailed any thing. We advised him to separate them from the diseased cow, which, however, was not attended to. At the end of fourteen days the affected cow was in perfect convalescence; but the one next to her began to cough; eight days after the other was attacked, and the pleuro-pneumonia carried them both off. At the veterinary congress held at Mayence in 1841, the question of contagion was agitated. All the members, twenty-three in number, were in favour of its being so. They admitted, moreover, that at an advanced period of the disease it was not only transmitted by immediate but also by mediate contact; that the pulmonary exhalations were more virulent than the cutaneous perspiration; that in certain cases the disease might shew itself spontaneously, but that its propagation must be attributed to contagion; that by its slow progress it existed for years in one district or locality, solely through its contagious nature, even although the hygeian of the cattle had been improved and every influential cause removed; that the infected atmosphere would not only spread it in the same stable, but would also penetrate into the neighbouring stables when not too far removed, or when they communicated together indirectly. Dr. Vix adds that the infected atmosphere, according to his experience, only extends to neighbouring stables at a distance of five feet. Every day's observation confirms the fact that the expired air and the mucus from the bronchi are the principal vehicles of the contagious virus, which is miasmatic, but which does not exert its influence beyond a circumscribed atmosphere surrounding the patient. The first manifestation of its effects is on the pulmonary vessels. Its progress is at first slow, and the

period of its full development is of an indeterminate period; it may be several weeks.

The virus seems also to adhere to contiguous bodies, by which the seeds of the infection are carried from stable to stable. The observation of Tscheulin, to which we may add another made in Holland, and a third communicated by Vandewattyn, tend to substantiate this mode of propagation. The experiments of Rudolphi and Dieterichs prove that the milk of cows affected with pleuro-pneumonia is not in the least injurious to healthy cattle.

Up to the present time we have no proof of any bad effect being produced on mankind either by the use of the milk or the flesh of diseased cattle. Huzard says that the meat of cattle affected by the pleuro-pneumonia has been constantly eaten in Paris, and that no disease which might be reasonably attributed to its use has been known to prevail. Haveman, Bojanus, Dieterichs, Hoffaker, and Waginfeld, likewise declare that the flesh is wholesome. Dr. Albert has communicated some facts which tend to a belief that at an advanced period of the disease, above all, when accompanied with fever of a typhoid character, the flesh of pneumonic cattle may not be used with impunity as human food: we also are of opinion that in those cases its use should not be permitted; but when the affection is at the commencement, then there is no reason why the affected cattle should not be sold to the butchers. This we know is frequently the case; and many proprietors of cattle, convinced of the little chance of cure, sell their stock on the first appearance of the disease.

Measures of the Sanitary Police.

We will contend that the disease has not developed itself spontaneously in our country; but it is also certain that none of the causes which have been assigned as giving birth to this affection will bear close investigation. They are, moreover, so contradictory, that there would not be much exaggeration in saying with Wagenfeld, that all obnoxious influences, either external or internal, which in general would have engendered a morbid action, have been brought in a certain degree to bear on the etiology of pleuro-pneumonia. That pleuro-pneumonia epizootica is contagious,

the above quoted cases are, in our opinion, a sufficient proof,—the government also considers it as such; in consequence of which it has assigned an indemnity from the agricultural funds to those whose cattle are slaughtered after competent authority has examined them, so as to prevent the spreading of the disease. But, to what purpose is this partial slaughtering, if no barriers are opposed to the propagation of the infection? If the virus which gives birth to the disease be not destroyed, some diseased animals at great expense are destroyed, it is true, but the principle of the evil is left untouched; and, what is more, every individual is at liberty to propagate the disease, since no penalty is inflicted on those who sell cattle which are suspected. As soon as the disease prevails in a herd, and has committed some ravages, it is no extraordinary thing for the proprietor to dispose of the remainder at the next and nearest fair, thereby spreading the disease in all directions. Being altogether ignorant of the causes which engender pleuro-pneumonia epizootica, we will regard it as a contagious disease *à priori;* that is, a disease which has been introduced from without, which exists and maintains itself only by or through contagion: it is under this impression that we will examine those sanitary measures which are applicable to it.

1st. Every buyer and drover of cattle shall be obliged to conform to Article 459 et seq. of the Code Penal, which enacts that, as soon as the disease shall appear among the herds, they shall, without delay, inform the parish authorities of the fact.

Art. 2. S. D., of the *Arrettè Royal*, 19th April, purposely calls attention to this act, and makes it wisely an indispensable condition to obtain the indemnity from the agricultural funds. But what is the conduct of the authorities after they have received this declaration? Do they take any measures to prevent the contagion extending? Do they know the duties they have to perform? Generally the proprietors act according to the advice of the veterinary surgeon; but in cases where empirics and quacks have possessed themselves of the confidence of the agriculturist, this law is violated with impunity. It would therefore be necessary to have the means to prosecute these violators of the law.

2d. The moment pleuro-pneumonia has shewn itself in a stable, the parish authorities, in concert with the government veterinary

surgeon*, will take every precaution for the perfect sequestration of the diseased animals from those which are as yet healthy, and see that they are not attended by the same individuals. That localities where they have sojourned be completely disinfected; however, those animals which we have designated as healthy must be considered as suspected, and consequently they must be prohibited from passing the limits of their domain; the public pasture, watering-troughs, &c. must also be interdicted for at least eight weeks after the death or cure of the last case.

3d. A strict watch must be kept that no beast coming from an infected stable or pasture be clandestinely brought to a fair or market, and sold. To carry this into effect, it is necessary to know the exact number of cattle, for it is only by this means that this important measure can be enforced. Another most important feature consists in demanding a bill of health with every beast brought into a market or fair, to be delivered by the veterinary surgeon, and countersigned by a member of the municipality, and to inflict a punishment on all those who bring animals without this certificate. Auscultation and percussion of the chest in reference to the diagnosis of pleuro-pneumonia, even in the first stage of the disease, offer to the veterinary surgeon certain signs which enable him to deliver these certificates. We consider this as a most efficacious measure, and, by adopting it, we should only imitate that which is practised in many of the German states.

4th. It would also be of the greatest utility to induce the proprietors of cattle to submit to a quarantine of eight weeks before letting their cattle freely communicate with each other, in particular those which have been recently bought. These measures are neither complicated nor difficult of execution; they only require a will to enforce them, and we are certain they would be crowned with success.

There remains still one question to notice:—What is to be done with the diseased animals that have been sequestered? Are they to be placed under medical treatment, or slaughtered immediately on the appearance of the first symptoms?

We know all the objections that have been raised against sys-

* In every district a veterinary surgeon is appointed, and paid by government, to prevent empiricism, and watch and report contagious disorders and epizootics.

tematic slaughtering, so as to extirpate contagious typhus, and we are far from comparing it with pleuro-pneumonia, which is only transmitted by a virus more fixed than volatile, and the influence of which is confined to a very circumscribed atmosphere surrounding the diseased animal. Notwithstanding, several powerful motives induce us to propose not the general slaughter of the animals, for this appears terrible, but to send to the butcher all animals which are attacked with the first symptoms of the disease.

Means of eradicating the Disease.

If we take a retrospective view of the different modes of treatment that have been advocated for pleuro-pneumonia, and consider the little success, or rather the non-success, by which they have been attended, we must acknowledge that we are but little advanced in the therapeutics of this disease. And how could it be otherwise? The period of development is generally very long. Already extensive, deep, and from their nature incurable, lesions exist in organs most essential to life, and that before the system becomes excited, so that it may almost be considered passive: indeed, the genus bovis will for a long time resist the influence of a disease which tends to destroy the very sources of its existence. Thus, to the common observer, suspected cattle, exhibiting externally all the signs of perfect health, and inspiring them with the greatest security, may offer very little chance of cure to the veterinary surgeon who explores the organs of respiration attentively. And proprietors consult professional men only when morbid phenomena indicate that their cattle are really diseased, and what can then be done beyond symptomatic treatment? A return to health is in some cases effected, but a radical cure seldom. Still this apparent return to health is often only the passing from the acute to the chronic form of the disease. The animal sustains an organic lesion of a serious nature; it remains in a state of emaciation, or is unthrifty: marasmus supervenes, and pulmonary phthisis at length puts an end to its miserable existence. In this case, it is a loss rather than a source of profit to the proprietor; and it is not even certain whether even in this stage the animal does not possess the power of disengaging the principle of contagion, and thus infect other animals.

For every diseased beast, arrived at the stage of incurability (and these constitute the greatest number), the owner receives out of the agricultural funds an indemnity equivalent to one-third of the value of the healthy animal; besides which, he is allowed to sell the hide. Estimating the value of each animal at 150 francs, the indemnity would be 50 francs; and adding 20 francs for the hide, will amount to nearly one-half its real value. If, however, the animal is sold to the butcher, and supposing the meat to be of inferior quality, he will have a greater produce, and the poorer classes of the community will be enabled to purchase a nutritious aliment, which the high price of meat generally puts out of their reach. The government, on the other hand, will be enabled, at a moderate expense, to indemnify the agriculturist for an enormous loss, and thus we shall much sooner and surer succeed in extirpating this scourge from the country, which it has ravaged for the last fifteen years: this is not a consideration which should be rejected without being duly considered. A few examples in support of this proposition:—

The pleuro-pneumonia manifested itself, for the first time, in the spring of 1833, at Renesse, in the island of Schowen (Zealand), and seven cows died before the competent authorities were informed of it. By the slaughter of all the suspected animals the propagation of the disease was prevented. In the month of October, in the same year, it manifested itself at Crabbendyke: the first five animals attacked were slaughtered, and the evil was crushed in its birth.

In the cantons of Vaud and Friburg the slaughtering was also had recourse to for mastering the pleuro-pneumonia. We will close this subject by an extract of the report of Dr. Laharpe, addressed to the Board of Health of the Canton:—

In the month of February the disease manifested itself in the village of Villars-le-Comte, in the environs of Moudon. It was not recognised immediately, and no report was made to the authorities, because it attacked cattle one after another, and shewed itself only after several weeks. A great number fell a sacrifice; and the slaughterer found, using his own expression, that they were affected with inflammation of the chest. A cow, sold at Denezy, a neighbouring village, conveyed the germ of the disease, of which she died: since that the pleuro-pneumonia

existed at Denezy without interruption, making, however, but slow progress, transmitting itself from individual to individual, and passing from one stable to the next. Denezy had already lost a vast number of animals, and, to put an end to the calamity, the authorities saw no other means than the general slaughtering of all the cattle contained in the locality.

The village of Villars-le-Comte was more fortunate, for, although cattle were here first attacked, since the month of May the disease has disappeared without any return. Probably the poor inhabitants of this district, possessing only one cow each, promptly disposed of it on the first signs of disease. It was not possible to trace the progress of the epizootic. It was supposed that it was brought from the canton of the Vallais, where, as in France, it frequently prevails.

A cow from Denezy was sold in the month of May at the fair of Romond, canton of Friburg; an inhabitant bought it, and sent into the pastures on the Alps for the summer: it arrived in the month of June in a meadow called the Great Tzermont, where it became ill, and died. This event awakened no suspicion, but in the month of July other cows of the same herd, which numbered about eighty head of cattle, became diseased, and many died. The cases becoming more numerous, and the mortality increasing, about the month of August the authorities were informed of it. The first veterinary surgeon employed did not know the disease; but others were consulted, who recognised the pleuro-pneumonia, and declared it contagious, and advised, as the only means of safety, the destruction of the whole herd. The mountain fortunately was isolated, and a hope was entertained of extirpating the epizootic by the sacrifice of this herd, but before this two head of cattle had left the Alps. A bull had been sent in the month of July to a neighbouring mountain, and a heifer had been fetched away a few days before the order arrived. The bull was shortly taken ill, and communicated the disease to a herd composed of about forty cattle, with which he was at the time. This herd was also condemned and destroyed, causing altogether a loss of 140 head of cattle. On the autopsia a great number of them were found affected with the disease, although during life they had exhibited all the signs of perfect health. Enquiries were now made about the heifer, and it was found in a stable with six other

horned cattle. The Board of Health of Friburg took this opportunity to assure itself of the contagious nature of the disease. The stable in which the heifer had been put was isolated, and access to it easily prevented; a watchman was set over it, who had the sole care of the cattle it contained, and no one was allowed to approach this man, and he often purified himself. After a few weeks the cow which stood next to the heifer became diseased, and seemed to be attacked with pleuro-pneumonia, and the heifer very soon died of this affection. The remainder contained in the stable were now ordered to be killed. On the autopsia it was found that the animal next to the first diseased was much affected with the same disease; the next to it less, and those farther removed still less—finally, the two last were found to be healthy. One of the diseased cows was six months in calf, and the lungs of the fœtus shewed already traces of alteration of structure; and from this time the canton of Friburg was considered free from the disease, and the restrictions were removed.

In the month of November a case of pleuro-pneumonia occurred at Balle, at the foot of the infected mountain. The authorities being informed of it, ordered three other cows in the same stable to be destroyed, two of which were already infected. These four cows were lodged in a stable next to the one in which the heifer passed the night on its descent from the mountain. Since this time no other case has occurred in the Canton of Friburg, and the disease has been confined to Denezy. Contagion was the alone cause of pleuro-pneumonia in these two cantons: it did not prevail epizootically, as in Savoy and France, where cattle badly fed, and in poor condition, are often attacked.

We would not wish to see the slaughtering carried on so extensively as this; but we persist in the opinion that the means the easiest of adoption and the most advantageous to the interest of the government, and also the proprietors, would be to send to the butchers all cattle which exhibit the first symptoms of the disease. This would be more efficacious than the partial slaughtering, and the allowing of free communication, without control, of the infected animals with each other.

COMMUNICATIONS AND EXTRACTS.

To the Editors of "THE VETERINARY RECORD."

Edinburgh, July 15th, 1845.

SIRS,—THE report of the Council of the Royal College of Veterinary Surgeons, published in your last number, contains a statement in reference to the Chemistry Class of the Veterinary College, Edinburgh, so singularly unjust and inaccurate, that I trust you will allow me space enough to point out its unfairness. At page 301, reference is made to the Highland Agricultural Society of Scotland "giving a silver medal to the pupil who shall pass the best examination in Chemistry; *and this too, be it remembered, in the face of a protest from the Professor of the School they patronize and protect against such a subject being taught in his class.*" I have marked with italics the passage I wish to comment upon. As I was the party by whom the pupils of the Edinburgh Veterinary College were instructed in Chemistry, and as I am likewise a member of the Highland Agricultural Society, I am in the best condition to say whether it was at the instance of that Society or of Professor Dick that the veterinary pupils were taught chemistry: and I beg to state emphatically, "that it is to Mr. Dick, and to him alone, that the merit of adding that branch of science to the curriculum of the Edinburgh College is owing. The following are the exact facts of the case:—

Last summer (1844), having been informed that Professor Dick intended to have his pupils taught chemistry, I had several conversations with him on the subject. He informed me that for years he had wished to have them instructed in that science, but that he had partly been dissuaded from it by persons to whose judgment on this subject he was willing to defer; partly had been prevented by difficulties which he could not overcome. He added, that he was resolved to let nothing stand in the way of his wishes being fulfilled during the approaching session (1844-45), and that he had made arrangements with Dr. Fyfe to have his pupils taught by him. Before the session commenced, however, Dr.

Fyfe was elected Professor of Chemistry in King's College, Aberdeen, and Mr. Dick's views in regard to him were frustrated. I undertook, in consequence to instruct the pupils of the Edinburgh Veterinary College in Chemistry, and they attended a special course of lectures addressed solely to themselves, during last winter. The arrangement was between Mr. Dick and me, not between me and the Highland Society. The latter body were not informed of its having taken place till it was concluded between us, and took part in the matter no further than to express their satisfaction at learning that their Professor was securing for his pupils a knowledge of Chemistry. It was by Mr. Dick I was engaged to lecture: to him alone I was responsible for the mode in which I taught the class; and he was the only party on whom I had any claim as to remuneration. From these circumstances, the reader can judge how ludicrously inaccurate, and altogether unjust, the statement in the Report of the Royal College of Veterinary Surgeons is, which represents Mr. Dick as having protested against his pupils being taught Chemistry, the very branch in which he had taken the greatest pains to have them instructed. Mr. Dick's protest, which I heard, had reference to a different matter. He protested as a matter of right (whether justly or not I do not say) against his pupils being examined in chemistry more fully than on previous years; and against ignorance of that science, as a special branch of study, being made the ground of rejecting candidates otherwise well qualified. The latter part of the protest I think was quite reasonable (although the view which is taken of that has nothing to do with the question before us) in reference to young men, the great majority of whom had attended only one course of Lectures on Chemistry.

I beg further to mention, that the Highland Society has already declined to accept the compliment which the Council of the Royal College of Veterinary Surgeons sought to pay it at the expense of Professor Dick. At a Meeting of that body on Tuesday last (8th July), I was in my place as a member, when Burn Murdoch, Esq., president of the Veterinary College Committee of the Highland Society, rose to disavow on its part any approval of the representation given in the Report of the Royal College of Veterinary Surgeons, which he further stated was quite inaccurate. Mr. Murdoch added, that it was Professor Dick, not the Directors of the

Highland Society, who had secured for his pupils a course of Lectures on Chemistry, and that there never had been any difference of opinion between them and him as to the desirableness of having that subject taught.

There is another statement in the report to which I wish to make a slight reference, From the way in which the medal of the Highland Society is referred to, in connection with the assertion as to Professor Dick, already discussed, a reader not otherwise informed on the subject cannot fail to draw the conclusion, that, as the pupils of the Edinburgh Veterinary College were unwillingly taught chemistry, so they were left by their teacher without any encouragement in the way of premiums to study that science, and that the Highland Society stepped in to supply the deficiency. I do not blame the Council of the Royal College of Veterinary Surgeons as a body because such a representation of matters has been given. But their Secretary, at least, knew that it was a very unjust one. The Highland Society's medal was only announced on the day of examination. No anticipation of such a thing being given existed on the part of the members of the class; it supplied, therefore, no motive to exertion on their part, and the competition was, in the end, open only to the candidates for diplomas, who did not form more than a third of the class. The latter was not left, however, without inducements to exertion. Two silver medals of the same value as those of the Highland Society were offered for competition to the whole class; the one for the best answers to a series of questions, in writing, on Inorganic and Organic Chemistry—the other for the best Essay on the "Connection between Chemistry and the Veterinary Art." Three Essays were given in, and they were so good, that considerable difficulty was experienced in deciding which was the best. Ultimately, prizes were given to the authors of all of them, and I availed myself of the assistance of the chemical examiner (Mr. McGregor) appointed by the Royal College of Veterinary Surgeons in settling which of the Essays deserved the medal. He spontaneously expressed his satisfaction with the papers placed in his hands as evidences of knowledge and ability, and the Essays were laid on the table at the close of the examination. The medals, which Mr. Gabriel had more than once in his hands, were ultimately presented by Dr. Knox to the successful students, in the presence

of all the examiners. I leave it to Mr. Gabriel to explain to his fellow-members of the Council why he left these things unmentioned. There seems a very strange contrast between the anxiety expressed in the Report as to the desirableness of having veterinarians taught chemistry and the systematic and intentional concealment of the successful endeavours which the teachers in Edinburgh made, unaided, to communicate the desired instruction.

With the questions that divide the veterinary profession I do not interfere; but I regret that Professor Dick's efforts to benefit his pupils should have been so misrepresented, and that the young men to whom I found it so pleasant to lecture, should have had their endeavours to acquire a knowledge of a very difficult science so slightingly passed over.

I remain, your obedient servant,

GEORGE WILSON, M.D., Surgeon,
F.R.S.E., &c. &c.

Lecturer on Chemistry in the Extra-Academical Medical School, and to the School of Arts, Edinburgh.

Laboratory, 24, *Brown-square*.

[*From "The Mark Lane Express," 7th July*, 1845.]

In the *Mark Lane Express* for June 2d, in offering a few remarks on the proposal for a distinct Charter, by the Highland Society and others, we expressed our belief, that at the examinations held at the Veterinary College, Edinburgh, 1844, scarcely any questions relating to chemistry, materia medica, and cattle pathology, were put to the pupils: this Dr. Mercer, one of the Examiners, has denied, and has given "our gratuitous statement" (as he has been pleased to term it) *a most unqualified contradiction*. That we had good and sufficient ground for our *assertion*, the following *extract* from the report of the deputation who were present at the examination alluded to will abundantly testify:—"*There is no examination on chemistry, none on materia medica, none on physiology, none on the diseases of cattle that deserved the name*. There were by far too many leading questions, and the examinations were very unequal and unsatisfactory." The report itself, from which this extract was taken, bears the signatures of

Professor Spooner, Veterinary College, London; Thos. Walton Mayer, Newcastle, Staffordshire; E. N. Gabriel, London, Secretary to the Royal College of Veterinary Surgeons.

That the testimony of these gentlemen is one upon which the Council of the Royal College of Veterinary Surgeons places implicit confidence, may be gathered from the fact that they have adopted the above extract in the pages of their Report just presented to the profession.

In this Report we find our statement fully supported; nay, it even goes further, and asserts that the Professor of the Edinburgh Veterinary College, *this year*, protested before the Board of Examiners against *chemistry* being TAUGHT in his class.

If the report is false, then we must refer Dr. Mercer to the Council of the Royal College of Veterinary Surgeons, whose especial duty it will be thoroughly to investigate the point in dispute. It has been from authentic documents that we founded the remarks that appeared in this paper, and not from any invidious feeling towards the Edinburgh Veterinary College.

To the Editor of "The Mark Lane Express."

Sir,—In your Journal of the 7th instant, you—apparently not a correspondent this time—again refer to the examinations at the Edinburgh Veterinary College of 1844; and the "gratuitous statements"—(as I have been pleased to call them, *and to which I have given a most unqualified contradiction* in my last letter) made by you in your paper of June 2d, you have endeavoured to substantiate by a reference to a Report made to the Council of the Royal College of Veterinary Surgeons by the deputation which they had sent to be present at these examinations.

This Report, bearing as it does the signatures of Professor Spooner, Veterinary College, London; Thos. Walton Mayer, jun., Newcastle-under-Line, Staffordshire; and E. N. Gabriel, Secretary to the Royal College of Veterinary Surgeons, London, in your full belief, abundantly testifies the good and efficient grounds for your assertions. It distinctly states that there was *no examination*

in chemistry—none in materia medica—none in physiology—none on the diseases of cattle THAT DESERVED THE NAME.

It is, indeed, sometimes very difficult to define what, or to indicate who, deserves a name; but as the above, as also your former statement, is fully intended to convey an impression to the public that *none or scarcely any questions* were put to the pupils here on these branches at the examinations referred to—even granting the apostrophe of the Report, that some questions were put, but these did not deserve a name—in the face of this Report, and those individuals who signed it, *I again reiterate a most unqualified contradiction to its intrinsic truth;* and I further beg to reiterate, that the pupils were as rigidly and as extensively examined last year on all these branches as they were in the recent examinations.

Further, Sir, independent of the appeal you make to the testimony of the gentlemen of the deputation, and the fact of the implicit confidence placed in them by the Council of the Royal College of Veterinary Surgeons,—to *clinch* all your remarks, you state that the *Report* (the recent Report of the Council to the profession) goes even further, and *asserts* that the Professor of the Edinburgh Veterinary College, this year, *protested* before the Board of Examiners *against chemistry being* TAUGHT *in his class.*

To this *assertion* I again beg leave to give "another most unqualified contradiction." Professor Dick *did protest* before the Board of Examiners at the time referred to; but *he did not protest against chemistry being* TAUGHT in his class. He *protested against chemistry being considered* by the Board *as a special subject for* EXAMINING his pupils on, this year, inasmuch as he had received no intimation from the Council of the Royal College of Veterinary Surgeons *that such a branch of study should constitute an individual part of the examinations.*

Had you been aware, Sir, of the real state of proceedings that took place at these examinations, a full account of which appeared in the June number of *The Veterinarian*, you would at once have seen, on collating these, the absurdity of this assertion; and, were it deemed necessary, I would only place the names of such of those gentlemen, members of a veterinary committee of the Highland and Agricultural Society of Scotland as were present at the examination, in the balance against the name of that gentleman,

who, on behalf of the Council of the Royal College of Veterinary Surgeons, appeared on the same occasion, as to the correctness of that published Report. I will also farther refer you to the remarks of J. Burn Murdoch, Esq., of Gartincaber, the Chairman of this Veterinary Committee, made at the general meeting of the Highland and Agricultural Society of Scotland, on Tuesday the 8th inst., *a certified report of which is published in the Edinburgh Evening Courant of this date.* There you will find, in the notice of the Edinburgh Veterinary College, that this gentleman takes cognizance of the *Report* of the Council of the Royal College of Veterinary Surgeons to the profession, and especially of this *protest* "*against chemistry being* TAUGHT *in the Professor's class.*" In charity, he hopes that "this statement has been made through inadvertency, and also in some measure perhaps from a misapprehension attributable to the confusion of the moment. *A more unfounded statement,*" *he however concludes,* "*never was put upon a public record.*"

On this subject of chemistry I shall only farther refer you to the three following circumstances:—

First—Professor Dick, at the last examinations, awarded a medal to that student, who, in the first year of his studies, *should undergo the best examination in chemistry.*

This prize was decided by the Board of Examiners.

Secondly—Dr. Wilson, the lecturer on chemistry in connexion with the Edinburgh Veterinary College, awarded two medals for the best essays *on the application of chemistry to veterinary medicine and agriculture.* These were also decided by Dr. Wilson and the Board of Examiners.

Thirdly—The Highland and Agricultural Society of Scotland awarded a medal to the student who distinguished himself most highly at the examinations *for his proficiency in chemistry generally.*

With such facts, Sir, which you could easily have obtained, could you ever dream of the reality of Professor Dick *protesting against chemistry being* TAUGHT *in his class?*

In conclusion, I shall now leave the matter in the hands of the Council of the Royal College of Veterinary Surgeons, courting most sincerely a thorough and impartial investigation; and though personally unacquainted with nearly all the members thereof, yet

I know that there are gentlemen there, who, for the sake of probity and justice, will impartially, candidly, and thoroughly, investigate the point in dispute.

On the honour of these gentlemen I fully and safely rely; and whenever it be deemed necessary to proceed further, I shall be happy to repeat and substantiate all that *I* have written.

I have the honour to remain,

Sir, your's, &c.,

JAS. MERCER, M.D., F.R.C.S.E.

Lecturer on Anatomy, &c., and Member of the Edinburgh Veterinary Examining Board.

50, Northumberland-street, Edinburgh, July 10, 1845.

To the Editor of "The Mark Lane Express."

Sir,—OUR attention has been directed to a letter which appeared in the *Mark Lane Express* of July 21st, from Dr. Mercer, of Edinburgh, in answer to some remarks which appeared in a former number of your journal, and also in contradiction to a paragraph contained in our Report to the Council of the Royal College of Veterinary Surgeons, which stated that "There was no examination on chemistry, none on materia medica, none on physiology, none on the diseases of cattle that deserved the name," at the examination of the pupils of the Edinburgh Veterinary College last year.

To the truth of this Report Dr. Mercer ventures to give "a most unqualified contradiction;" and further reiterates that the pupils were as rigidly and as extensively examined on all these branches as they were in the recent examination. Notwithstanding, however, this charge of having asserted a deliberate falsehood, and thus deluded the Council of the Royal College of Veterinary Surgeons, we most solemnly and deliberately aver that every word contained in our Report with reference to the examination is true in every particular. We declare that the pupils were neither strictly nor extensively examined; that numbers were never asked a single question on any one of the subjects mentioned; and that those who had any questions put to them gave very indifferent answers; the whole examination evidently

shewing that their education on these important points was both limited and defective.

We witnessed these things with pain. We regretted that so many young men should be considered fit to enter on a professional vocation so lamentably ignorant of subjects, a knowledge of which is so indispensable to the veterinary surgeon; and we expressed our opinions and feelings to the Council in words which Dr. Mercer declares to be entirely false.

But we heard with our own ears, we saw with our own eyes, we have the testimony of our own consciences, substantiated by gentlemen who sat at the same table, who took part in the same examination with Dr. Mercer, and whose rank, station, and character in the medical world entitle them to the confidence of the public. And what is the result? Examiners and pupils, medical men and veterinary surgeons, have one and all given their testimony to the truth of our statements. Nay, more, Dr. Mercer's own letter proves the truth of our Report; for if the pupils have been invariably and rigidly examined on chemistry, &c., why should Professor Dick have objected to his students being examined on chemistry? Let Mr. Burn Murdoch, Chairman of the Veterinary Committee, return the answer:—"Professor Dick objected to chemistry being recognised on that occasion, as a necessary part of the examination, on the ground that it had not been customary to do so."

Does Dr. Mercer mean to assert that we do not know what an examination ought to be?—and that we are not capable of expressing with truth that which we both saw and heard? Does he mean to state that we have set down from malice and design that which did not take place? Does he mean to declare that the pupils of the Veterinary College of Edinburgh were extensively examined on organic and inorganic chemistry?—that they knew the composition, and could explain the decomposition, of the different substances used in veterinary medicine?—give the names, properties, and places whence obtained, of the different vegetable productions we employ?—were asked to explain the physiology of the various structures in ruminants, and the nature and proper mode of treating the diseases to which they are liable? If he does, let him come before that tribunal to which he has appealed, and substantiate his remarks. Let him bring his

witnesses before the Council of the Royal College of Veterinary Surgeons: there will we meet him; there will we give evidence to prove that we have stated the truth, the whole truth, and nothing but the truth.

We are, Sirs, your obedient servants,

EDMUND N. GABRIEL.
T. WALTON MAYER.
CHARLES SPOONER.

From "The Veterinarian."

A LETTER bearing the signature of James Mercer, M.D., F.R.L.S.E., Lecturer on Anatomy, &c. and Member of the Edinburgh Veterinary Examining Board, having appeared in the *Mark Lane Express* and now in your periodical, a few remarks on some portion of its contents become necessary. My attention had been called to it on its publication in the *Mark Lane Express;* but as I am by no means proud of engaging in a newspaper controversy (partly, perhaps, because not being a Lecturer on etceras), I had no particular object in taking that means of advertising myself to the public, I should not have replied to it had not my colleagues in some parts of the transaction thought it desirable that my answer as well as their own should appear through the same media as the charges brought against us. *The Veterinarian*, however, having also become the vehicle of communication, the veterinary profession becomes interested in the affair, and it is but fair that they should be set right in the matter.

The first part of the letter I have left my colleagues to reply to, feeling very certain that either of them is quite capable of setting the question of veracity at rest, to the satisfaction of the profession, if not to the satisfaction of Doctor Mercer.

In my report of the examinations at Edinburgh, of this year, I stated that Professor Dick protested against chemistry being required to be taught to his class. I made a minute of the protest at the time it was made, fully believing it to be correct. It is just possible I may have misapprehended a single word, namely, *taught*

for *examined*; and the authority of Mr. Burn Murdoch, in some remarks he made to the Highland and Agricultural Society, would tend to make it appear it was so; the protest it seems, from that gentleman's shewing, was not against chemistry being taught to the class, but against the class being examined on chemistry. The difference between the two statements, in their practical effect, is rather a fine-drawn one; for whether a protest is entered against a subject being taught, or against the pupils taught being examined as to their knowledge of it, the result as a guarantee to the public will be found to be the same; for in the present day no man who is taught a particular subject has a right to expect to have it taken for granted that the subject is properly understood, unless means are afforded of testing him on it.

But the learned Doctor not only asserts that Professor Dick did not protest against chemistry being required to be taught to his class, but that he actually awarded a medal to that student who in the first year of his studies should undergo the best examination on chemistry. Now to this assertion I give a "most unqualified contradiction." Professor Dick did not give a medal to the student who should undergo, in his first year, the best examination in chemistry. I had not the pleasure and satisfaction of having two colleagues to bear me out on this occasion, but I find no despicable one in the Report of the examinations given in *The Veterinarian* for June: that Report, after alluding to the medals given by the Highland and Agricultural Society, *two* of which were for chemistry, not *one* only, as mis-stated by Doctor Mercer, states, "Professor Dick also awarded the following prizes: Silver medals to Mr. Bowman, for the second best anatomical preparation; and to Mr. William Walker, by the united suffrages of his fellow students, for the best answers and general proficiency exhibited at the public weekly examinations of the class;" and then mentions others awarded by Dr. Wilson for proficiency in chemistry. This report was evidently drawn up by the authorities of the Edinburgh Veterinary College themselves, or by some of their friends and coadjutors. "In charity"—I quote this opportune expression from the doctor's own letter—"in charity," it is to be hoped it did not emanate from the author of that letter himself; as, if it did, so great is the discrepancy between these two statements, that well

might the worthy Professor exclaim, as so many have done before him, "The Lord deliver me from my friends, and I will defend myself from mine enemies."

A mis-statement on the ground of mis-apprehension of words spoken is neither pleasant nor desirable; but a mis-statement on a matter of fact, that might have been easily verified, is not only more condemnable in itself, but it is just possible that it may be supposed to give colouring to other matters mixed up with it.

A letter from Dr. Wilson, in *The Veterinarian* of this month, is much more deserving of attention, and, with one exception, I have perused it with some satisfaction; and I consider that both the veterinary profession and himself are much indebted to the mistake it would appear I have committed, as it has been the cause of much valuable information having been elicited.

The profession, on this side of the Tweed at least, if not on the other, was not aware, and I most certainly, up to the moment of reading his letter, was not aware that he had been engaged, either by the Highland and Agricultural Society or by Professor Dick, to lecture on chemistry to the Clyde-street School. I understood at the time that his class had been thrown open, as those of Dr. Knox and others had so liberally been, to veterinary students, and that he had given medals to those who best attended his lectures. Not a word was said at the examinations that could lead to the conclusion, either that the course of lectures given, or the medals awarded to those attending it—awarded by and inscribed with the name of Dr. Wilson—were provided at the expense of Professor Dick. I am but too happy to learn they were so, and can scarcely regret an error that has caused such very gratifying information to be laid before the profession. With a single exception, therefore, as before stated, namely, that of the illiberal and unfounded charge of "systematic and intentional concealment," a charge quite unworthy of Dr. Wilson to make, and too contemptible for more than a mere denial, I have perused his communication with much information, and with considerable though not unmixed satisfaction.

I am, Sir, your most obedient servant,

E. N. Gabriel.

Rabies in a Mare, Cow, and Heifer.

By Mr. J. Mannington, *V.S.*,

Uckfield, Aug. 20, 1845.

Dear Sirs,—Seeing in the public journals an account of some animals being attacked with rabies in the neighbourhood of Cuckfield, I rode over there a few days since, and from Mr. Hallett, the owner of the diseased animals, received the following particulars, which, although hastily thrown together, I hope will not be deemed by you altogether unworthy of a place in the Veterinary Record. In the appended description there are points that will awaken both regret and pity; and, from causes which are sufficiently obvious, it is necessarily imperfect.

I am, dear Sirs,

Respectfully yours.

To the Editors of
"The Veterinary Record."

On the 30th of June last, a dog belonging to Mr. H. presented the following symptoms: He howled very much, dragged himself on his belly, then rolled on the ground as if in a fit, and was only roused from this state by his master's voice, coming to him when called, and retreating when scolded; thus shewing that the dragging on the ground was not caused by paraplegia, which is a frequent accompaniment of rabies in dogs. When left to himself, he would recommence howling and rolling, but *shewed no inclination to bite*. Supposing him to be mad, he was shot an hour or two after the first appearance of the attack. On July 4th, as a young man was walking in the road from Mr. H.'s house, a strange dog met him, and on his attempting to pat the animal, he was bitten through the hand by him; the dog then ran away towards the field in which the horses and cattle were turned out. It is even at this time not known to whom the dog belonged or what has become of him, as he was not seen afterwards; and I am inclined to believe that this was the animal which has caused so much mischief, and not Mr. H.'s dog. About three weeks afterwards, namely, on the 26th July, a cart mare, after having worked all day as usual, was turned out on another farm of Mr. H.'s, some distance from his residence. She was seen grazing on the 27th, at 11 A. M., very

quietly, but about 1 P.M. was observed to run after and bite the other horses in a most furious manner, and, covered with perspiration from excitement, tear the bark from trees in the field, and gnaw the roots above the ground: she nearly gnawed through the top rail of a gate, and afterwards with her teeth lifted it from its hinges, and carried it into the road; she then tore down some bars and got into a wheat field, frequently attacked a pony who followed her about, and, what is very singular, although this animal was covered with blood and saliva from the gums and mouth of the rabid mare, not the slightest abrasion of the skin could be detected. At times the paroxysms would abate, and she would bite some of the wheat-ears off, and eat them; but if any one approached her, she would run at them furiously, endeavouring to bite them; at times she would seize her arms and legs, which she lacerated to a great extent, and all her incisors were at last broken by the violence with which she continued to seize the gate, bars, &c.

All efforts to secure her were unavailing, and she continued in this state until 6 P.M,, when she fell exhausted, and was unable to rise. When down, she attempted to bite the ground, and appeared to be extremely vicious: death fortunately put an end to her sufferings in about two hours from the time she fell.

On the 29th July, being the Tuesday following, a three-year-old polled cow, in the same field, was observed to kick violently, rub her head and cheeks against posts or trees, and scratch them so much with her hind feet that the skin became abraded: she bellowed loudly, yet *she was not at all spiteful, nor did she attempt to butt or seize any one with her teeth;* but on her road to a yard into which she was driven, she was continually rubbing herself against posts, &c. She was placed in a shed, and continued bellowing and kicking until evening, when she became spiteful, would run at persons who looked at her, or seize a stick that was placed in the stall. She continued in this state all night, and was shot the next morning, after having, through her violence, become a mass of bruises, particularly about her head and legs.

Exactly a fortnight after this, namely, on Tuesday, Aug. 12th, a yearling heifer, also in the same field, shewed symptoms of abdominal pain, as her owner supposed. She was seen pawing and

scratching, bellowing, lying down and rising again almost immediately, and presented a very wild expression of countenance. She was suffered to remain for an hour or so; when on Mr. H. going towards her, she ran at him, and also at other persons when near her; she did not, however, attempt to gore the other beasts; on the contrary, if they approached her, and presented their horns, she would crouch and sink down as if cowed.

Mr. H., on horseback, assisted by several men, drove her and the other stock into a yard, and afterwards turned all the others out. Here she became, if possible, more furious, running at any one she saw, even though separated from them by a gate or rails. All efforts to secure her were fruitless for above two hours, when she ran into a stall, and was immediately confined. A rope was then thrown over her head, which was pulled close to a post and raised, so that a powder might be given to her, procured from Mr. ————.

This was dropped on her tongue as directed, and she was again released. She continued furious all that night, and also the following day; no benefit being derived from the medicine. Two of the powders were then given, but she still continued in the same state until the next morning, although much exhausted, when she died, never having attempted to bite during the whole of the attack.

It will from the above be seen, that it is not at all certain what dog these animals were inoculated by, as none was known to bite them, nor was there any lesion of the skin observed on any of them, and, most unfortunately, no post-mortem examination was made, which is much to be regretted; but such was the dread instilled into the minds of persons in the neighhourhood, that Mr. H. told me some of his neighbours would not even visit him, being afraid of the infection: the animals, therefore, were buried skins and all. I, however, have Mr. H.'s promise, that should any more of these interesting though horrible cases occur in any of his stock, that he will acquaint me of it immediately, so that I shall be able to make a post-mortem examination, provided always that Mr. ————'s powders have no more beneficial effect than those which have been tried. I may also have an opportunity of seeing the animals alive, and thus furnish a more detailed account of the symptoms.

Mr. H. has received from the person referred to a preventive for

rabies. It is a colourless liquid, and on obtaining a small quantity of it, I conclude from the following tests being applied by me, that it is hydrocyanic acid. Its smell is characteristic. With nitrate of silver it throws down a white precipitate, which from its minute quantity I am unable to demonstrate to be the cyanide of silver. Neutralized by hydrate of potass, on adding a solution of sulphate of copper, a light green precipitate is thrown down, which becomes almost colourless on hydrochloric acid being added. Neutralized as before, on the addition of sulphate of iron, a dirty green precipitate is produced. Sulphuric acid being now added, it becomes slightly blue: if the acid is in excess, the precipitate is dissolved with effervescence, and a colourless liquid results.

This hydrocyanic acid is ordered to be given to the animals in doses of one drop in a wine-glass of water every morning; and the young man who was bitten was recommended to take the like dose, daily. I am happy to say he continues in good health. I have enclosed you one of the powders: you will find it very small in quantity, white, and sweet to the taste. I have not attempted to test it, on account of its smallness; but must leave you to decide its composition.

The directions for its use are as follow:—

If benefit follows the administration of the first dose, which may be seen "from the spirits and look of the patient" [these words would lead us to suppose that Mr. ———— had seen some cases of recovery], no more is to be administered until the good effects of this first dose are passing off, when another is to be given. If no benefit be derived from the first dose, another powder is to be given in twenty-four hours, and so on, as long as the animals are alive.

Mr. H. inquired of me if I considered a rabid horse or bullock capable of communicating the disease to another animal? I answered, it was a disputed point; and I thought no well-authenticated facts had ever been brought forward in support of this view, but that the generally received opinion is that it is not communicable by the herbivora or graminivora, but only by the canine and feline tribes. I, however, find that Mr. Youatt considers it can be communicated by the herbivora as well as carnivora. Perhaps you will be kind enough to favour me with your views on this subject.

It is remarkable what a difference existed in the premonitory

symptoms of the two beasts, one case appearing to me to resemble dumb madness, as it is termed in dogs, and the other ferocious.

No water being offered to them, I do not know if they were at all hydrophobic.

[We are much obliged to Mr. Mannington for the history of these cases, brief as it necessarily is: the zeal he has manifested augurs well for his future professional reputation. We confess we are unable decidedly to answer the question he has put to us respecting the communication of rabies by the herbivora. In common with himself, we believe there are no well-authenticated facts of its being so placed on record, but we rather incline to the opinion that it may be thus transmitted.

In the *Proceedings of the Veterinary Medical Association* for 1839-40, page 369, a most interesting account of a flock of sheep having been bitten by a rabid dog will be found. It was forwarded by the late Mr. Hickman, of Shrewsbury, who also sent to the College one of the rabid sheep: the symptoms evinced by this animal, and the post-mortem appearances, are there given by Mr. Spooner. During the life of the sheep, Mr. Simonds inoculated two rabbits from it by introducing setons saturated with its saliva behind their ears. This was on Monday, April 22d.

On the 23d and two following days they exhibited no deviation from a state of health; but on the 26th both were dull, hanging their heads, and inclining them on one side. They took their food when placed before them, but evinced little desire for it. Towards evening the respiration of one of them became considerably increased, and likewise the state of stupor. The other manifested a strange desire for jumping, which it did in an awkward manner, having, seemingly, lost much power over the action of the voluntary muscles on one side. Occasionally, in these springs, its head would come in contact with the wall of the box, but this did not deter it from attempting to perfect the act. At midnight they were both evidently worse; and, on taking them up and placing them on their sides, they would remain in that position for some few minutes, being in a state of unconsciousness.

27*th*.—This morning each was seen resting its head on the floor,

supported upon the mouth, and from this comatose state they could not be roused. On turning them on their sides, they struggled until they had resumed their first position. The appetite was totally gone. There was occasional spasmodic twitching of the muscles. This stupor hourly increased, and about 2 P. M. one died: the other would attempt at times to jump, which it did still more awkwardly, alighting nearly upon its head. If teased, it would utter a slight moan, expressive of its sufferings, and obstinately refuse to alter the position of the head, which it seemed quite incapable of supporting. At 9 P.M., I found it lying on its side, evidently fast sinking. At this time a cat and dog were inoculated with its saliva.

The first rabbit which died presented the following appearances on dissection:—The wound made in the neck, where the virus was introduced, was of an unhealthy character, its edges being thickened from deposition of lymph, and here and there were spots seemingly going on to suppuration. The cellular tissue surrounding it was inflamed, and infiltrated with serum.

The abdominal viscera:—The coats of the stomach were thickened towards the pyloric orifice, apparently from rigid contraction; and traces of inflammation were on its peritoneal surface. The internal coat was covered with a white deposition, similar to pus. This viscus contained some food, which was closely compacted in the pylorus. Its rugæ were inflamed. The small intestines exhibited marks of increased vascular action. The vessels of the bladder were beautifully injected, and considerable inflammation of the uterus, both of its body and cornua, existed. The dorsum of the tongue and the epiglottis were inflamed; and a singular injection of vessels, beautifully marked, pervaded the whole course of the trachea. On its internal and upper side some frothy viscid mucus filled the larynx. The vessels ramifying on the pericardium were injected. The lungs were also inflamed; and the thorax contained some effused fluid. The vessels on the right hemisphere of the cerebellum and on its external surface were injected—not so the left. The vessels ramifying on the medulla oblongata were also beautifully shewn.

The second rabbit presented similar abnormal appearances, varying, however, in degree; for instance, the larynx and trachea shewed greater symptoms of inflammatory action. The stomach

was not so much affected, but coated with the same inspissated mucus.

May 3*d*.—The cat and dog are apparently quite well.

Two rabbits were setoned in a similar manner to those above described, in order to see how far such an operation might be connected with their disease and death. The setons were removed after being in the same length of time as the others.

8*th*.—No symptoms of illness arising from the above experiments have yet been observed in either rabbit.

Before this day two other rabbits were inoculated by the same means, using the saliva of a healthy sheep; but not one unfavourable symptom followed, and they are now in a state of apparent health.

We leave those experiments to speak for themselves.

We have not been so successful in ascertaining the nature of the powder Mr. Mannington has sent us as he was with the liquid, respecting which little doubt can rest on the mind of its being what he states. This will not appear so surprising when we state that the weight of the powder is only two grains and a half. It has no odour, a sweet taste, leaves no impression on the palate, and has the appearance of dirty pulverized white sugar, of which it is principally constituted; for heat causes it to swell up and blacken, when it gives off the characteristic smell of burning sugar. Dissolved in distilled water, neither the hydrosulphate of ammonia, nor the iodide of potassium, nor the nitrate of silver, gave indication of any mineral substance being present. The galvanic circle was also equally ineffectual. It may be one of the vegetable alkaloids; as strychnia, atropia, veratria, &c.; but since homœopathists deal in the decillionth of a grain as their dose of a therapeutic agent, which they obtain by division and subdivision with sugar until they have this portion remaining in a given quantity of the powder, by chemical re-agents we can hardly hope to prove its existence, even were we in possession of certain tests by which these very active substances may at all times be demonstrated.]

Case of open Parotid Duct in a Cow.

By Mr. J. M. Leech, *M.R.C.V.S.*

Dear Sirs,—If you think the following case worthy of a place in The Veterinary Record, you will oblige by its insertion

Ashbourne. Your old pupil, &c.

On the 23d April last, I was requested by one of our employers to see a short-horned cow that had received an injury from the horn of another cow. The messenger who came stated that there was a small hole on the side of the face, from which *water* issued.

Upon my arrival I found, as the person had described, a small wound upon the side of the face, situated about four inches superiorly and anteriorly to the angle of the posterior maxillary bone, causing a division of the parotid duct, from which was issuing a large quantity of saliva. The whole of the fluid did not escape by the external orifice, but a large quantity had infiltrated itself into the cellular structure of the cheek, causing considerable and frightful swelling of the parts. The cow in every other respect seemed in perfect health. I at first thought it advisable to have the animal destroyed; for when we take into consideration the size of the duct and the function over which it presides, it appeared almost a hopeless task to attempt a cure, since the quantity of saliva secreted in this class of animals is very great, so as to enable them to perform the process of rumination healthfully. But my employer wished me to do something for the animal; and I at first thought of cutting down upon the duct and injecting some caustic agent, so as to destroy the secreting power of the gland, similar to what has been tried upon the horse. Yet this, in my mind, did not seem a plan at all feasible, or calculated to restore the cow to her pristine condition, which I inferred would become impaired by the want of action in this gland. The next question which arose in my mind was, Can we by any means give a certain amount of pressure to the side of the duct, which would cause inflammation to be set up, and, as a consequence of this, we may expect that the process of granu-

lation will take place, whereby the opening might possibly become closed? This plan we determined to adopt, as being likely to effect our desired object. It was performed in the following manner:—A circular piece of leather was obtained, about the size of a crown piece, and the external wound was slightly enlarged, so as to allow of its introduction. This was then placed over the divided duct, and upon the outer surface a large quantity of tow was laid; the edges of the wound were then brought together by means of sutures passed through the skin, which was the whole of the surgical treatment adopted that day. A dose of aperient medicine was given, the animal ordered slop diet, and to be kept in a state of perfect quietude.

On the next day the external swelling was considerably increased, so much so, that a portion of the animal's horn had to be removed to prevent pressure. Rumination and the secretion of milk were not at all interfered with. During the three following days the swelling gradually became less, and at the end of the seventh day we deemed it advisable to open the wound and remove the piece of leather. Pressing against that side of the leather which was in contact with the duct was a cluster of beautiful granulations: thus were our expectations more than realized, and assurance given of the successful issue of this singular case. The external wound was then dressed in the ordinary way, from which there issued a small quantity of laudable pus; and in a few days afterwards the animal was discharged cured.

I saw the owner last week, and he tells me that the cow is now as well as ever she was in her life, and performs all her functions regularly, as if nothing had ever happened.

This case will, I believe, be the first published in THE VETERINARY RECORD. It is not only remarkable for its pathological character, but also in a physiological point of view; for I was enabled to measure the amount of saliva which was secreted per minute by collecting it from the ends of the divided duct during the act of mastication, and I found it to amount to no less than a pint; an immense quantity during this small period of time. I should say that a loss of one duct to the class *ruminantia* must be of more consequence than it is to other animals, they having to perform the process of rumination. I will not occupy your valuable space

by any more remarks upon this case, leaving you to fill up where it is wanting, knowing as I do the interest you feel and the zeal manifested by you towards the onward progress of veterinary science.

I remain, truly your's, &c.

Larva of the Helophilus Pendulus found on the Spinal Marrow of a Horse.

By Mr. E. Stanley, M.R.C.V.S., Banbury.

Dear Sirs,—It is now some years since that the following strange case came under my notice; but, it being so unusual, I have thought you might deem it worthy of a place in your valuable Journal.

The subject was a cart horse, belonging to a Mr. Dodd, miller, Warwick. I am writing solely from memory; but the facts made such an impression on my mind at the time, that I am sure I was not mistaken either in the symptoms that shewed themselves or the cause of the disease. The horse at the onset of the attack appeared to have injured his spine; there was partial paralysis present, attended occasionally with acute pain. Being walked out one day, when about half a mile from home, he was suddenly seized with violent trembling of the limbs, profuse perspiration, and other acute symptoms, altogether very uncommon. With some difficulty he was walked home. I cannot now say positively whether he was destroyed, or that he died from the attack, but he did not continue in this state of intense suffering longer than from twenty to twenty-four hours. Upon examination of the spinal sheath, there were observed most decided marks of inflammation, with extravasation of blood about the lumbar and posterior portion of the dorsal region from fourteen to eighteen inches in length; and upon a careful investigation I found a grub of a dark brown colour lying on the spinal sheath: its body was the thickness of a common slate pencil, and about half an inch long; it had a very thin tail, as long as its body, on which were apparently many very short legs. Instituting some inquiries, I found it to be a larva of the helophilus pendulus, which is frequently met with in

privies and drains. I have not the least doubt in my mind but that the grub was developed in that locality. While in the state of embryo it did not interfere with function, but, the moment the ectozoon became alive and active, it then gave rise to the symptoms I have already detailed.

I am, your's, &c.

Strongyles found in the Cellular Membrane surrounding the Kidney of a Filly.

By Mr. J. Harvey, *M.R.C.V.S., Bath.*

My dear Sirs,—Having recently met with a case which I consider of unfrequent occurrence, I beg through you to communicate it to the profession. The subject was an eleven-months' old filly which had during the winter received every attention, as far as food and being kept in a loose place were concerned, and never shewed symptoms of the least disease up to the time of her being turned out to grass, which was on the 21st of May last. The field was very hilly and much exposed, and the weather, for the time of the year, exceedingly cold. The day she was turned out, on the coachman leaving the field, she ran after him, and leaped over a gate about four feet in height, but did not at the time shew any irregularity in her action from doing so. She was seen every day by some of the servants up to the 27th of the same month, when I was sent for; the groom having been informed that she staggered as she walked, and on his arrival he found, on attempting to move her, that she fell down and could not rise. I ordered her to be removed on a dray to my infirmary, which was easily accomplished. After time had been allowed her so as to recover from the excitement, I found the pulse 50, and full, the breathing, however, tranquil: great pain was evinced on pressure being applied along the lumbar region, and more particularly over the right kidney. The extremities were warm, the visible mucous membranes healthy; fæces and urine of the usual character; but she had lost all power of supporting herself on the hind legs.

I bled her that evening, and administered an oleaginous purgative, had the legs well bandaged, and the loins fomented with warm water. On the following day the muscles of the lumbar region were much swollen; the pulse was about the same; the bowels being freely acted upon; the appetite good; the urine voided without any pain, and of its natural colour. She continued in this state till June 3d, during which time I administered sedatives and applied active counter-irritants along the spine, when the owner requested she might be killed. I attended the post-mortem examination, which I now give you. The viscera of the thorax were perfectly healthy, as also those of the abdomen, excepting the right kidney, which was increased in size, and the vessels thereof in a highly congested state; and embedded in the membranous matter with which this kidney was surrounded were at least two hundred small worms, some of which I have forwarded to you. I carefully examined the vertebral canal, which was entirely free from all disease.

Trusting this communication may be acceptable, believe me ever,

Your's truly.

[These worms appear to belong to the strongyles. The *strongylus gigas*, which may be accepted as the type, is frequently developed in the parenchyma of the kidney itself of dogs, oxen, horses, and sheep. We have seen the kidney of a dog filled to repletion with these parasites. They are said to vary in length from five inches to three feet, and in diameter from two to six lines. The body is elongated, slightly impressed with circular striæ, tapering towards each extremity, and generally of a dark colour, supposed to arise from the nature of the food which is necessarily derived from the vessels of the kidney. The head is truncated, and the mouth fringed with six small papillæ: the tail of the male is bifid,—that of the female obtuse.]

The following case, although unfortunately incomplete, is not, we think, without some degree of interest, and therefore worthy of being inserted:—

A Disease of the Brain simulating Phrenitis.

By Mr. W. S. Wallis, *M.R.C.V.S.*

My dear Sir, *Halstead.*

I know I am not asking too much of you when I request you to consult your colleagues, Messrs. Spooner and Simonds, on the following case, and convey to me at your earliest convenience your joint opinions on it, with counsel how to act. I confess it perplexes me.

The subject is a full sized Suffolk cart-mare, nine years old—good constitution—not a greedy feeder—temperate, and an excellent worker—healthy and hardy.

On the 10th of Sept. ult. she was seized while at work with a kind of stupor, and nearly fell. I was immediately sent for, and on reaching the stable found her standing with her head depressed nearly on the ground—eyelids closed. She was quite unconscious of surrounding objects, and with great difficulty was moved from her position, and, when moved, remained perfectly still wherever placed:—breathing slow, and slightly stertorous—pulse 26, and oppressed—conjunctival membrane yellow, and somewhat vascular—pupils not unnaturally dilated, nor have they been subsequently.

Treatment.—The owner had taken three quarts of blood when I arrived, and I abstracted five quarts more without any perceptible effect upon the pulse, although it evidently relieved the animal: blisters were applied to the head, and sedatives administered. In a few days these remedial means, with a restricted diet, seemed effectual, and for a time she appeared to have recovered. On the 24th, however, she manifested a little drowsiness, when I gave her a dose of purgative medicine, which operated well, and restored her once more apparently to her usual health and spirits.

Oct. 1.—She is dull again. Take blood six quarts, give a purging ball, and insert two setons in the neck. I then administered sedatives for a few days, when again she recovered, and appeared to be in perfect health until the 20th, when the unfavourable symptoms reappeared. I now detracted blood to the amount of two gallons; pulse during it rose for the first time—

gave a physic ball, and blistered the back of the head and forehead.

On the 21st I repeated the blood-letting, and the pulse rose again; I also repeated the blisters and exhibited sedatives. On the 22d I bled to approaching syncope, and continued the sedatives till Nov. 2d; when, with some little confidence, I discharged my patient as convalescent. From this time to Dec. 6th she was in high spirits and excellent health; when, after a few days' light work—little more than exercise—she relapsed into her former state, and is now almost as insensible as ever. Perhaps I ought to have stated that, up to the 20th of Oct., we could not lower her condition; since then, however, by the aid of bleeding and mercurials, she has been considerably reduced in flesh, but to no purpose. She has lived throughout upon mashes, with bran and carrots. On Saturday last I administered another purging ball, and this morning she is quite herself again.

Waiting your reply,

I am, my dear Sir,

To Mr. Morton. Your's, &c.

Royal Veterinary College, December 13th, 1844.

My dear Sir,

THE case you have requested me to consult Messrs. Spooner and Simonds about is, certainly, one with which is associated much ambiguity. That it is a cerebral affection there can be little doubt; but whether the sensorium is sympathetically affected or undergoing some organic change is not so easily decided. From the relief which has been from time to time afforded by the measures adopted by you, one would be inclined to suspect the former, while the recurrence of the attacks indicate the latter. As, in all probability, the death of the animal will alone decide this question, in the mean time you are, of course, desirous of knowing if any other kind of treatment can be had recourse to beyond that you have already resorted to. It is suggested—fearing that effusion may be taking place within the ventricles of the brain—that a trial be made of the iodide of potassium, both given internally, combined with diuretics, and applied externally, keeping the bowels in a soluble state by the occasional interposition of a dose of laxative medicine. Farther depletion by blood-letting it will be as well to abstain from, unless

the urgency of the symptoms imperatively demand it. Continuous counter-irritation may be set up by means of a seton smeared with some active digestive, or one of the compounds of iodine, particularly the biniodide of mercury.

We shall be glad to hear the result of the case, whether favourable or otherwise: if the latter, we shall be much obliged by the morbid parts being forwarded to us.

Truly your's,

W. J. T. MORTON.

My dear Sir, *Halstead, June 25th*, 1845.

I AM very sorry that your letter of the 5th instant has remained unanswered so long: the truth is, I have been so much engaged of late that it has been quite overlooked. I trust, therefore, you will pardon my seeming neglect.

The case referred to, I believe, at the time I wrote you was suffering from a relapse: a dose of physic had relieved her by the time your kind suggestion arrived. I much wished to have pursued the treatment you advised; but as the mare had been a considerable expense and trouble, and was now in a state to shew for sale, the owner, thinking that he had seen and suffered enough already, sold her for £7 or £8, and I have not been able to learn any thing respecting her since.

This case possessed considerable interest, and I should have been glad if circumstances had permitted me to see the end of it; but you are aware that few of our employers in the country have much sympathy with us in the pursuit of scientific knowledge, so that we are not unfrequently thwarted.

I feel much indebted to you for the kind and prompt manner in which you replied to my inquiries.

Believe me, as ever,

Your's very truly,

W. S. WALLIS.

To Mr. W. J. T. Morton.

Note from Mr. T. D. Broad.

Dear Sirs, *Trowbridge, June 1st*, 1845.

I see in the last Record there is a slight mistake in the wording of the case of Phrenic Hernia forwarded by me in January. There was no laceration of the diaphragm, but *the intestine had passed through the foramen dextrum*. I regret that I did not forward the specimen to you.

Rupture of the Iliac Vessels.

A horse died last night in a very singular manner. He had been dull and off his feed for two or three days, but he did not appear to suffer any pain, and the pulse was scarcely above the natural standard. He, however, died suddenly in my presence, after taking a little water, without even a struggle. I saw the body opened this morning. The abdomen was full of blood, and an immense large coagulum underneath the peritoneum in the vicinity of the iliac vessels. The cause of death, therefore, was, doubtless, internal hæmorrhage, arising from a rupture of these vessels.

Open Parotid Duct.

In March last I had a cart-horse brought to me in a very emaciated state, having a very large abscess situated between the branches of the inferior maxillary bone, and an opening into the parotid duct, so that as soon as the animal began to masticate, the saliva flowed out in a stream. The stench from the wound was so great that I was obliged to wash it freely with chloride of lime before I could examine it satisfactorily.

The after-treatment I adopted consisted merely in sprinkling slaked lime on the wound several times in the day, the horse being fed sparingly on mashes from the ground, as I have observed that the escape of saliva is always less than when fed from the manger. He immediately began to improve, and the flow of saliva to diminish; and in the course of a month the wound had healed, the animal recovered his former condition, and he has done well ever since.

I am, your's respectfully.

Dr. Thibert's Model Museum of Pathological Anatomy.

We were much interested on a visit to this museum. It has long been a desideratum among pathologists to preserve the natural colour of morbid specimens; and the various fluids that have been employed for this purpose have all of them failed to do so, if we except the solution recommended by Mr. Goadby, of which an account will be found in the present number. There is, moreover, this objection to be raised against "wet preparations," as they are designated: when of any size, they require large glass vessels for retention, and the moving of these about, or the use of them in the lecture-room, is attended with risk of breakage and loss. And, in addition, a still more important fact may be urged:—an abnormal change has taken place in an organ or some of the tissues, and, what is rarely to be met with, it presents all the diagnostic characteristics. The fortunate possessor of such a specimen prizes it highly; but the professional public derives no benefit whatever from its existence.

To meet these difficulties, drawings and models in wax have been proposed. The first make but little impression, from the sense of seeing being alone exercised; they are, therefore, soon forgotten. There is nothing tangible in them,—nothing that communicates to the mind the idea of its being the thing itself, and not its mere representation. This, it is true, may be gained by wax; but the objections to this material are so obvious as to need no comment. We think Dr. Thibert has been extremely fortunate in forming a composition which at first, we presume, possesses great plasticity, so as to permit of its being moulded into the most delicate forms, which it retains, and also to represent the various tissues of the frame; while, afterwards, it becomes so hard as to bear the freest handling, and even to resist blows. With this composition a copy of the diseased part is made, and from this a mould being obtained, any number of casts may be readily taken, and these, being coloured, will give a faithful representation of the original preparation. We saw diseases of the skin and of the lungs; of the eye, liver, kidneys, &c. of the human subject, and glanders in the horse, admirably pourtrayed, and which we were assured

would retain their beauty—if the term may be applied to truthful and most vivid resemblances of many "of the ills which flesh is heir to"—for an indefinite period. The cost, too, is comparatively trifling; while by a simple and ingenious plan such preparations as from their nature, perhaps, are better not exposed, may be enclosed in a book-like form; and these, being arranged on shelves, will present the appearance of a library.

The Museum is open for inspection, at 29, Bridge House Place, Newington Causeway, on Mondays, Wednesdays, and Fridays, from 11 A.M. to 4 P.M.

EXTRACTS
FROM FOREIGN VETERINARY JOURNALS.

FROM the favourable opinion many have been pleased to entertain of our labours, and especially among our Continental brethren, we have been enabled to effect an exchange of Journals with them. This we hail as a means likely to be productive of much good; since we are thus made acquainted with what is taking place in the veterinary profession both at home and abroad, and are enabled to place in juxta-position the different views that may be entertained of the same disease. Our pages therefore will, from time to time, be enriched by articles of novelty and importance taken from these works. Among the more recent publications is the *Journal de Médécine Vètérinaire de l'Ecole de Lyon.*

This periodical commenced on the 1st of January, 1845, and it promises to be of value to the veterinary surgeon. The first article is by M. Kainard, Professor of Pathology at the Veterinary School of Lyon, "Maladies qui succedent le parts dans les femelles des Animaux domestiques," from which we make the following extracts:—

ON MILK FEVER.

THE above name is given to the fever which appears on the third or fourth day after parturition, and coincides with the tumefaction of the lacteal gland, &c. It is infinitely less marked and less frequent in animals than in the human subject. Anatomy ex-

plains this difference in a satisfactory manner. In both, the uterus receives its supply of blood from the abdominal aorta; but not so the lacteal glands. In the human subject the mammary glands are supplied by a branch of the anterior aorta, while in animals these glands are supplied from the same vessel whence the uterus is supplied. In the first there is a change in the current of the circulation, while in the latter the current remains undisturbed. The mammary gland receiving its blood from the same portion of the aorta, there is no plethora; and, therefore, this angiotenic inflammation can hardly exist; there would, in fact, be nothing more than a slight derangement caused by congestion in the gland; that is to say, this fever, in the domestic animals, would be only a local affection. This, however, is principally applicable to those animals which are uniparous; among those which are multiparous, some offer an exception, as, for instance, swine, in whom the first three pairs of mammæ are supplied with blood from the anterior abdominal artery.

Through this reasoning we are able to account for several interesting facts:—1st, That aborting at an advanced period of gestation, or premature parturition will not influence the secretion of milk, which will be nearly the same as in the normal parturition. 2dly, That neither œstrum nor gestation suspend the secretion of milk. In fact, these different acts draw the blood towards the posterior parts of the body, and do not, consequently, prevent its arriving at the gland. Thus, five or six days after parturition for the mare, and eight or nine days for the cow, may suffice to put them again to the male, which may be followed by impregnation without affecting the least change in the milk, either as to quantity or quality, &c.

On Typhus in Horned Cattle.

By M. Prince.

This dreadful disease has lately caused considerable alarm, and threatened agriculturists with the most fearful loss. We are informed that the typhus has broken through the quarantine which is constantly exercised by the neighbouring provinces near the Russian steppes. It first appeared among the cattle of Galli-

cia; from this province it was carried by some Podolian oxen into Bohemia, whence it penetrated and traversed Moravia. It proved the more dangerous because at first its nature was unknown. It was only in Bohemia its true character was discovered, and measures were taken to prevent its further progress. The appearance of the typhus produces everywhere the greatest sensation. Prussia and Bavaria armed their frontiers with quarantines, &c., but these are not preventives to its extension.

M. Moll, according to Swarg Kopf, reports that the five attacks of typhus which occurred in the eighteenth century caused a loss of one hundred million head of cattle. In these five attacks, it not only prevailed among oxen, but also, although with some difference in its characters, among sheep, horses, asses, and mules.

Typhus has never occurred spontaneously in France, nor in any part of Western Europe, but has always been imported from the East; from Eastern Russia, Wallachia, Moldavia, and the marshy districts of Hungary. In the last-named country it seems to be enzootic, without, however, committing such great ravages as it is known to do in other countries, where it only appears from time to time. Every time the typhus has shewn itself in Germany, France, Belgium, and Italy, it has been clearly proved that it had been imported, directly or indirectly, by cattle from the above-named countries, which may be justly considered as the hot-beds of this epizootic. However true this last assertion may be, it leaves untouched the difference which divides authors on the origin and cause of typhus. Much is yet wanted before all will agree with M. Moll in assigning to this malady certain localities, which he designates as their perpetual hot-bed, and as being always the point from which it starts.

There is an opinion in direct opposition to this; namely, that which assigns, as the cause of typhus, an inherent predisposition in the organisation of the different breeds, at the head of which are placed those of Hungary, Dalmatia, and Eastern Russia, &c.

[This paper is much abridged, as it principally consists of a long disquisition on the origin and cause of typhus, carried on between M. Moll and M. Prince, and which would not be of general interest to the English reader. M. Prince, in support of his view, quotes a letter of M. Verheyen, Professor at the Veterinary School at Brussels, which we translate.]

"The contagious typhus developes itself primarily in one breed of cattle, those of the steppes. Sometimes the morbid phenomena are so little marked that one might doubt whether any disease exists in them; nevertheless, they communicate the contagion wherever they go. In Russia one hundred and fifty thousand head of this cattle travel every year on the high roads to Moscow and St. Petersburgh, and every year the typhus prevails in the villages on these roads. Prussia has established on the Russian frontiers lazarettos, in which these droves, with their conductors, are compelled to perform a quarantine of twenty-one days before they are admitted into the interior of the country.

"It seems that the cattle often leave the steppes in good health, and that the disease does not prevail in the country; but having an innate predisposition to contract it, any exciting cause, which in an individual of another breed would have produced a different disease, will in the breed of the steppes produce typhus. In all the wars in which the northern Powers have taken part, the typhus has always been their companion, because their provision grounds were always supplied with cattle from the steppes."

On Dropping after Calving.

By M. Fischer, *Veterinary Surgeon at Essingen* (*Luxemburg.*)

M. Fischer states that at the commencement of his practice he was frequently called upon to treat a disease which attacked cows after parturition, and which he mistook for metritis, or metro-peritonitis; but from the number of fatal cases, and the autopsiæ he made, he was convinced that it was a different disease. We will give some of the cases, as related by M. F.

On the 26th of October, 1842, I was sent for to attend a cow that had calved the day before, and which I found in the following state:—She was lying down on the right side, in a complete state of prostration; she had lost the use of all her limbs; the head was bent over the scapulo-humeral angle, and resting on the ground; the skin, ears, &c., were icy cold; the muzzle dry and cold; the eyes, drawn within the orbits, were half closed, and insensible to the light; the conjunctival membrane was pale;

the mouth cold, with an increased secretion of saliva; the pulse small and weak, and ranging from 90 to 100; the contraction of the heart oppressed, and no alvine evacuation had been perceived that day. I withdrew from the rectum a large quantity of dry black fæces, having an offensive fœtid smell.

Premonitory Signs.—I had seen this cow six days before, apparently in a state of perfect health. She was of the Birkenfield breed, ten years old, in good condition, large frame, and had calved on the previous day without difficulty. The fœtal membranes also had come away. She had more milk than the calf could suck, and it was only on the following morning, the day of my visit, that she was perceived to be off her appetite, her eyes watering a little, the lacteal gland soft, and the secretion of milk entirely suspended. She had lain down and got up twice without much difficulty; but when it was found that she was unable to stand, the owner was afraid that she was attacked with a disease well known and much dreaded by all the owners of cattle.

Diagnosis.—I was convinced by several analogous cases on which I had been consulted, that it was neither metritis nor metro-peritonitis I had to deal with. The autopsia of several animals that had not been medically treated left no doubt on my mind in this respect. I was also aware that the termination of this disease was, in nearly all cases, fatal, and was considered to be such by the best breeders, who designate it by the name of *calf fever*; but they often confound it with metro-peritonitis, complicated with paralysis, which sometimes occurs after calving, and of which I have had some cases.

Treatment.—As the animal was in good condition, eight pounds of blood were taken from the jugular vein, and alteratives were administered, although little hope was entertained of the recovery of the patient.

Towards night the animal began to shake her head violently, letting it fall afterwards into its former position, as if unable to move it, and she died about one o'clock in the morning.

Autopsia.—I found neither inflammation of the uterus nor of the peritoneum, nor any other lesion, with the exception of about half a litre of serum in the pleural cavities, and slight inflammation of the leaves of the third stomach. The mucous membrane of the

intestinal tube was discoloured, and the excrements contained in the rectum hard and dry.

M. Fischer further remarks, that this disease is not mentioned by any of the French authors, while it is very accurately described by the German, in whose works it is always associated with metritis and metro-peritonitis, but as a distinct disease. Much later, however, M. F. has met with an accurate account of it in a work written by a celebrated French cattle-breeder, Felix Velleroy, under the name of "Fievre Vitulaire." M. Brilhouet, veterinary surgeon at Galcon (Gironde) has described a disease, without giving it a name, which attacks cows after parturition, the seat of which he has placed in the brain, and which he thinks is confined to the race Bretonne. M. F. finds great analogy between this and the disease he has described.

M. Baumeister, Professor at the Veterinary School at Stuttgard, gives the following definition of this disease:—It is a peculiar fever, of the nervous and inflammatory kind, which attacks cows in the first few days after parturition. It is rapid in its course, and of an uncertain issue, in spite of the most active and well-devised treatment. It never attacks cows that have calved with great facility. The author seeks for the cause, the same as Rychner did, in the sudden disemburthening of the animal economy of a great load to which it had been accustomed. He avers, and with some good reason, that this state of things must sometimes cause a considerable derangement of the vital functions, particularly in the circulatory and nervous systems. The malady makes its appearance from the first to the third day after parturition: some veterinary surgeons speak of having observed it from the fifth to the sixth day. Its invasion is always sudden and violent; so much so, that in the course of an hour the disease has attained its greatest degree of intensity. It is frequently ushered in with shivering, soon after which all the vital functions are perverted, or altogether cease. The pulse is small and accelerated, and this in proportion to the progress of the disease, until at last it becomes altogether imperceptible. The contractions of the heart also become insensible. According to M. Bell, veterinary surgeon, the respiration furnishes a pathognomonic symptom (which we have also observed), namely, it is exceedingly slow

from the beginning, and becomes still slower as the disease advances; but at this stage it is performed with a jerking movement, accompanied with a peculiar plaintive sound. The skin, when the hair does not hide it from the sight, is always pale; the muzzle dry and cold, and the eye insensible to the light, the pupil being dilated. In five cases out of eleven, I have noticed the profuse watery discharge from the eyes, mentioned by authors. In all, the different organs have lost their sensibility; the animals soon lie down, the decubitation being peculiar to the disease, namely, the neck bent over the shoulder, and the muzzle on the ground. In the majority of cases the mouth is filled with frothy saliva; grinding of the teeth is heard from time to time; there is never any inclination to drink; the alvine evacuations are in general dark-coloured and hard, rarely (I have seen it in only one case) is diarrhœa present. By auscultation we perceive that the intestinal motion has ceased before the disease has reached its crisis. An extraordinary prostration of the vital powers, and an insensibility to surrounding objects, are characteristics of this disease: the globe of the eye may even be touched without the least sensation being evinced; if the head is raised, it falls back to its former position, like a dead weight; and enemas administered return by their own gravity. Lastly, the pulse becomes imperceptible; the mouth icy cold; the animal makes a few convulsive movements, and then dies.

The duration of this disease is in general from one to three days; sometimes, however, it may continue till the fifth day. The nervous symptoms are always the most marked, and the reaction on the spinal marrow in particular is characteristic. Some authors have described a variety of this disease, in which the brain is more affected, and the convulsions are stronger. I have never seen this form.

I have never observed this disease in the mare. Some veterinary surgeons, however, have reported cases, but they are of rare occurrence.

Causes.—A certain predisposition to this disease cannot be denied, both in fat and in more or less delicate cows. I have never witnessed it in lean cows, nor after the first or second calving. In common with M. Bell, I have never met with it except in those cases where parturition has been quick and without difficulty, and the cows were good milkers.

There is, however, another cause, which must have some influence, although its mode of action is unknown, since this disease is met with more frequently at certain periods than at others. Thus in April, 1845, I had six cases, while in the latter half year of 1844 I had not one case. The attacks of this disease are more frequent when cows are constantly confined to stables or sheds, and the air is vitiated. As an occasional cause, we may accept the provender being too exciting, or given in too great quantity shortly before parturition takes place; but principally, and according to Professor Rychner, the too sudden vacuum caused in the abdominal cavity is the general cause.

The termination of this disease is almost always fatal. As curative means, some authors prescribe the use of antiphlogistic agents; others that of diffusible stimulants; and MM. Gesker and Pilger adopt the antispasmodic. Baumeister contends that antiphlogistic treatment is always destructive in this disease. Bell says that he has obtained favourable results from the administration of the potassio-tartrate of antimony, given in mint infusion. M. Villeroy recommends us not to lose much time with, in the majority of cases, useless treatment, but to recommend the proprietor to dispose of the patient while she is yet of some value. I treated one case successfully with the powder of nux vomica, given in an infusion of camomile, and repeated every six hours until six doses had been exhibited. The convalescence of this patient lasted fifteen days, during which time there was great loss of power in the posterior parts, which was removed by irritating frictions on the spine; but this treatment, in several other cases, has not realised my expectations.

Autopsia.—The pathological anatomy in those animals that die of this disease is not always the same, with the exception of the traces of parturition in the organs of generation. Sometimes no lesions are found; at other times slight traces of inflammation can be detected on the peritonium, but never true signs of peritonitis. In some animals, to which I have administered calomel in large doses, I have found slight traces of inflammation on the mucous membrane of the duodenum. One necroscopic character most constant in this disease is the dryness of the ingesta contained in the third stomach, which presents the same appearance as in cases of indigestion of this viscus. In two cases only have I found this

peculiarity wanting. I have carried my investigation to the great nervous centres in two cases, but have not observed any morbid alteration.

[The English veterinary surgeon will have no difficulty in recognizing in all this that disease which is usually called puerperal fever, although not a correct cognomen, which proves so frequently fatal, and difficult to combat, and on which but little light is thrown by the description here given.]

On Diabetes in the Horse.

By Professor Delwart.

Diabetes is a disease the principal symptom of which is an undue secretion of urine. This fluid is limpid and sweetish, and expelled with considerable force, and it is not long before this superabundant secretion affects the organism; and, subsequently, loss of condition followed by marasmus and death.

This malady is sometimes attributed to chronic inflammation of the kidneys, to hypertrophy of the same organs, and to irritation set up in them, by which their secretory power is augmented. These different opinions as to the nature of the disease have led to as many modes of treatment, varying from the most abundant blood-lettings and the lowest diet to the use of the most energetic tonics and highly nutritious food; all having been employed with more or less success.

M. Faber relates two or three cases cured by the administration of cantharides.

Case I.—In 1839 a gelding, belonging to the administration of the messageries, was brought to the hospital of the school to be treated. I found the following symptoms present:—an abundant flow of clear insipid urine, which was evacuated every five or six minutes, and with great force. This state had already existed for ten days. The patient was low, with great prostration of strength—dry skin—staring coat—thirst unquenchable—mouth dry—pulse small and wiry—the excrements small and hard, and expelled with

difficulty. The quantity of urine voided in twelve hours was from thirty-five to forty litres. The great debility and the rapid waste led me to fear a fatal termination.

The state of this patient seemed to me to be beyond the powers of medicine to restore; and I, therefore, decided on trying an experiment which had once been successful on a glandered horse that was affected with diabetes. I prescribed creasote f℥ij, given in two litres of ferruginous water. In the course of the day the animal drank six large pailsful of water, in which hot bars of iron had been cooled, with six litres of bitter decoction. This treatment was seconded by a generous diet.

On the following day no marked change was apparent, but I fancied that the flow of urine was not quite so abundant: the same treatment was adopted.

On the third day the quantity of urine was diminished—the appetite was good, although the mouth was much excoriated by the administration of the creasote, which was now omitted, the ferruginous water with the bitters being continued, with the addition of pot. carbonas ℥ij. This treatment was continued for four days longer, after which the animal was able to go to gentle work.

Case II.—In the month of September, 1840, I received into the infirmary a gelding of large size, seven years old. I was informed by the groom that, three weeks before, he had noticed the animal frequently staling when in the stable, and that he daily lost condition. In fact, the horse was thin, dull, and disinclined to move—the coat was staring—the visible mucous membranes pale—the mouth dry, and excessive thirst present, but the appetite was tolerably good. The pulse was small and slow—the excrements hard, and voided in small quantities—the urine, clear and limpid, was from twelve to fifteen times more in quantity than in health, and voided with considerable force. This last symptom left no doubt on my mind that it was diabetes, and the treatment was directed accordingly.

The day after the animal's admittance into the hospital I ordered him six pailsful of water, in which heated iron bars had been cooled in the morning, and creasote f℥j was given in a litre of water in the afternoon of the same day. Gentian-root powder

and carbonate of soda, made into balls, were given three times a-day.

On the fourth day the urine was less abundant—the pulse stronger—the thirst less—and the appetite good. The same treatment was continued.

Fifth day, the secretion of urine still less, but mastication is difficult, owing to the soreness of the mouth, produced by the medicine. Farinaceous food was ordered, and the creasote omitted for a day, the other treatment being continued.

On the sixth day considerable amendment was perceptible: the secretion of urine was less by one-half—the pulse had become of its healthy character—the skin moist—and the mucous membranes more healthy in appearance. The treatment was ordered to be continued, with the exception of the creasote, the dose of which was reduced to one-half. This was given until the 11th, when it was discontinued altogether, the animal exhibiting all the indications of returning health; and on the fifteenth day after his admission he was discharged perfectly cured.

Case III.—An old cart-horse, affected with diabetes, was received into the infirmary of the school in 1843. He was in a debilitated and even dangerous state. The information obtained from the owner was, that a month ago he perceived that the horse staled very much, but he attributed it to the oats being a little mildewed. Having changed the food, and the urine being still voided in large quantities, a few days after the horse was bled by a farrier, but the malady continued its progress until the animal was altogether unfit for work.

The same treatment was employed in this case as in the former ones, and here, too, it was followed with the same success.

Professor Delwart further observed, that he could not let the present opportunity pass without drawing the attention of the profession to a new disease of the urinary organs recently described by M. Verheyen, and which he (M. Verheyen) had designated Albuminaria, on account of the great quantity of albumen found in the urine. Struck with the similarity of symptoms, Professor Delwart collected and examined the urine of the horse (the third case of diabetes), and he found on analization that it contained a

large amount of albumen. It would, he says, be an error in diagnosis to mistake albuminuria for diabetes; but he would not attempt at present to solve the question, whether they were one and the same disease, but wait until farther researches enabled him to do so more satisfactorily.

THE VETERINARY MEDICAL ASSOCIATION.

FEBRUARY 4, 1845.

The PRESIDENT in the Chair.

THE following presentations to the Library were laid on the table:—

"Researches into the Structure and Development of a newly-discovered Parisitic Animalcule of the Human Skin—the Entozoon Folliculorum," by the Author, Erasmus Wilson, Esq.

"Recherches Experimentales relative a l'Action des huiles Grasses sur l'Economie Animale."

"Découverte d'un nouveau Muscle dans de Cheval," both by the Author, M. A. Thiernesse; and

The "Journal Vétérinaire et Agricole de Belgique," in exchange.

MISCELLANEOUS OBSERVATIONS ON THE ACTION OF CERTAIN METALLIC COMPOUNDS ON THE ANIMAL SYSTEM.

By Mr. GEORGE ROBB.

Arsenic.—FROM experiments I have instituted on animals, and from those that I have seen opened and examined which had been poisoned by arsenious acid, I do not believe that what is called the local effects of this poison—namely, its action on the stomach and intestines—is the cause of death. The post-mortem appearances, it is true, generally exhibit the remains of what had, most probably, been acute inflammatory action in the mucous coat of the stomach and intestines, which was soft and easily detached, with sometimes an engorged state of the vessels; but I never observed that these appearances were in any way propor-

tionate, or had any distinct relation to the degree of fatality which attended the particular case; on the contrary, I observed that some of these animals, especially two cats, which had so far recovered that they would have lived, but which were purposely destroyed, exhibited upon examination all those appearances in a much higher degree than most of those which had died of the effects of the poison; and that some of the latter exhibited scarcely a trace of diseased action having existed in any of the viscera. Though I believe it to be very common, I never saw any thing which could be called ulceration, except in some fowls, and I think the nature and quantity of the food in their crops had some connexion with it.

From these circumstances, it is obvious that the fatal effects of this poison are to be attributed to its entering the system and forming combinations there, converting portions of that organism, which before was adapted for carrying on vital functions, into compounds possessing no vitality, changing the constituents of the animal economy into forms of matter which have no place in living systems, as the neutralization of the acid or oxidation of the plates in a galvanic battery would render these unfit to perform their functions in that system, cause the cessation of action, and consequent death, if I may be allowed such a term, of the apparatus.*

* I do not mean, by this comparison, to infer that the vital force is identical with the galvanic force. No; the laws which govern these forces appear distinct, and their phenomena, which is all we know about either of them, also appear to be distinct. No series or arrangement of plates has ever produced all the phenomena of life. If, then, these forces differ in their phenomena, they differ in all that is substantial; for, the phenomena being abstracted, nothing remains but the force in a state of rest, inappreciable to our senses; or the hypothetical fluid—the fluid, the existence of which convenience and the imperfect development of human understanding has induced philosophers to assume merely by hypothesis. Indeed, it will always be most convenient to distinguish these forces by different names; and in the present state of our knowledge, it is quite unphilosophical to assume their identity. They have, however, this common resemblance, that, to a certain extent, they each can supply the place of the other, and they each depend upon a certain arrangement or system of matter, apart from which they have no perceptible existence, and which, when materially disturbed, their phenomena cease to appear. Thus it is, that when a foreign substance enters the animal body, combining with any important organ, poisoning, or death of the whole system, is the result.

The local action of arsenic, or its effects upon the coats of the stomach and intestines, may be imagined to arise frequently from the attempts of the system to throw off the poison through the medium of the mucous membranes—a view of the question which is supported by the fact, that the diseased condition of these viscera is, in many cases, even greater when the poison has been applied to an external wound, or introduced under the skin; in which cases there could be no action on the mucous membranes but what arose from some such elimination of the noxious body, or from excessive secretion of a morbid and irritating nature, in the attempts made to expel the poison.

Barium.—In their action on the animal system, the salts of this metal are analogous to arsenious acid; or rather, I should say, the latter, though an acid, resembles in its action on the tissues certain metallic bases of which baryta is one, copper, lead, &c., being the others. They combine in the ratio of their equivalent numbers with the organic molecules, causing disorganization proportionate to the peculiar energy with which each is characterized in its affinity, giving rise to the formation of new tissues, which are incapable of life and growth, and which, though still entitled to the name of organic, can no longer be considered as organised, or admitting of the passage through them of the circulating fluids. This tissue no longer arranges itself into an elaborating apparatus. It becomes a mere chemical compound, not an organ; but, as with every description of poison, it is to their action on the fluids that we must look for the most fatal consequences of these metals; becoming infiltrated into the blood, by which vehicle they exercise their most fearful ravages, and in such cases they cause the greatest functional disturbance, acting in the most minute quantities, and within the shortest space of time. The compounds of this metal (barium) have been employed in veterinary medicine. In some recent numbers of *The Veterinarian* are records, by Mr. William Percivall, of cases of glanders in the horse having been treated—some successfully—by the chloride of barium. In medicine, the salts of this metal have been employed as tonics, chiefly in scrofulous diseases. On account, however, of their virulently poisonous properties, they require to be administered with extreme caution. Being much more soluble, they are poisonous in smaller doses than arsenic. Some of the horses treated by Mr. Percivall died

from their effects, one very suddenly; shewing, as that gentleman observes, in what an unexpected manner death occasionally happens during the exhibition of this poisonous mineral.

The carbonate, which is quite soluble in the acid of the stomach, is the most poisonous of all the salts of barium, from the smaller equivalent number of its acid,—a circumstance which should not be overlooked by the practitioner. Thus, if we compare it with the nitrate, the difference in amount of metal is very considerable, 100 grs. of the carbonate being (in round numbers) equal to as much as 131 grs. of that salt.

When poisoning has been caused by the exhibition of a metallic compound, should the prepared liquid, after having been acidulated, give no precipitate with sulphuretted hydrogen (which test should always be applied first) the probability will be that barium is in the solution. If, then, a precipitate be obtained by the addition of diluted sulphuric acid, which does not re-dissolve on the addition of a free acid, it is certain, if a metallic body be present at all, that it is barium. The metal strontium would answer to the same tests; but it is not poisonous. The experimenter should satisfy himself, however, by completing the analysis, and having recourse to the usual tests for discriminating between these two metals.

Copper.—The therapeutical effects of the salts of this metal are referred to their action as tonics, giving power and vigour to the body when it is debilitated and relaxed, and this, together with their indirect action as antispasmodics, allaying irregular muscular contractions, and their astringent and styptic operations, is the extent to which, so far as I know, their medicinal effects on the animal system have been traced. But we must not stop here. From the recent researches of Messrs. Danger and Flandin, it appears that the exhibition of the salts of copper is attended by a copious bronchial flux. "This symptom (they say) is not constant, which is perhaps the reason why it has not been remarked; but it is easily produced by placing the animal in the sun or near a fire. It lasts for some time, and in some instances appears in the intermittent form." And these chemists, it would appear, have discovered that in this liquid—this bronchial flux—the greater proportion of the copper which has entered the system is to be found, and that "a few drops alone are sufficient to prove its existence."

The conclusions I would draw from this fact are, that the salts of copper have a specific action on certain diseases, and that their effects are not limited to tonic and antispasmodic powers, or to their astringent or styptic operation. Thus, in that fatal disease of young cattle which is characterised by the existence of immense quantities of worms in the bronchial passages, the removal of which is so difficult, and at the same time so essential to the safety and recovery of the animal, they would probably prove an efficacious remedy, by causing an increased action of the exhalents of the bronchi, and poisoning the secretions of the membrane to which these parasites are attached, and upon which they feed. Whether this phenomenon may or may not extend to that portion of the mucous membrane of the air-passages lining the nostrils, is matter for experiment; but certainly the disease called nasal gleet in the horse is often successfully treated with sulphate of copper.

Sulphate of copper has likewise received the credit of having effected the cure of glanders; but to what extent it has been assisted by nature, it is not easy to say; nor would I consider it a settled point, as to what degree of confidence is to be placed in the correctness of his diagnosis whose reputation stands highest in the cure of this intractable disease. If, however, the salts of copper have effected cures, I imagine it cannot be referred to their tonic influence; for there are plenty of medicines besides sulphate of copper that produce tonic effects on the system that will not cure glanders. How, then, does this agent effect a cure? Certainly by its specific therapeutical action, that specific therapeutical action having a relation to its physiological action.

Lead.—From the researches of these chemists on the effects of this metal on the animal system, it appears that in cases of acute poisoning, one symptom they observed in dogs was vomiting of a white frothy liquid, containing carbonate of lead, which was formed chiefly in the mouth by the subacetate—the salt they employed—being brought in contact with the carbonic acid gas expulsed from the lungs. This is the only characteristic symptom in cases of this kind; and when once seen, "will enable the physician (they say) to guess pretty exactly as to the nature of the poison." I would, however, recommend, that upon no occasion should the analysis of this liquid be omitted, as, instead of lead, it might contain barytes, the carbonate of which, under such cir-

cumstances, would be precipitated quite as readily as the carbonate of lead. But, as they farther observe, it must not be forgotten that the aliments contained in the stomach may produce changes in its colour, and that it may be black, when from disease or other causes sulphuretted hydrogen is generated in the stomach.

When the poisoning has been produced *gradually*, the tongue and interior of the mouth, with the teeth, become black from the presence of the sulphuret of lead. These are singular phenomena, and when taken with the other symptoms of poisoning by this metal, there cannot be much difficulty in the diagnosis.

It is stated by Messrs. Danger and Flandin that "M. Roard, director of the manufactory of Ceruse, at Clichy, near Paris, informed us (them) that when the workmen, after their daily labour, took care, by his advice, to cleanse their hands with a brush and some soap, they were never affected with the painful colics which persisted sometimes a considerable length of time with their comrades who turned a deaf ear to his warnings, and neglected taking the necessary precautions." And they very reasonably consider this a "probability, if not a proof," of the absorption of this poison by the skin. This, I would observe, proves likewise the truth of the proposition, that diluted sulphuric acid acts as an antidote to poisoning by lead, even after that substance has entered the circulation, by causing the decomposition of the compounds which that substance forms with the constituents of the animal system; for it has now been ascertained, and is generally known, that the disease called painters' colic, to which the workmen in the manufactories of white lead are liable, is prevented by their taking the sulphuric acid-lemonade (a solution of sugar acidulated by sulphuric acid.)

Localization of Poisons.—In the Memoirs lately brought before the French Scientific Societies by Messrs. Danger and Flandin, these chemists and physiologists have exhibited results which shew that, in cases of poisoning by the metallic compounds, the various metals are not met with in equal quanties in the same organs; that some are not met with at all in the organs in which others are found; and that they are not carried, as has been supposed, to all parts of the system, but have a power of fixing upon particular

organs as their destination, or a peculiar susceptibility to be attracted by such. Thus, copper must be looked for in the liver, in which organ (a very singular fact) the whole of the poison absorbed, except what may have already been eliminated, is to be found. Lead is to be sought for in the alimentary canal, the liver, kidneys, spleen and lungs; not in the heart, brain, bones, muscle, nor in the blood. Antimony is found in several of the viscera; arsenic in almost all. Farther; while antimony "is eliminated from the economy in the urine with great rapidity," copper, "after having been absorbed, is thrown off, not by the kidneys, but by the pulmonary and digestive mucous membranes. Lead, though not rejected with equal rapidity as antimony, is eliminated from the system by urine, rather than by the insensible transpiration."

I regret I cannot go minutely into this subject, for I have not seen the papers on that part of it which refers to arsenic and antimony. I have just alluded to it, however, in this miscellaneous essay, on account of its being a subject of great interest, and new.

To resume: Should this discovery of the localization of poisons be confirmed, it will tend materially to facilitate and abridge the labours and researches of the chemist and physiologist in cases of poisoning. The whole body need not be analysed, but those organs or parts only which, to the exclusion of all others, ought to contain the poison. The mixing of a part which contains the poison with parts which contain none, or even a small quantity, renders the discovery of it less sure; for it is easier to detect the poison in a small than in a large quantity of organic matter. Thus, should the poisoning agent be copper, he has to search for it only in the liver, and, according to the authorities abovementioned, it is there so abundant that "1·764 oz. to 2·117 oz. of that organ is sufficient to furnish positive proofs" of its existence. In a soluble form it cannot be separated by cold water from the parenchyma of this viscus; but ere it can be dissolved the parts require to be submitted to long and rapid ebullition. Hence, in cases of poisoning by copper, the dead body might remain for a long time under water, and yet the chemist would discover the metal in the liver. Simple washing with cold water, however, will remove the

small quantities which have been imbibed by the capillaries, or the mucous membranes of the stomach and intestines; but which are not in a state of chemical combination with the tissues.

Poisons have been known to be introduced into the bodies of men and of animals after death. In such cases the poison either remains on the spot where it was deposited, or it is imbided and carried gradually and indifferently into all the organs. The fact of the localization of poisons would remove all difficulties in such cases. The circumstance of its being met with in parts where, in cases of poisoning the living body, it is never found, would be enough to shew, if confidence is to be placed in the uniformity of Nature's laws, that the individual had not been poisoned.

The experiments of Messrs. Danger and Flandin on the viscera of children and adult men and women, on the blood, and on the lower animals, have led them to the conclusion that neither copper, arsenic, lead, or any unknown metal, exist in the body in its normal state; so that they are at variance with the opinions in the last edition of M. Devergie's "Treatise on Legal Medicine," which, I believe, contains tables shewing the proportions of lead and copper in the human body. If this position be a true one, it will have the advantage of depriving criminals of the plea of the presence of these metals in the normal state of the system. For although there be a difference between what has been laid down as the normal quantity and that found in cases of poisoning sufficient to preclude the possibility of error if the analyses have been properly conducted, yet the spirit of the laws, which in all matters of doubt tends to allow the benefit to the prisoner, is often, by the eloquence and ability of counsel, forced in that direction far beyond its legitimate boundaries.

It appears to me highly probable that their views in this respect will be confirmed by other physiologists. It is true, the opinions of Messrs. Devergie and Hervey, "that copper, lead, and probably another metal form constituent parts of all the organs in man and animals," were supported by Professor Orfila; but some of the experiments made by him, and the conclusions deduced from others on this subject, are not, I conceive, of so satisfactory a nature as those of Messrs. Danger and Flandin. Several chemists have doubted the correctness of Messrs. Devergie and Hervey's disco-

very; and M. Chevreul, it appears, now claims the priority of the assertion, that copper does not exist in the human body.

In one experiment Messrs. Danger and Flandin "mixed with the food of a strong healthy dog a certain quantity of sulphate and acetate of copper, gradually increasing the dose until the animal was enabled to take gr. ii daily without appearing incommoded. During the 273 days that the experiment lasted, ʒviss of the poison was administered—enough to destroy fifty dogs of the same size. The most scrupulous investigation of the urine during life, and of the whole body (viscera, muscles, and bones) after death, did not furnish the least particle of copper. It is necessary to state, that for two days previous to the dog being killed the copper had not been given, and that before operating on the intestinal canal the parts were carefully washed. At first the animal grew thinner, but he soon appeared to get accustomed to the poison, and then not only recovered his former health and spirits, but even grew fatter."

The discovery of the localization of poisons, and the different means which Nature takes to expel them from the system, will lead to the knowledge of the best modes of treatment in cases of poisoning, and of promoting the elimination of those substances with which the animal body may from various causes become charged.

Analyses.—The presence of organic matter having the effect frequently of altering the action of tests on inorganic bodies, various means have been adopted, and processes described, with the view of obtaining accurate results under such circumstances.

According to these chemists, whom I have so frequently named, the most efficacious is, to carbonize, by adding to the matter to be examined, "one-third of its weight of sulphuric acid; expose the residue (after evaporation) to a red heat; reduce to a fine powder; then (if the metal be copper) moisten with sulphuric acid, and boil until nearly dry: finally, add a sufficient quantity of water to dissolve the salt of copper." On this liquid they tried their tests, and they state that they discovered one hundred thousandth part of the metal. If the metal be lead, hydrochloric acid should be employed for effecting solution, and aqua regia if it be tin, gold, &c. When several metals are mixed together, they must, of course, be separated by the ordinary processes of chemical analysis, and then the characteristic phenomena, by which each is most strikingly distin-

guished from every other substance, may be exhibited by solution and the application of the proper tests.

For the detection of arsenic and antimony the above process for the fixed metals would require to be modified. It would be enough, after evaporating to dryness, simply to treat the residue with concentrated sulphuric acid, so as effectually to char the organic matter; a clear and transparent liquid would then be obtained, upon which the usual re-agents would give satisfactory results. In case Marsh's apparatus should be employed, there is a modification of it recommended by our Lecturer on Chemistry, Mr. Morton, whereby he obtains nascent hydrogen from the decomposition of water by introducing into the metallic solution the poles of a galvanic battery. By this beautiful improvement the introduction of zinc, and consequent contamination of the liquid under investigation, is avoided.

Mr. Morton.—I have with much gratification read this Essay by Mr. Robb: it is full of interest, and replete with instruction. Fully do I agree with the author in his assertion that arsenic does not always, by its local action merely, cause death. Poisons, as a class, have a twofold influence; namely, local and remote: but that loss of substance or erosion does not generally ensue upon the exhibition of arsenious acid as a poison, is a statement with which I confess I do not so readily concur.

Mr. Robb.—I certainly never observed any solution of continuity of the mucous membrane.

Mr. Morton.—In every case I have examined, corrosive action has been visible. Here, then, we differ; but we agree in considering that this is very often altogether an insufficient cause of death.

The localization of poisons I consider a subject of more than ordinary interest; and this remark may be extended to medicines generally; for were we acquainted with the peculiar tissue or organ on which each agent is capable of acting, we have at once a key to unlock all the mysteries of therapeutics. There is another circumstance which may not be altogether foreign to this subject, namely, the specific action of medicinal substances. Did we rightly know—had we ocular proof of—the desired effects having been

brought about, we should then be able so to apportion our dose as to combat disease more effectually, and also with the least expense to the animal economy. With the peculiar effects of some few medicinal substances we are conversant. Thus, we know that mercury in all its forms will produce salivation; that digitalis, under certain conditions of the system, will cause an intermittency of the pulse; and belladonna a dilatation of the pupillary opening of the eye; and whenever we see these results brought about, we are warned either to withhold our agent for a time, or to give it in smaller doses or at longer intervals, as may be, this depending on the disease we are desirous of overcoming. These, then, become criteria by which we are to be guided; and could we go through the whole of the materia medica in the same way, doubtless it would be advantageous.

As I have adverted to the action of the compounds of mercury, I would observe that, from some experiments lately instituted by Dr. Osterten, he found that this metal, in common with many others, accumulates in the liver principally, although it is met with in the blood and other organs. It is not, perhaps, a matter of much wonderment that, in the liver, these agents should be so frequently found, when we reflect that the absorbents empty themselves into the venous system, and venous blood, in very considerable quantities, passes through this large excretory gland. The salts of copper may likewise be detected in the liver, although large quantities are expelled with the excrements. In like manner arsenic is found there; and in all analyses of poisoning by this mineral Orfila directs the liver to be incinerated by the action of nitric acid on it, and then the ordinary tests or re-agents to be employed.

To return: We know that the influence of the alkaloid strychnia is on the spinal cord. When a few doses of this powerful agent have been administered, it is not uncommon to find the symptoms of the disease aggravated: an extreme sensitiveness is evinced on pressure being applied along the spine, and sometimes tetanic spasms will be present. We may now be sure that the maximum dose of the agent has been attained, and by judiciously apportioning the quantity, relief, if not cure, may be anticipated.

The peculiar action of the compounds of iodine and of hydro-

cyanic acid on the animal economy is too well known to require any comment. I repeat, that our acquaintance with the specific influence of medicinal substances is a desideratum.

I believe it is possible that the effect of every medicine might, by observation patiently pursued and carefully noted down, at length be accurately known. Great, indeed, would be the benefit conferred on veterinary science by that person who shall be the first to carry out these views. The field is as yet unoccupied, for a few scattered facts alone we are at present conversant with; the honour, therefore, would be all his own. Still, it would be necessary not only to note the potency of certain agents on the healthy system, but most particularly during the existence of disease, since this often modifies the action of medicines, and sometimes determines it. Further, it is well known that certain medicines have a tendency to accumulate in or to derange certain parts or organs of the frame to the exclusion, as it were, of others. A precise knowledge of this would materially guide the practitioner in his selection of therapeutic agents, and could not but greatly modify the terminations of disease. Nor are the means of observation so rare as to present an obstacle to research. As certain painters become attached to particular tints, and all men are observed in their speech to exhibit a partiality for particular words, so most medical men have a confidence in particular medicines, which they employ often to the exclusion of every other. Thus, when an animal died that had been treated actively with some particular medicine, you would have a proper object on which to commence your observations, which, it is probable, you might be able in another case to confirm. By such means every fatal case would be made an actual experiment, and the result be of twofold importance, viewed both therapeutically and pathologically.

Mr. Robb has referred to many valuable experiments, by MM. Danger and Flandin, on the mineral poisons. The same physiologists, while ascertaining the effects of arsenious acid on sheep, found that the quantity of this substance progressively increased in the urine until the animal either died or the whole of the agent was eliminated from the system by the kidneys. On this fact M. Rognetta has advanced the theory, that this acid is comparatively harmless to ruminating animals, when given either in a solid form

or that of powder, from its being involved in a large quantity of dry food, its solution and consequent absorption being thereby prevented.

Some of you may remember an experiment instituted by Mr. Simonds with this agent on the cow. It is recorded in the *Proceedings of the Veterinary Medical Association for* 1840-41.

Both in the urine and the pleural secretion has this acid been detected by the French experimenters. On this account its use has been advocated in pleuritis in cattle and sheep, combining it with common salt, which in some way appears to check its poisonous tendency. There is a circumstance I would mention here:—I have, while experimenting, found common salt prevent the development of arsenious acid when the fluids containing it were decomposed by the aid of galvanism.

In one of MM. Danger and Flandin's experiments, twenty sheep, affected with chronic pleuritis, had an ounce of arsenious acid each given to them, and only two out of the number died,—the remainder got well in a week; hence, they have not hesitated to advocate the employment of that agent in this disease.

I do hope that the introduction of this paper will stimulate those present to investigate for themselves. It at all times affords me pleasure when I am able to assist my professional brethren in their duties; but I cannot say it is gratifying to my feelings, when my former pupils solicit my aid from a seeming disinclination for a study in which they are, or should be, as proficient as he who was once their teacher. I believe the time is come when the veterinary surgeon should carry on his own analyses; when he should appropriate to himself the credit of demonstrating the existence or non-existence of poison in the animal system. To need help in such a process is to acknowledge a deficiency which, I fear, not only injures the local reputation of the individual, but likewise tends unjustly to impress the public generally with a low estimate of the scientific attainments of the veterinary profession as a body. The process requires some care; but it is neither so nice nor so complex, in the majority of cases, but that all may undertake and accomplish it; and I therefore trust that, for the future, none will avoid it. The labour of the investigation must be considerably lessened by a consideration of the localization of poisons, to which I

have already adverted. Certain organs will, therefore, require to be particularly examined, and among these especially the liver and the bladder, or, rather, the contents of the latter.

Mr. Robo has favourably noticed my mode of detecting arsenious acid; but he has not referred to the two forcible objections against the employment of Marsh's test; namely, that both zinc and sulphuric acid, when commercial, often contain arsenic, and sometimes they are only with extreme difficulty procured in a state of purity. The history of the circumstance which led to my employment of the process which has been largely approved of by scientific men may not be uninteresting. It so happened that, when about to examine the contents of a stomach taken from a horse supposed to have been poisoned by arsenic, I first tested the hydrogen which was being very abundantly given off by Marsh's ingenious apparatus; and the result was, that I obtained a number of metallic films, which proved to be arsenicum. Conjecturing the source, as none of the suspected solution had been yet introduced, I sent for fresh zinc and sulphuric acid, hoping they would be pure: still Marsh's test gave proof of the presence of arsenic. Again I changed the materials, but with the same result. I now felt myself in a difficulty, when it struck me that the solution might be decomposed by other means; and hence I was so fortunate as to apply a process by which the result is placed beyond the possibility of error.

Mr. Robb has stated, that my process obviates the necessity of employing zinc. It is true, at first I only asserted that metal was, by my plan, no longer required; but then I had obtained only half the desired end; for sulphuric acid is often even more highly contaminated with arsenic than zinc is. I confess that I have found no substance conduct electricity so well as dilute sulphuric acid; but the salts of potassa are sufficiently good conductors, and thus I have done away with its use, and therefore no objection can be advanced with regard to the materials employed, galvanism being my decomposing agent.

Mr. Jekyl drew attention to the assertion made by Liebig, that lead was only poisonous in the form of carbonate; and if the formation of this in the system were prevented, or if its decomposition within the system were effected by the administration of

acetic acid, so as to produce the acetate of lead, no fatal consequences would ensue.

Mr. Morton remarked, that the same fact had been asserted by Professor Thomson; and in proof that large quantities of the salts of lead might be administered with impunity, he stated that he had given to the horse four ounces of the acetate, and one pound of the diacetate of lead, without destroying life in that animal, or producing any very marked action beyond that of a sedative.

Mr. Robb observed, that some toxicologists, among whom was Raspail, considered the acetate as the most poisonous of the compounds of lead, and inquired of Mr. Jekyll what facts had induced Liebig to make this statement.

Mr. Jekyl replied, that Liebig had drawn his conclusions from experiments made upon dogs.

Mr. Morton said, that the presence of the phosphates in the stomach of the dog seemed to render such conclusions doubtful, as the phosphate of lead, which would be then formed, was a comparatively inert compound.

Mr. Robb.—The circumstance that the zinc and sulphuric acid of commerce both frequently contain arsenic, certainly does, as our worthy Secretary observes, give rise to difficulties in the employment of Marsh's apparatus; and these difficulties are, probably, not the less experienced by the great majority of medical men, who are but indifferent chemists. I have frequently, however, found both zinc and sulphuric acid of commerce in which no arsenic could be detected by Marsh's apparatus; and even if it were not so, it is in the power of any one to provide himself with these substances in a state of sufficient purity, and no chemist who undertakes such investigations should be without them. Although, therefore, Mr. Morton's process, even in so far merely as it gets rid of the abovenamed difficulties, is a very beautiful process, and is well worth the consideration of the scientific community, yet I conceive it is still more highly to be recommended for the reasons I have mentioned in my paper, viz. that the liquid under investigation no longer becomes contaminated by zinc, even in a state of purity, which is necessarily introduced in the employment of Marsh's apparatus, but which, under Mr. Morton's plan, is altogether dispensed with. It is almost unnecessary to

say, that this improvement, which admits of the examination for arsenic without adding to the liquid metals which themselves might have been administered as the poisonous agent, is a point of great importance gained.

Mr. Ernes noticed the unfitness of the dog for experiments whence any deductions of real value to the veterinary surgeon could be drawn. Neither one class of animals nor isolated facts were sufficient to establish truths connected with this important subject; but a series of experiments are called for, and the repeated observance of effects produced on all, or nearly all, animals could alone establish the definite action of any medicinal substance.

FEBRUARY 11th, 1845.

The PRESIDENT in the Chair.

Mr. HALL gave the history of two cases of fractured pelvis in the horse, the result of the animals slipping down on the wood pavement. A similar instance was related by Mr. H. DAWS, who also exhibited a fracture of the basilar process of the occipital bone of a horse, caused by the animal's rearing up and falling backwards; and two fractured pastern bones, one recent, the other having existed for some little time, in which the attempts made by Nature to effect a reunion of parts, was beautifully shewn.

An Elaborate Essay by Mr. JEKYL was then read "ON THE ANTIDOTES AND TESTS FOR THE POISONS TO DOMESTICATED ANIMALS."

[We regret that want of space precludes the introduction of this Essay, and also some others, since it contains much valuable matter. Its consideration occupied this and the following meeting. Mr. Jekyl lucidly demonstrated the manner of applying the many tests for the different poisons, describing the chemical changes that take place, and the precautions necessary when organic fluids are being operated upon. We may recur to this subject, and give some extracts from the thesis to shew the progress that is being made in the acquirement of scientific principles by those who are about to become practitioners of veterinary medicine. Some of our readers may think that the subject was anticipated

by the "OBSERVATIONS" of Mr. Robb. Such, however, was not the case. The two essays constituted an admirable whole, Mr. Jekyl's, being an addendum, and filling up an important hiatus which otherwise would have existed.]

TUESDAY, FEBRUARY 25, 1845.

Mr. W. C. CRABBE, V.P., in the Chair.

CASE OF OSSIFIED TUMOUR ON THE PLEXUS CHOROIDES.

By Mr. COX.

Mr. Cox.—The portion of a tumour upon the table was taken by me from the lateral ventricle of the brain of a horse which died in my infirmary. The animal had been seen frequently to turn round and round when at grass, and when put to work was as frequently observed to reel. Still he was able to perform his labour, and the less attention was, perhaps, paid to these symptoms as the appetite remained unimpaired. One evening, however, when returning from a neighbouring coalpit, the symptoms suddenly became more aggravated, and in consequence of this the owner sent the horse to my infirmary for treatment. The peculiarities that presented themselves were, pulse accelerated, and to be felt only at the heart. Breathing quick and laboured. Visible mucous membranes of a purple hue. When in the paddock the animal kept turning round and round, and when the head was elevated, he fell; and after struggling for a short time got upon his legs again with difficulty. He was almost continually yawning, and sometimes the respiration was so much impeded as to simulate roaring. The sound was such as I never heard before, and so loud as to be audible at a considerable distance. The skin was wet with perspiration.

When he was first brought in, I considered him to be in a dying state, and he only lived till the following morning. I was absent from home when death took place, and by the time I returned the owner had employed a man to skin the horse, which was not only

accomplished, but the brain was likewise exposed. Within the left ventricle was found a substance which Mr. Morton has correctly pronounced to be granular, attached, and about the size of a pigeon's egg. No other part of the frame exhibited any signs of disease except the lungs, which were slightly congested.

Mr. Morton.—Analogous cases to that which Mr. Cox has favoured us by relating are recorded in the *Proceedings of the Association.* Here is a specimen, taken from the museum, of a very large tumour involving the plexus choroides, and in the same collection is another and similar one. Cases of this kind are full of interest, and although they possess no novelty, yet, as establishing the susceptibility of the horse to a particular kind of cerebral disorder, are deserving of record. They are likewise of importance, as illustrating the extent to which such a form of disease may proceed. Both the horses, from which the specimens to which I have alluded were taken, died phrenitic; but we cannot for an instant suppose that the development of the tumour was simultaneous with the manifestation of the symptoms. There is more reason to think that the deposit resulted from long-continued abnormal action, and to regard it as the growth, perhaps, of years; and, being gradually developed, it caused little derangement till some exciting cause co-operating produced those symptoms which suddenly terminated the existence of the animal. These concretions consist principally of the phosphate of lime with animal matter. Every part of the frame is subject to tumours of this kind, and, when we reflect on the composition of the brain, there is certainly no reason why this organ should be exempt from them.

Two Cases of Supernumerary Tarsal Bones.

By Mr. Cox.

Mr. Cox.—As every thing connected with the horse possesses interest to us, perhaps I may be excused for directing your attention to a circumstance which has not, I believe, been previously noticed. I have here the tarsal bones which belonged to two horses, and in each is found an extra bone, there being what, for the sake of description, I may call two small cuneiform bones in

both. Neither of the hocks shewed any symptom of disease externally; and in one of them, which belonged to a mare I treated for shoulder lameness, the cuboid and magnum are united, so that in this case the joint really possessed the usual number of bones. As illustrating a variety in conformation where none has been before observed, but where, from my having met with two specimens without searching for them, I cannot deem a circumstance of only occasional difference or very uncommon, I lay these specimens before the Association for their inspection.

On the Management of Hunters.

By Mr. E. Boddington.

The author of the Essay, after dwelling on the necessity of the educated veterinary surgeon being intimately acquainted with this subject, and the advantages that he will derive from it, proceeds to observe—

"We are not only expected to understand the nature of the various diseases to which the animal is liable, but also the causes that are in operation to produce them. That many of them are the result of the violent exertions of the field, and the sudden changes the animal has to undergo to prepare him for those exertions, I feel assured no one will be bold enough to deny. I shall now endeavour, as plainly and distinctly as possible, to give you my views upon this subject; and I hope, imperfect as they may be, they will not fail to elicit from those of you who are more conversant with it than I am, not a little information.

"I shall consider it under three distinct heads; namely, 1st, The preparation or conditioning of the hunter for the coming season; 2dly, The treatment during the season; and, 3dly, That part which affects the country veterinary surgeon more particularly—the summering or throwing out of condition.

"In the preparation for the coming season I consider that both town and country veterinary surgeons are concerned. It is no uncommon thing for a gentleman to take a horse to his professional adviser, and to say that he wishes to have him prepared for the

hunting season. Under such circumstances, you should first make a few inquiries as to the manner he has been kept during the summer: neither should his age be forgotten by you, likewise whether he may have been in the grass field, having only that food which it produces, or in the bay of a barn, or a loose box, there being allowed corn with his green meat. Upon these, and other similar inquiries, of course, will depend your after-mode of treatment. It will be right also to examine the horse as to soundness, so that, should any disease exist which in your opinion would be likely to prove detrimental to him in the field, you can inform your employer of it. Should none exist, you can at once proceed with your treatment. This, perhaps, will generally be about the last week in June: at least, in my opinion, it should not commence later than this. And whatever may have been the mode of the animal's living previously, the change you are about to produce upon him must be gradual. The state of the feet should be the first thing looked to; and here a great deal of care will be requisite. It is impossible for me to lay down any fixed rule as to the method of shoeing, as this must, of course, depend upon various circumstances. Do not forget to well examine the frog, as it is not unlikely that thrush may exist: if so, this, of course, must be attended to. The stable should by no means be a warm one, neither should clothing be allowed at present; the grooming, too, should simply consist of the employment of a whisp. The change of diet also must be most carefully and gradually effected. If the grass field has been his summer abode, and its produce alone his food, his diet for a fortnight or three weeks should consist of a mixture of hay and grass, or green clover, as may be most convenient, with small quantities of bran and oats. You may now administer a gentle dose of some cathartic agent, say aloes ʒiv, previous to any further change, which will consist in moving him to a warmer stable or a loose box (the latter is always to be preferred), allowing better grooming and better keep, which may be as follows,—old hay six pounds, from eight to ten pounds of old oats, with ten or twelve pounds of bran and chaff per diem. This quantity should be given at three or four feedings. From one to four hours walking exercise should also be allowed every morning *early*; after which he must be well groomed, and then left loose if in a box; if in a stall, care should be taken that the head be let down, for

grooms are too apt to keep horses tied to the rack, to prevent them from dirtying their quarters, and consequently to save themselves the trouble of cleaning them.

Much importance is to be attached to the exercise being given early in the morning, as then there is the whole of the day for the animal to rest; in fact, when he has had his feed in the middle of the day, his head should be loosed and the door locked until the evening. This plan may be continued for a fortnight or three weeks; when, perhaps, it may be advisable to administer a second dose of cathartic medicine, say aloes ʒv, combined with calomel ʒj; after which the last change of treatment may be proceeded with as follows:—His clothing should now be warmer than before, and the same continued throughout the season. The temperature of the stable should at no time exceed 64°, it being at the same time well ventilated. The food may be increased to six or eight pounds of hay, from ten to twelve pounds of *bruised* oats, and from six to eight pounds of split beans, per diem. The corn should be old and dry; and I would strongly recommend that the oats be English, in preference to either Irish or Dutch: the former (as sent into this country) are generally full of dirt and small stones, the latter very apt to be heated and fusty. The exercise must now be more active; and a short canter may be given once or twice a week, with the usual walking exercise every morning, and this increased gradually until within a few weeks of the approaching season. If it be found necessary, clipping may be had recourse to, previous to his having what is termed his sweating gallops once or twice a week, as may be thought proper, and which should very gradually *increase in distance* and *decrease in time*, until a three or four-mile canter can be taken without distress; after which care must be exercised that he be made perfectly dry, which can be best done by using first what is termed a scraper: the legs are then to be well washed, rubbed dry, and immediately bandaged with flannel, which should remain on until he has been well groomed: the bandages must then be taken off and replaced by clean dry ones, which should continue on for some time.

Should the horse have been living on dry food, and in the bay of a barn, &c., during the summer, of course, it will not be necessary to exercise so much caution as regards change of diet, temperature of stable, &c., as in the former case; and you may, even

in the course of a day or two, perhaps, advantageously administer a dose of cathartic medicine; then at once proceed to your more active treatment, which should be the same as beforementioned, and it may be summed up in a few words,—good diet regularly given—proper exercise—stable or box well ventilated—not too much clothing—good grooming—and attention to the state of the bowels.

We now come to a consideration of the second division of our subject; which is, the treatment during the season. Upon this but little will be said, as it does not much concern the veterinary surgeon, the horse generally remaining in the owner's hands during this time. He is now liable to many accidents, such as sprains—throwing out of curbs—spavins—splents—being staked, &c., over which, with a variety of such like maladies, neither the owner nor the veterinary surgeon can have any control; but, when they do occur, the animal must be treated accordingly. But, during this time he will require occasional nursing, more particularly after a hard day's work, and I would recommend, when brought in, that about two or three quarts of tepid gruel be given instead of water, and a small quantity of hay whilst he is being groomed—which latter should not be too long about; and his legs being bandaged as before advised, and the dirt rubbed off him, by the side of his corn a warm bran mash should be placed. Neither should I object to a tonic ball being given, containing pulv. gentian et zingib. ää ʒij, and most decidedly I should allow one or two hours walking exercise the next morning. Occasional doses of cathartic medicine during the season will, I have no doubt, be likewise found of service.

We now pass on to a consideration of the third and last portion of our subject; and though the *last*, it is not in my opinion the *least* in importance. It is, I have said, this division which, perhaps, most especially affects the country veterinary surgeon; and this, because it is seldom that the town practitioner has the conveniences necessary for what is termed the summering of hunters. A great change is now to be brought about; and in throwing a horse out of condition as much, nay more, skill and caution are called for than in preparing him for that which he is now about to lose. The system has been brought into a highly excitable state, not only by the best of provender, &c., but also by the sports of the field, in which the animal has daily joined, and he is now to be withdrawn

from these stimuli. Having deprived him gradually of his clothing, warm abode, and grooming, he should be put either into a loose box, the bay of a barn, or a shed, having a yard about twelve feet square attached to it, a portion of the bottom of which should be covered with clay and tan, and constantly kept moist by means of cold water. Upon this part, more particularly, should he be fed, his diet consisting of hay six or eight pounds, or, if convenient, grass, green clover, &c., with about eight pounds of old oats and ten pounds of bran and chaff per diem: no grooming should be allowed.

I consider this mode of summering far preferable to turning horses out in a large grass field, where their feet are injured by the hardness and heat of the soil, the flies are continually teazing them, their legs are battered and bruised by galloping about, and they are liable, from being with others, to accidents of various kinds. Besides which, from the low state of condition they are allowed there to fall into, their constitutions are ruined by the sudden change they have to undergo in the preparation for the coming season; and this, I have no doubt, is the reason why so many hunters are worn out after only a few seasons' work; whereas, had they been kept on dry food and in doors, they would have been enabled to undergo, without any constitutional derangement, any change that might have been required.

The veterinary surgeon will, during this time, be expected to attend to the general state of the health of the animal, and also the treatment of any injury that may have been inflicted during the season, which is often the principal reason the animal is placed under his care; such, for instance, as what is called getting the legs fine, either by continual cold water bandages, the use of lotions, blisters, or the actual cautery.

It will, perhaps, be said, that I have omitted a most important branch of this subject, viz. that of shoeing. Had I entered upon it, I must also have considered the treatment of many diseases connected therewith; and feeling assured that there are many among you better able than myself to undertake that part of veterinary science, and, moreover, that it would be an excellent subject for a future Essay, which would be gladly received by the Association, I leave it, and remain

Your's respectfully.

MARCH 6, 1845.

Mr. W. R. Shirley, V.P., in the Chair.

Mr. Harman, student, was elected a Member.

Certificates of Membership were awarded to Messrs. R. H. Dyer, Edwin Taylor, and Edward Mayhew, on obtaining their diplomas from the Royal College of Veterinary Surgeons.

ON DIARRHŒA IN CATTLE, WITH ITS MODIFICATIONS.

By Mr. W. Cox.

The following Essay embraces three very important diseases to which cattle are liable, namely, Acute Diarrhœa, Acute and Subacute Dysentery, and Constitutional Dysentery.

Acute Diarrhœa

Is the result of a functional derangement of some part of the digestive apparatus, but generally of the abomasum and the intestines, although sometimes of the latter alone; and which may be brought on by a variety of causes, such as too freely eating of succulent grass and clover, but more especially when these are bedewed with moisture; running about in a state of excitement in the summer season to avoid the attack of the gad-fly; or, when in a state of perspiration, taking their fill of cold water, and afterwards standing in a pool or river perhaps for hours together.

Drinking of stagnant pit-water has been likewise said to produce it; and some persons have asserted that the animalculæ met with in those places are the cause of this disease, which has led to the cleaning out of these pits and throwing in a quantity of quick-lime, after which, it has been stated that the disease has ceased. A sudden change of weather from dry to wet, no doubt, will also often become a cause.

Symptoms.—If a milch cow be attacked, she may appear in her usual health either in the morning or at night, but chiefly at the latter period, while she will yield her regular quantity of milk. But

so rapid is the progress of the disease, that at the next milking she will not give as many pints of milk as she did gallons before.

The coat will be observed to stare, the animal to stand with its back bowed, and all four legs placed nearly together, shivering as if from cold, scarcely a muscle or a limb being still; the extremities, nose, ears, horns, &c. are chilly; but the state of the fæces is the surest guide to a correct diagnosis. The alvine dejections are very watery, and mingled with them are portions of undigested food: they are also generally fœtid, but not invariably so. The animal has always a thin and tucked-up appearance, and the pulse is sometimes slower and weaker, though in the majority of cases it is but little altered.

Treatment.—Friction to the skin, a comfortable cow-house and being well clothed, with a mild stimulant administered, will sometimes bring about convalescence so rapidly, that the animal will appear in less than twelve hours as if nothing at all had been the matter with her. The only traces of the disease left are a loss of milk, and weakness for a few days. But if this disease continues, an aperient, consisting of castor oil, should be given, to which a small quantity of tincture of opium may be added. After the operation of this, a mixture of tincture of opium and tincture of rhubarb may be given with advantage. Starch or flour gruel should also be freely allowed.

Acute Dysentery.

This is sometimes the sequela of acute diarrhœa, the disease just described; and the same causes that are in operation to produce it will give rise to the malady now under consideration: I may further add, that cattle which are turned out to grass early in the spring are most frequently the subjects of it. Animals that have recently calved, and have but very little flesh on their bones or hair on their skins to keep them warm, and are exposed to the inclemency of the weather, are also very liable to its attack. The affection consists in an inflammation of the mucous membrane of the small and large intestines.

Symptoms.—The appetite and rumination are suspended, the ears, horns, extremities, and surface of the body are chilly, and a peculiar coldness of the mouth is present, with continual rigors and grinding of the teeth. The pulse is quick and feeble, but the

respiration is seldom much accelerated, and I have never observed any striking at the belly with the hind feet, or knocking the head against the side; but when in a recumbent position, the animal will lie groaning, or rather moaning, with its head turned towards the abdomen, which is a sure sign of pain in these animals. Tenesmus is present, the fæcal matter being very thin, and flakes of mucus mingled with it; hence the name of Dysentery. Coagulated blood will also often be voided, and that sometimes in very large quantities: it then constitutes what the cowleech calls "bloody flux," —a disease of frequent occurrence.

Treatment.—I never find any tolerance of blood-letting in this disease. The comfort of the animal should first be attended to, by placing it in a warm cow-house and well clothing it. A dose of castor-oil, with tincture of opium, should then be administered. If relief be not obtained, the exhibition of prepared chalk with opium must be resorted to, and the animal well supplied with sago gruel. If much blood is voided, and the mucous membranes are becoming pale, astringents combined with stimulants should be given without delay. I have found the diluted sulphuric acid and brandy very efficacious.

Restoration to health will often take place if proper curative means be early adopted; but if, on the other hand, the case is neglected, or improperly treated at the first, speedy death is commonly the consequence: if otherwise, it takes on the sub-acute form.

Sub-acute Dysentery.

In this form of the disease there is seldom much either to cheer the hopes of the owner or the practitioner, except that the poor beast will now and then take a mouthful of hay, or he will sip a little gruel; which, after all, proves delusive.

Symptoms.—The animal loses condition and becomes hide-bound—the teeth are loose—the breath fetid—vermin very soon cover the body—and, instead of mucus being voided with the fæces, we have now purulent matter; and if much gruel is given, it will pass through the alimentary canal very little changed—the eyes are sunk in their orbits—and the animal dies in a state of marasmus, the time varying, according to the intensity of the attack, from one week to three months.

The post-mortem appearances, in the acute stage, are inflammation

of the mucous coat of the intestines, with loss of substance resembling erosion. In the sub-acute or chronic form, we have ulceration of the mucous coat, involving very often the muscular; and, indeed, I have seen all the coats of the intestines in a highly diseased state, as well as all the compartments of the stomach.

I am now brought to the third and most important division of my subject, namely,

Constitutional Dysentery.

This disease has hitherto been confounded with the one last described; but in my opinion it is altogether a different affection. It has been called by writers chronic diarrhœa, chronic dysentery, rottenness, scouring rot, scantering, shooters, &c. This malady is of frequent occurrence, and also incurable when confirmed. But what makes it of great importance to the veterinary surgeon is, the fact that he will be more frequently called into courts of law to give evidence as to the soundness or unsoundness of animals labouring under this disease than all the other maladies to which cattle are liable. The primary symptoms are, an unhealthy appearance of the coat, it gradually becoming of a lighter colour; a cough will also be present, but not invariably; there will be a perceptible although slow wasting away of the animal, and, if a milch cow, a diminution of the lacteal secretion. Although rumination will be regularly performed, and the appetite apparently not in the least impaired, the above symptoms will continue without any purging being present for a period varying from one to twelve months; when on turning the animal out to grass, or parturition taking place, or exposure on a cold wet night in autumn, or some other exciting cause being applied, diarrhœa will commence, and which will generally continue, despite all the remedial means we may have recourse to. What had before puzzled the practitioner he now understands perfectly well: to use the language of the cow-doctor, the beast is rotten. The symptoms which now supervene are violent purging, the fæces being light coloured, fetid, and mixed with mucus, or something analogous to it; this being not in flakes, as in acute dysentery, but intimately mingled with the dung, giving to it an oily appearance, and causing it to have a bubbled surface after it has fallen to the ground. There is generally excessive thirst present, and frequent eructa-

tions of gas from the stomach, but no hoove. Although the animal will waste away, so as to appear little more than skin and bone, the appetite will continue unimpaired, and rumination be performed as in health.

The distinguishing characteristics between this disease and sub-acute or chronic dysentery, should the practitioner not know any thing of the previous history of the case, are, the peculiar state of the fæces (which I have described), and the absence of hide-bound. Another peculiarity is the appearance of the eye, which will be bold even to the last.

It is uncertain how long animals will live affected with this disease, as they are commonly slaughtered; but I have known them exist for two years. If they are attacked in the spring, they may now and then be patched up until the autumn; and if in the autumn, until the following spring: but the disease is sure to return, and will run its course.

Treatment.—It is my opinion that we should be more successful in our treatment of this disease, did our employers consider their own interest and consult us in the early stages of it, abiding by our decision, and not running to the quack or to the druggist for a cordial drink, as it is called, or some other nostrum. I have frequently succeeded—at least I have thought so—in arresting the progress of this disease, when taken in the early stage, by placing the animal under a course of tonic medicines, consisting of the sulphate of iron in combination with caraway-seeds, or some other carminative.

In the latter stages, or rather when the purging has commenced, I have checked it by the administration of astringents, combined with the vegetable tonics. For this purpose I have given the gall-nut with opium and prepared chalk. I am indebted to Mr. Morton for a knowledge of the value of the gall-nut as a therapeutic agent: it is one of the best astringents that can be given to cattle.

The only morbid lesions observable after death are, a slight thickening of the mucous coat of the intestines, most apparent in the small ones, with discolouration, if the diarrhœa has been long continued, but no ulceration; also, atrophy and dryness of the manyplus. The liver and all the other viscera are generally healthy, and it is astonishing what a large quantity of fat will be found within the animal. It is my opinion that the primary cause of

this affection is long-continued indigestion, brought on by bad forage, such as flooded or withered hay or grass, or the animal not being allowed a sufficient quantity of food or water. The process of chylification being thus rendered imperfect, the ingesta acts as an irritant to the lining membrane of the alimentary canal, and produces purging. The emaciation may be accounted for by the lacteals not being able to absorb the chyle. Excessive milking will also lay the foundation of this complaint.

I remember the progeny of a certain bull, nearly all of which became affected with this disease; from which I infer that it is sometimes hereditary.

Mr. Cox, in reply to several questions, stated that he had observed in many cases of acute diarrhœa the milk to diminish previous to the commencement of purgation, although that secretion was always subsequently lessened in a more marked degree; and he considered milch cows most liable to be attacked. This was to be accounted for by the sudden changes of food to which such animals are subjected. The farmer too often restricted the quantity of the food of the cow while in calf, saving the produce of his fields till the "season of profit" arrived, when the half-starved beast was turned into luxuriant pasturage, frequently to become diseased.

Mr. Cartwright said he approved of Mr. Cox's division, and agreed with him in regarding constitutional dysentery and diarrhœa as distinct diseases. In dysentery there existed ulceration of the intestines, and the fæces were often mingled with blood and pus. Acute diarrhœa had been successfully treated by him by first administering a purgative, and subsequently exhibiting astringents. He had known calomel to be employed with the best results. Constitutional dysentery was a far more obstinate disorder, and few beasts, when once affected with it, were saved. In cases of this kind ulceration of the intestines was not observable; but the omasum would be found inflamed, and impacted with dry and hard ingesta.

Mr. Robb remarked, that ulceration was not constantly present even when acute diarrhœa had existed for some time; and with this

Mr. Cox agreed, saying he had known violent purgation to be present for months without the lining membrane of the intestines

shewing any marked indication of disease, though generally some degree of inflammation was detected.

Mr. Fowler disapproved of the custom, common with many practitioners, of blending opiates and astringents with purgatives, in the treatment of these diseases: he preferred the practice of first seeking to remove any foreign agent from the alimentary canal by means of a laxative, and afterwards employing medicines of a corrective nature. The chloride of mercury he had witnessed the happiest effects from. Had the condition of the gall-bladder been noticed after fatal cases of dysentery? He remembered in one instance to have found the gall-bladder ruptured, and the ductus communis so constringed as not to admit of the passage of a fine probe.

Mr. Jekyl related a case in which the liver of a cow that had died from dysentery was found enlarged and softened, and the gall-bladder so distended as to be at least five times its natural size.

Mr. Bass confirmed the disposition of the liver to become affected in cases of dysentery. He had found abscesses, with inflammation of that gland, after death from diarrhœa, while the intestines were free from any marked symptom of disease.

Mr. Cox stated, that the result of his experience had not rendered him favourable to the use of mercury in any of its forms when diarrhœa exists. Its use seemed to him often injurious, and at best of no benefit. The liver in some cases would be diseased; so also would the lungs, although he never remembered seeing tubercles present in the one, or flukes in the other. Affections of this nature would, however, assume various types; and the keep and situation would so modify the symptoms, that his observations must be regarded as simply stating the result of his own experience; and the treatment he advocated received only as a result at which he had arrived when practising in a particular locality, and which he had found so beneficial as to enable him confidently to recommend it.

MARCH 11, 1845.

The PRESIDENT in the Chair.

Certificates of Membership were awarded to Messrs. E. Hutchinson, Josiah Hutton, Henry Evans, and J. T. Lee, on obtaining their diplomas.

CASE OF PERICARDITIS IN A BULLOCK FROM A PUNCTURE.

By Mr. W. LITT, *M.R.C.V.S.*

To the Secretary of the Veterinary Medical Association.

Dear Sir,—BEFORE this reaches you, you will, in all probability, have received the portion of diseased heart which you requested me to forward for the inspection of the members of the Association. The following is an account of the case.

On the 21st ult. I was called upon to visit a yearling bullock that had on the previous day evinced, for the first time, symptoms of illness. The animal, which was in good condition, obstinately refused his food, and looked slightly dejected; but, beyond this, and a slight degree of constipation of the bowels, there was nothing to distinguish his case from one of ordinary fever, *with the exception of the peculiar state of his pulse*, which was exceedingly full and rapid, something like 140 per minute; indeed, the pulsations were so quick, that, notwithstanding their full and distinct character, I had much difficulty in counting them. This circumstance, and the peculiar sound perceptible on auscultation at the sides, led me to the supposition of extensive disease of the heart, but of what particular character I was at a loss to determine. Having stated thus much to my employer, and further given an unfavourable prognosis, I set about the treatment as follows:—I commenced by the abstraction of blood to the amount of about eight pounds, and administered a strong purgative drench, which, having operated freely in the course of the night, seemed to afford considerable relief; for on the 22d he was decidedly better, and ate tolerably well, although there was but little alteration in the

state of his pulse. I ordered him to have the following drench night and morning:—

℞ Ext. bellad.
Ant. pot. tart. āā ʒj
Potass. nitrat. ʒvj
Magnes. sulph. ʒiv.—M.

On the 23d he was very much worse, and seemed to be in some pain, which, however, subsided on a second bleeding, though his appetite never returned. The medicine was persevered in, without the slightest beneficial effect, until the evening of the 26th, when death put an end to his sufferings.

Feeling some degree of interest in the case, I rode over on the following day, and made a post-mortem examination. The abdominal viscera were perfectly healthy, but, on laying open his chest, an immense mass of disease presented itself. The lungs were inflamed in places, not, however, to any extent; but the pericardium was extraordinarily diseased. It was not only much thickened and inflamed, as you will perceive by the specimen sent you, but was also completely enveloped in a thick coat of coagulated lymph-like substance, from which large flakes of the same material were floating loosely in the chest. Having removed the pericardium and its contents apart from the chest, a more minute examination detected a slight opening through the sac, and a corresponding one in the substance of the heart itself, extending about half way through the wall of the left ventricle, as will be perceptible should the specimen be still sufficiently perfect. The membrane of the heart itself was much diseased over its entire surface, and there was also an inordinate quantity of the *liquor pericardii*. Thinking the case curious, I brought away that portion of heart and sac containing the punctures, and which I trust is now in your possession: had I then thought of sending it to the Association, I should have taken the whole organ. As the animal's skin had been removed before my arrival, I had no opportunity of examining it; but I found a distinct mark, in fact a long-healed cicatrice, on the anterior portion of the left *pleura costalis*.

The conclusion at which I arrived respecting the case was, that some time, probably months ago, the side had been punctured by

some sharp instrument, and the heart wounded to the extent shewn, and that the efforts of nature had never been sufficient to close and heal up the injury: unhealthy inflammation was the consequence, and the result of all, the mass of disease I have attempted to describe. The case is also interesting, as being another proof how long the most serious disease of a most important organ may be going on without in any way interfering with an animal's apparent well-doing—a circumstance of great importance to the veterinary surgeon.

I had resolved to make some further remarks, but the well-known ability of your President will, I hope, supply the omission.

Mr. Spooner.—The observations made by the gentleman who has favoured us with the specimen that now lies upon the table are so clear and conclusive, that little room is left for a comment on the case. It is one of chronic pericarditis. The wall of the left ventricle is pallid and slightly atrophied, while that of the right retains its healthy aspect. Inflammation appears to have been confined to the pericardium, on which may be traced the appearance of a cicatrix, proving that an injury had at some antecedent period been inflicted. The case is certainly one that merits our especial attention, since it illustrates the fact that an organ of the highest importance to life can for a time, at least, endure and resist an injury, which, without the proof before us, we must conclude would have been immediately fatal. It is only for a short period, however, that Nature bears up against the mischief, since I have never known a case of this kind which she was enabled entirely to surmount. The progress of after-disease may be slow, but the result is always certain.

Case of Ossification of the Right Auricle of the Heart of a Horse.

By Mr. W. Thacker, *M.R.C.V.S., Twickenham.*

Dear Sir, *March 10th*, 1845.

I have forwarded to you a morbid specimen of somewhat a rare kind, I believe. I should imagine it to be deserving the name of ossification, although probably the parts involved have not yet become perfect bone. I have sent it exactly as it was removed from the animal, so that you may make a correct examination of it.

The subject whence it was taken was a dray horse, the property of the Messrs. Farnells, of Isleworth, and had been in their possession nine years, having been purchased when three years old. He was of rather a nervous temperament, but in other respects nothing was observed to be amiss with him until within the last few months, when he evinced fatigue after a long journey, which he had never done previously. About a month ago, however, his appetite became entirely suspended, and he appeared very languid. My attention being now directed to him, I found his pulse ranging between 40 and 45, slightly intermittent, and small both in the arteries and at the heart; diminished circulation in the skin and extremities; regurgitation in the jugulars; visible mucous membranes of a healthy colour; slight and occasional cough; excretions natural, and breathing tranquil. From these symptoms, I pronounced him suffering from diseased heart, and that probably of an organic nature; but at the time anticipating an attack of influenza, which was then very prevalent in the neighbourhood, I administered to him a mild aperient, put him in a quiet place, and clothed him warm. On the following day, no other symptom having shewn itself, nor any abatement in those previously existing, I felt convinced that the heart was the sole cause of ailment, but I was still at a loss as to the particular nature of the disease. I administered diffusible stimulants, with, occasionally, an alterative dose of aloes; which treatment was continued for nearly a fortnight, during which time the appetite gradually returned, but the pulse remained the same, both in character and frequency. The breathing, previously tranquil, now became some-

what quickened, but still it was not hurried; soreness was expressed when turned round in his stall, which daily increased, and he throughout retained the standing position. A narcotic agent was now administered, combined with the diffusible stimulant (viz., extractum belladonnæ cum liq. ammoniæ acet.), and blisters were applied to his sides. This treatment was persisted in for a week, but without the least amendment. He gradually lost flesh, and, as all hope of permanent recovery was abandoned, he was destroyed. For the week before his death, it appeared as if the pleuræ were becoming involved. The autopsy, however, brought to view a healthy state of that membrane, as also the lungs, with the exception of these last being increased in bulk. The heart, however, as you will observe, sufficiently accounted for his illness, though perhaps not so clearly for some of the symptoms evinced. It weighs fifteen pounds, and the right auricle is the part more especially affected. The pericardium, and the liquor pericardii, were in a normal state, as were also all the other viscera. Should the specimen and this imperfect description be deserving the attention of the members of the Association, I hope it will prove the means of eliciting more correct information on this but little understood, though highly interesting and important, subject.

I am, dear Sir, your's, &c.

Mr. Spooner.—The state of chronic-disease which the right auricle of this heart presents merits our attention. If the abnormal deposit yet wants the perfect character of bone, the ossific process has nevertheless decidedly commenced. This form of disease of the heart is rare, yet I have seen the change of structure of the organ much more complete, and the ossific deposit of far greater amount than is here shewn. This is a specimen taken from out the museum of the College, in which the alteration of structure has been so far perfected, that almost the whole of the right auricle has been converted into bone; and I remember the case of a cab-horse, in London, which was regularly worked up to a few days prior to its death, in whom the whole of the right auricle was found to be completely ossified. In such a case, it is obvious that the contractility of the cavity must be lost, and yet this animal, subjected as

he was to the will of its owner, and liable to have its circulation frequently accelerated, was enabled not only to exist, but to perform exertion with apparent ease. I was informed that during life one of the most marked symptoms was a throbbing of the veins, very perceptible in the jugular vein, synchronous with the pulse, and referrible to the regurgitation of the blood. This regurgitation is to be very plainly observed in many debilitated animals, and I have, with others, been accustomed to attribute it to a revulsion of the current produced by the contraction of the superior cavity of the heart; but when the right auricle has suffered such a change of structure as must destroy its contractility, we at once perceive that such a cause could no longer exist, and therefore the impulse communicated to the veins must be referred to the force imparted to the current by the contraction of the ventricle.

On cutting into this morbid specimen, I perceive the serous membrane of the left ventricle is acutely inflamed: to this circumstance, rather than to the chronic condition of the right auricle, I attribute the symptoms which were present prior to the death of the animal. Under a similar state of disease a man would have probably continued to live; but the horse is not able to accommodate himself to circumstances, being kept alive only for his uses, and his life is worthless as soon as his capability of exertion is lost. The care and caution the human practitioner employs in the treatment of diseases of the heart, the veterinary surgeon cannot exercise towards his patients, and hence, perhaps, instances of chronic carditis are less frequent in the horse than in man. As I perceive we are to-night favoured by the presence of Mr. Erasmus Wilson, I hope he will pardon me when I inquire, has he ever met with a similar case in the human subject?

Mr. Erasmus Wilson.—I cannot say that any similar state of disease connected with the human body ever fell under my notice. In man, disease of the right side of the heart is a rare occurrence. Hypertrophy of the left ventricle is by no means unusual; but the auricle is seldom involved unless the lungs are affected.

I perceive that the regurgitation of the blood into the veins is a symptom for which you have not a name. We denominate it the "venous pulse," which in the instance before us may perhaps be thus explained. There exists in the veins a considerable *vis-à-tergo*, a force directed towards the heart, and in this state of the

heart the blood would flow freely into the right auricle. Having entered the auricle, no contraction of the cavity could succeed; the impulse of the ventricle would be communicated to the blood contained in the auricle, and thence directly to that of the veins, which might be the more marked because of the normal portion of the organ being called upon to make greater exertion for the support of the circulation.

Case of Amputation of the Penis.

By Mr. G. Hill, *M.R.C.V.S.*

Islington, March 11th, 1845.

My dear Sir,—You will remember, that about a month since I asked your advice relative to a black stallion that had an engorgement of a portion of his penis. The horse had the epizootic prevalent at the time (now three months since), when the penis became drawn by the excitement which a mare occasioned, and he was unable to retract it. In consequence of its pendulous position, a deposition of lymph into its cellular tissue took place, and it resisted all means employed to reduce it. About twelve days since I applied a silver ligature around the end of the penis, which I removed this morning, without any hemorrhage taking place. I have thought you would like to shew it this evening to the members of the Association, and therefore forward it.

Your's very truly.

Mr. Spooner.—This case is not without some degree of interest, though it is by no means an unusual one. The horse appears to have been a debilitated animal, for the two muscles running from the floor of the sacrum along the inferior portion of the urethra, provided by nature to retract the penis, are very pale and much wasted, having lost their function. Such a state of parts, however, did not prevent the organ becoming erect from excitement. If the penis be not retracted, mere gravitation of the blood will occasion distention of its vessels. I have known it to take place after castration has been performed, and the parts remain ex-

posed and pendulous. Serous infiltration first presents itself—then lymph is thrown out—a general thickening ensues—and all hope of the organ ever being again withdrawn is dissipated. The importance of early and decisive measures, such as first making free scarifications, and then supporting the body of the organ with a bandage, cannot in these cases be over-estimated. On this particular case my opinion was requested a month ago; and I then advised scarifications to be made, though, from the length of time during which the parts had been affected, I said there were but slight hopes of any measure short of amputation being of benefit. I have repeatedly amputated the penis of the horse, and always with success. Mr. Hill employed a ligature of silver wire to effect his object; but my plan is, first, securely to fix a tape around the organ above the place where I intend to make my incision, and then at once to remove the diseased part. This being accomplished, I employ the actual cautery to stay the hemorrhage, especially from the spongy structure, taking care, by slitting up the urethra for a short distance, to keep that canal pervious. Animals thus treated have been known to do well for years after the operation. In the part before us, the external opening of the urethra is almost obliterated, and the integumental covering exhibits a tendency to ulcerate. It may be regarded as a case analogous to paraphimosis in man,

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Fatty Tumours taken from the lumbar Region of a Horse.

By Mr. N. Fowler.

Ware, March 5th, 1845.

Sir,—I have forwarded by this morning's train a mass of tumours, which I hope will be of sufficient interest to place before the members of the Association. I was first called in to see the horse on the 15th of September, 1844. It then appeared to be suffering from what I imagined to be inflammation of the liver. From the treatment I adopted, the animal slowly recovered, so as to be able to perform light work until recently, when it rapidly got worse; the hair of the mane fell off, and there was much constitutional disturbance present. Seeing no prospect of a perfect cure,

I thought it best to advise the owner to have him destroyed, which was done the 1st of this month. On dissection, the tumours sent were found immediately over the kidneys, and attached to the liver. The horse was fifteen years old, and used to do very hard work. He first appeared to fail about a year and a half back, without any apparent cause.

Believe me, Sir, your's very respectfully.

Mr. Spooner.—These tumours, the weight of which is sixty pounds, are of a fatty nature, though partially fibrous in their structure. The probability is that they originated from inflamed mesenteric glands. Such changes, consequent upon diseased action, are by no means unfrequent, especially after cases of suppressed strangles. From the lowness of the organization in this instance, diseased action must have been going on for a considerable time, and it is not unusual to discover in our post-mortem examinations the existence of accumulations of this nature, which, during life, were never suspected to be present. I remember, some years ago, a horse which had fractured his radius, and in consequence of the accident the animal was destroyed; when there was found within the thorax a tumour weighing no less than fifty-four pounds. From its size, as you may suppose, it compressed the lungs, and occasioned a considerable diminution in their bulk; but it was unattended with any marked symptoms during life, and from its position there were no means of detecting its existence; but in this case an examination per rectum would probably have made the practitioner aware of the presence of the tumour, which appears to have surrounded and compressed the vena cava. The value of this mode of exploration cannot be too much impressed upon the mind. It has aided me in many an obscure case. In one instance, where a horse had been subjected to treatment by several practitioners, and concerning the cause of disease there had been delivered many contradictory opinions, I, by passing my arm up the rectum, was enabled to solve the mystery, by detecting the spleen to be considerably enlarged.

Experiments illustrative of the Effects produced by obliterating the Fallopian Tubes.

By the President.

I wish to direct the attention of the members to the organs of generation taken from two female pigs that have been subjected to experiment in the College. In both, the abdomen was opened as in the common operation of spaying, and the horns of the uterus, together with the ovaria and Fallopian tubes, were freely exposed. In one case, a ligature was placed around the Fallopian tubes, close to the horns of the uterus; and in the other, a portion of each tube was removed. The operation was similar in effect in both, namely, disconnecting the uterus from the ovaria, the object in view being to ascertain the result upon the desire for sexual intercourse, and the ability of the animal to propagate its species. The pigs were small when operated upon, and both did well and grew to maturity without exhibiting any symptoms of disease. They were destroyed the day before yesterday, and we find in both instances the Fallopian tubes to be impervious. This state of parts seems not in the least degree to have lessened the desire for copulation, since when the animals arrived at puberty the labia pudendi became inflamed, with other symptoms denoting œstrum, and the male was taken by both of them. A few weeks after he was admitted a second time, and, on the animals evincing a desire for the male a third time, they were then slaughtered. In the ovaria in each we perceive the corpora lutea are distinct, being seemingly about to burst. In one, numerous hydatids are attached to the uterus, while in the other large sacs, containing a dark matter resembling coffee-grounds, are adherent to the ovaria. The parts also, on cutting into them, appear unusually vascular, but we must remember the animals were destroyed during the existence of sexual excitement.

The result of these experiments would seem favourable to the idea of the passage of the sperma up the Fallopian tubes in order to impregnate the vesicle of the ovarium; and, it certainly proves that the obliteration of the tubes does not prevent desire, although it renders propagation impossible.

Severe Case of Broken Knee and Open Joint.

By Mr. Erasmus Wilson.

Mr. Spooner.—The morbid parts before me possess an unusual degree of interest. They were taken from a horse the property of Mr. Erasmus Wilson, who, being present, I know will give the Association the history of the case. Three or four days since, I was requested by him to see the animal, which I found in a sad condition. The left knee had been broken, the joint opened, and the horse, which had been under treatment for some time, was in a state of great suffering. The pain rendered the animal unable to support his weight upon the injured limb, and the poor creature, when I saw him, actually grasped the manger with his teeth, endeavouring by this means to remove some portion of the weight from the fore extremities. On examination, I discovered that there was extensive bony deposit thrown out around the injured knee. Partial anchylosis had taken place, and crepitation was distinctly to be felt, which I now perceive arose from a portion of the bony deposit that had been broken off by the falling of the animal in the stable when under treatment. Had I seen the horse when the accident occurred, it is probable I should have immediately advised its being destroyed; and when I did see him, there was no other course to be recommended, as no treatment could hold out any prospect of a cure. The evil consequences of one limb being, as it were, suddenly called upon to perform the offices of two, is in this case well marked, and merits especial notice. When the joint was opened, the horse could no longer support any portion of his weight upon the injured extremity; the whole burden, therefore, of the front of the body had to be upheld by the healthy limb. The result of this continued and undue pressure upon the foot was, in the first instance, an impediment to the free circulation of the blood. The veins of the horse's foot having no valves, the return of the blood is effected chiefly by a pumping action induced by intermittent pressure given to the part whenever the animal progresses, or, if in the stable, shifts its position; and no greater injury can be inflicted on this organ than forcing the horse to stand continuously, which, by impeding the circulation, must eventually induce disease. Here one fore foot had to sustain the whole weight, and, as a consequence, inflammation

and congestion of the laminæ ensued, and the pedal bone, as you perceive, has descended, and is actually protruding through the sole. The point of the os pedis had thus to endure all the weight, which, in a state of health, is sustained by the fore extremities. This will explain the cause which compelled the poor animal to seize the manger with his teeth, and, by firmly grasping that, seek to remove some portion of the weight from the fore limbs, both of which having now become so inadequate to the task. This serves to impress upon us the importance of giving artificial support in cases of a similar nature. In all severe cases, slings should be employed; and were some support afforded, even in cases of lameness resulting from less formidable causes, contraction of the foot, as the result of disease, would, I think, be far less common than it is at present.

Mr. Erasmus Wilson.—The history I have to relate is brief. This was my first attempt in the practice of veterinary surgery, and you will no doubt say it does me little credit. My poor horse was a heavy animal, and not at all fitted for the saddle. I was riding him during the first week in January last, when the accident occurred. You will, perhaps, tell me I ought not to have ridden him. My feelings towards a horse make me averse to the employment of the whip or spur, and this animal, being pretty much his own master, had contracted a clumsy method of going. He was trotting over some gravel recently laid upon the road, when he tripped and came down with a running fall, the principal shock of the fall being received by the left knee. I was in the act of proceeding, the horse having recovered himself, when it was remarked by a bystander that the knee was wounded. I then dismounted, and found the integument of the entire front of the knee removed, the bones exposed, and a thin membrane bulging, upon pressure, from between the bones. This latter I regarded as the synovial membrane. I took the horse home, and had all the particles of gravel washed away, and applied a poultice over the wound; but I soon found that your patients are not so manageable as ours, for he tore off the bandages with his teeth, and rubbed his knee against the manger, so that in the morning there was considerable swelling and inflammation. There was also some oozing of a transparent fluid from the synovial cavity, and the quantity poured out soon became much increased. I observed that this

fluid was spontaneously coagulable, and inferred, therefore, that it contained fibrine. The process of granulation was very slow, and when it had commenced the granulations were large and flabby. I now wanted to close the opening, and, having consulted veterinary authorities, contemplated the use of the actual cautery; but it seemed to me that so severe a remedy must either produce sloughing of the newly formed textures, or increase the inflammation. I then hit on the following expedient, which at the time I esteemed a brilliant discovery, and one which would enable me to appear before you in triumph. I intended to have come here, not, as now, to confess my errors in the face of my work, but to have asserted my claim to your consideration as a worthy member of your Society. My plan was this:—Finding the granulations large and passive, I punctured them, and thus relieved their congestion, and excited them to throw out smaller and more active granulations. In this way I nearly effected the closure of the wound, and should have succeeded entirely, but for the copious fibrinous secretion poured out through the contracted aperture. At last, however, I did accomplish my object—but, alas! it was only drawing a veil before the mischief which was progressing internally. The secreted fluids, no longer able to escape, formed a considerable tumour; there was great thickening all around the joint and the metacarpal bone, and œdema along the radius, and about the extremity of the humerus. Indeed, I began to perceive that a broken knee was a much more serious matter than I had anticipated; and I discovered, moreover, that an injury which may be treated with fair chance of success in a man, offers but a dreary prospect in a horse. With this feeling, and perceiving that there was more deep-seated mischief than I had anticipated, I appealed to the kind assistance of my friend, Mr. Spooner, who assured me that hope was past, and that no relief remained but death. I must remark, that, on the closure of the wound, I attempted to produce absorption of the thickening tissues by blisters, and by the administration of castor and linseed oil.

Mr. Spooner.—After the orifice is closed, we consider the application of a blister to be sound practice. The wonder is, that, under all the circumstances, you could get the wound to close at all.

Experimental Operation in a Case of Congenital Malformed Feet.

By the President.

Mr. Spooner.—The legs now lying on the table were taken from a foal sent to the College by Mr. Smith, V.S., of Epsom. It was obliged to be brought in a cart, in consequence of its labouring under a congenital deformity affecting the fore-limbs, the feet being drawn backwards and upwards, so that the weight of the body, in progression, was thrown upon the os coronæ. Examination shewed not only the derangement to which I have alluded, but likewise an excrescence on the lower part of the os coronæ of each foot, causing partial anchylosis. The case was quite different in its nature from those which are usually the result of contraction of the tendons, and from the first I entertained an unfavourable opinion as to the result of any treatment. Yet, as an operation held out the only chance of ever rendering the animal useful, I did not hesitate to try the experiment. On applying force to bring the foot as much as possible into the natural position, no tension was produced upon the tendons above the pastern, as is usually the case when their contraction causes the heel to be elevated. In such cases we divide the tendon above the pastern. During the present session this operation has been performed upon a mare with perfect success; but in the instance of the foal no force we could employ had any other effect than that of rendering tense the perforans below the pastern. It became evident, therefore, that good could alone result from the division of the tendon at that part where tension could be induced; yet, in order to effect this, it would be necessary to open the synovial sheath. I was, as you know, fearful of the consequence, but still I hoped to learn something from the attempt; and my hope was the greater, inasmuch as I was informed by Mr. Sewell that the French were, in ordinary cases, constantly in the habit of operating after this method. Accordingly the attempt was made; the synovial sheath was cut into; the perforans tendon was divided; the foot was brought partially to bear upon the ground; and at first the case appeared to be doing well: but inflammation soon set in, and, despite all

our efforts to check it, extended upwards, and produced an abscess which burst above the pastern joint. The case now became hopeless, and the animal was consequently destroyed: and, from the result of this operation, I conclude that the method adopted by the French, in ordinary cases of contracted tendons, is not to be preferred to that we are, in this country, accustomed to have recourse to.

TUESDAY, MARCH 18, 1845.

The TREASURER in the Chair.

THE evening was occupied by the consideration of an Essay on RED-WATER, read by Mr. T. D. Gregory.

Mr. Robb said that he differed only in one or two general opinions, which Mr. Gregory, in common with many other writers, had advanced. He, Mr. Robb, was inclined, from what he had seen and heard of the disease called red-water, to regard it as identical with jaundice, and to consider obstruction to the free passage of the bile as its principal cause. This view, he thought, would satisfactorily explain many of the symptoms; it being well known that extreme depression of the vital powers, and even death, might follow the sudden suppression of bile; while diarrhœa, and its attendant debility, would be the consequence of an obstruction to its flow into the intestines. He had himself no doubt of the identity of the two diseases; and if the causes which authors state will produce jaundice in man, and those which give rise to red-water in cattle, were compared, the similarity would be found so exact, as to preclude the idea of the two affections being distinct. The principles of the treatment in the two diseases likewise bore a strong resemblance to each other, while the pathology of each was alike in all the more essential particulars. Mr. Robb concluded by stating, that observation and reflection had induced him to think that red-water arose, not from the excess of bile, but from its secretion being suppressed; the elements not being removed from the blood in consequence either of functional disorder of the liver, or of some obstruction existing to the flow of the bile

through its ducts. The liver being thus unable to purify the blood, called upon the kidneys to perform that function, and bile was consequently excreted with the urine; although, when he asserted this, he did not mean that pure bile was to be discovered in that secretion, but rather that the elements of bile, which were foreign to healthy urine, were present in red-water.

Mr. Morton stated that he did not agree with the conclusions to which Mr. Robb had arrived. It was well known that he had chemically examined the urine of animals suffering under red-water, and he was not aware that the result of his examinations had been controverted. There was no great difficulty in detecting either blood or bile if present in urine; both were capable of demonstration: the tests were dissimilar, the proofs were unlike, and the possibility of mistaking the one for the other it was not very easy to conceive. He had again and again seen in the urine of red-water, not perhaps pure blood, but certainly impure or imperfectly formed blood; such a fluid as is then found to be circulating in the body. Bile, it is true, has often been detected in urine, but it has not as yet been demonstrated in that excretion during the existence of red-water. That the colouring principle of blood and bile were similar, he must be permitted to express a doubt; and even if they were, if iron be not the cause of colour in the blood, as stated by some, the presence of that metal or its oxide, which was no element either of bile or of urine, was so characteristic and conclusive, that, having ascertained its existence in the urine of animals labouring under red-water, he must believe that it and jaundice were distinct diseases, although, doubtlessly, both were intimately associated with the state of the digestive organs, and the reciprocating function of the liver and kidneys he was ready to allow.

Mr. Gregory said that "yellows," so called in cattle, answered to the disease termed jaundice in man; from which red-water was as distinct a disease as phrenitis.

Mr. Cox asserted that experience had led him to doubt the correctness of the opinion of those gentlemen who associated red-water with parturition. He was not unacquainted with either. He had seen much of both; but he had seen nothing to induce him to connect the one with the other. In his neighbourhood it was most prevalent during the winter season, which was not the period

of calving. It was, however, often produced by a particular species of pasture or by change of food. He was acquainted with a farm in Derbyshire where the cattle reared upon the land were not the subjects of red-water; but if any strange beast were pastured on these fields it was certain to be attacked by that disease. He would relate another instance of red-water being produced by the food, because it was one which is not generally noticed. A friend of his, the owner of much stock, for the first three years of their acquaintance never had a single case of red-water. The fourth summer, however, was exceedingly dry,—the pastures were burned up,—when suddenly the rain fell, and continued for some time, and the land, from being hard and bare, became all at once wet and luxuriant; and all the cattle on that farm, with a solitary exception, became affected with red-water.

With regard to treatment, Mr. Cox said he would honestly confess he had no experience as to the efficacy of bleeding, and the assertions of most practitioners had almost prejudiced his mind against it. He did, however, remember several cases where the owners, not recognising the disease, had, in the early stages of it, withdrawn blood, and the animals recovered. There was also a practitioner residing in his neighbourhood who, in cases of red-water, was accustomed to extract blood, and with by no means ill success.

Mr. Boddington observed, that he was fully convinced of the influence of pasturage on the production of this disease. He knew one farm in particular where certain fields, which consisted of wet, rushy, and undrained land, always produced red-water; and here, too, it was most prevalent during the winter season.

Mr. Crabb said he had never seen a case of red-water during the summer only after parturition, though in the autumnal months he had often known it to be connected with other causes.

Mr. White remarked, that although most pathologists appeared to agree in associating red-water with parturition, he, with many others who had spoken, and who were from Derbyshire, were but of one opinion; namely, that they had never seen it in that county follow immediately upon calving.

APRIL 1, 1845.

The TREASURER in the Chair.

A letter from M. Bouley, confirming the proposal of an exchange of journals with the "Recueil de Médecine Vétérinaire," and soliciting the same for the Veterinary Society of the Seine, was read.

CASE OF STRANGULATION OF A TESTICLE RETAINED WITHIN THE ABDOMEN.

By Mr. W. BAKER, *M.R.C.V.S.*

Dear Sir, *Sudbury, Feb.* 28, 1845.

THE case of strangulated testicle which was the subject of conversation between us, and which you wished me to give you an account of, occurred in November last, at Shimpling, nine miles from this place. I was requested to attend the horse, but when I arrived he had just died, and the owner, Mr. King, desired me to institute a post-mortem examination, in order to ascertain the cause of death; when, upon opening the abdomen, the same appearances were presented as in a former case recorded by me. The viscera generally were healthy, but a pendulous testicle was found in the iliac region, black and stinking from strangulation, the cord being tightly twisted. The peritoneum in contact with these parts was inflamed, but the cord, above the twisted portion, was in no way affected. I have since ascertained that the horse had evinced continuous pain for about five days prior to his death. When well he was anxious after mares, and had covered several, and was supposed to have got one foal. He was half-bred, and used alternately for the road, plough, &c. The other testicle was removed by the usual mode of castration when he was two years old. He was eight when he died.

A singular circumstance claimed my attention yesterday. A heifer calved a fine healthy calf at mid-day; and between two and three o'clock in the same afternoon, when I called at the farm, the

boy attending said the calf was "lousy," and, on looking at the back and shoulders, I found it had lice in great numbers. I naturally proceeded to examine the skin of the mother, which I found to be slightly affected with them, but not to one-twentieth part the extent the calf was. This quick generation of parasites, and in such extraordinary numbers, is somewhat surprising. I know not if the like has been observed by others.

I remain, dear Sir, your's, &c.

To Mr. C. Spooner.

Mr. Spooner.—The history accompanying this case is brief, but, from the circumstance to which it refers being very unusual, it becomes one of the highest interest. "Rigs," or horses that have been deprived of but one testicle by the castrator, are common enough, and such animals I have known to live and work well for years; but it has occurred to Mr. Baker, in two cases of "rig" horses, to find a testicle in the abdomen in a state of gangrene, consequent on the cord becoming twisted. The possibility of such a consequence teaches us that there is danger in the non-descent of the testicle into the scrotum, particularly if left as a pendulous viscus in the abdominal cavity; and should we, in practice, meet with the like cases, it would, I think, be our duty to advise our employers to part with such animals, for a circumstance which has happened twice may occur again. I, however, cannot recall to my memory any similar cases to the two recorded by Mr. Baker. Their history tells us but little of the symptoms, which doubtless resembled colic and peritonitis; although it is probable other indications were also present, which might be considered diagnostic in their nature. The position of the testicle should not be lost sight of, as in many horses termed rigs the remaining gland is to be found impacted within the inguinal canal, and considerably less than its normal size; and in such cases the same danger of the twisting of the cord is not to be apprehended. The loss of substance of the gland, when in this situation or within the abdomen, does not deprive it of function; and it is important to remember that a rig is fully capable of impregnating a mare. Instances of foals, the sires of which were rigs, are well authenticated, although Sir Astley Cooper was of opinion, that, unless the

testicle descended, its use in propagation was destroyed. The celebrated surgeon to whom I have referred, however, confined his remarks to the human subject; and our late patron, Professor Coleman, contended against the inference as being applicable to the horse, basing his deductions on facts.

Calculi in the Bladder and Urethra of Sheep.

By Mr. F. R. Silvester, *M.R.C.V.S.*

Dear Sir, *St. Albans, March* 21, 1845.

I have forwarded to you a bottle containing urine, with the bladders and kidneys, taken from some fat tegs which have been placed on a high situation and gravelly soil. They have been kept well on oil-cake, hay, and turnips; these latter having been greatly injured by the frost, many of them being rotten.

From what I can learn, the symptoms are:—loss of appetite—lying down almost constantly—and when they rise they strain violently to urinate, but ineffectually.

Twelve sheep have been affected, and in none of them has the disease been allowed to run its course, they having been slaughtered. You will observe the coats of the bladder are much inflamed. A quantity of apparently calcareous matter has existed in those I have examined; and the kidneys were of the same appearance as those sent: all the other viscera were in a normal state.

I am, Sir, faithfully your's.

To Mr. Morton.

Mr. Morton said that he had found the specific gravity of the urine to be 1·20; it possessed an alkaline reaction, and he had obtained traces of the presence of both albumen and bile in it. The calcareous deposits consisted of animal matter and carbonate of lime. Dried on bibulous paper they became amorphous, and resembled lime; in hydrochloric acid they dissolved with effervescence, and when treated with potassa they yielded no ammonia. Whether any of the phosphates entered into their composition he would not positively say, but he had not obtained any indications from the tests resorted to by him. The subject of the formation

of calculi was one of considerable importance, and the advances now being made in organic chemistry tend to withdraw the mysterious veil that has so long concealed the transmutations that are taking place in the animal economy. For the constituents of these concretions we have to refer to the food taken into the system; and we must bear in mind that there are certain organs which act as depurators to the blood, and among them none more so than the kidneys, which excrete all soluble saline substances in the form of urine.

We are told by Mr. Silvester, that these sheep had been fed on turnips, many of which were decomposed or rotten. This would induce derangement of the digestive apparatus doubtlessly, but it would not satisfactorily account for the production of carbonate of lime in the bladder, nor tell us why the kidneys, beyond all other organs in the body, should become affected. Perhaps the principles of chemistry may assist us.

Lime is a constituent of the turnip, and the same bulb contains large quantities of the salts of potash and soda. Here, then, we have a clue to the cause of the urinary organs being unduly acted upon: it is referrible to the presence of the last-named salts. Liebig places the relative proportions of lime and magnesia, and the salts of potash and soda, as 18·40 of the former to 81·60 of the latter in the 100.

In the urine a characteristic substance is met with, namely, urea. The changes which this organic principle undergoes, under certain conditional circumstances, are varied and often complex. Among the compounds formed by it with water is the carbonate of ammonia. It is true that this metamorphosis more commonly takes place after the urine has been excreted; but it will be borne in mind that we have to do with a somewhat vitiated secretion arising from the nature of the food, it being well known that decaying vegetable matters readily yield a large amount of the saline bodies they contain. The compounds that are formed, too, are prone to undergo change from the feebleness of the affinities that bind their elements together; so that when the urine is retained longer than is natural in the bladder, or is of an unhealthy character, from reasons already assigned, decomposition ensues, and new compounds are formed, favoured by the fact, that, in the normal condition of the urine, the saline constituents are but

small in quantity compared with what are now present in it. Now, as quantity sometimes determines decomposition, the carbonate of ammonia, generated as I have stated, may become converted into carbonate of lime, from the lime being in excess, which being a comparatively insoluble compound, would be deposited in a solid form, and then, becoming mixed with the mucus of the bladder, make up the concretions under notice. Or, if you will not accept this theoretical explanation, the production of carbonate of lime may be referred to the fact that organic salts having alkaline bases, become converted into carbonates in the organism, and the carbonate of lime is now thrown down by the urine undergoing a change, or not possessing those conditions which are requisite to retain certain compounds in a state of solution in it.

Mr. Simonds.—There can be no doubt of the advantages to be derived from an application of the principles of chemistry to pathology. It is only of late years that calcareous deposits in the bladders of sheep have been so frequently observed. Mr. Crabbe last session brought forward the first case of the kind on record, and in those cases the sheep had been fed on vegetables growing on land which had been recently limed; hence it was easy to account for the formation of these calculi. More lime has been used of late years than formerly, and the effect of this on the food of animals was in his opinion a subject worthy of investigation. In the specimens now before us, the deposit of carbonate of lime is to such an amount, that the entire mucous coat of the urethra is covered more or less with calcareous matter, and within the vermiform appendage the canal is blocked up; the bladder in consequence has become greatly distended. The kidneys are of a pale colour, but not otherwise structurally diseased. The sheep, then, died from long retention of urine, consequent upon calcareous deposition, and either such cases are new, or hitherto they have been too much neglected.

Mr. Cox related an instance of a large dairy of cows being fed on turnips that had been grown on land manured with guano, and all of them became affected with nephritis. The bulbs were given with the earth upon them: the disease disappeared when the food was changed, but again returned on the turnips being allowed.

Mr. Morton.—Such an effect from such a cause was highly probable, as guano contained several of the salts of ammonia, which, acting as diuretics, would be very likely to produce nephritis.

Case of Abscess in the Brain of a Sheep.

By Mr. J. B. Simonds.

The head of a sheep before me has been forwarded by Mr. Baker, of Sudbury, having been removed from an animal supposed to be affected with "gid" or "dunt," as the disease is termed in the county of Essex, the symptoms of which had been present about three weeks. On laying open the skull, the cerebrum on the right side was observed to be enlarged, the pia-mater being raised, and having on the centre a cream-like elevation, with red vessels radiating from it, increasing in size and number, and altogether unlike what appears when an hydatid exists. On cutting into the tumour, about half an ounce of thick pus escaped, which was white in colour and free from fœtor. The cavity in which it was contained is, as you see, situated in the substance of the cerebrum, and has no communication with the lateral sinus; it presenting the most perfect case of an abscess in the brain I have ever seen. Any attempt on my part to explain the true cause of this unusual disease would be imperfect, as we know so little of the history of the case; but I may observe that, in all probability, it resulted from an injury which might have been received in fighting or butting, a practice to which sheep are much addicted: the cranium, however, shews no appearance of a blow or contusion. Although frequently turning round and an unsteady gait seem to have been the only symptoms observed as denoting the existence of cerebral disease, we are not to be surprised, for it would appear from cases admitted into this infirmary that pus may form in the cerebrum, and even accumulate in a large quantity there, without giving rise to that train of symptoms by which we recognize the presence of phrenitis. The case is both interesting and instructive, and adds an important link to the chain of comparative pathology.

Case of Tetanus in a Lamb.

By the same.

On the table is placed the body of a lamb which died of tetanus. It has been forwarded to us from the country for the purpose of investigating the morbid lesions that have resulted from an at-

tack of that distressing malady. A brief but nevertheless sufficient history of the case, as it respects the cause of the disease, has been given us, which shews it to have been traumatic tetanus.

The animal had been castrated; which operation was performed in the usual way, and he was afterwards allowed, according to custom, to pasture with his dam. No symptoms of illness having been observed for about three weeks, it was anticipated all would be well. However, on the shepherd going his rounds, he found the animal lying down, and altogether incapable of getting up: the limbs were extended, the head curved backwards on the spine, and the whole body rigid, as if frozen. Convulsive spasms of the entire frame came on from time to time, and these were easily produced by an attempt being made to raise the animal or change its position. In this state it survived but a short period. Those symptoms shewed it to be a case of opisthotonos, or that variety of tetanus which is characterized by general spasms of the levator muscles of the head, drawing it backwards upon the neck or spine. On a post-mortem examination, the spermatic cord on the left side was found to be slightly inflamed and thickened, but without any indication of the formation of pus. The other cord was healthy, as were the viscera generally, both of the abdomen and thorax. The meninges of the brain, and also of the spinal marrow, are, as you see, dyed of a deep scarlet colour: this, however, does not extend lower down than opposite to the fourth cervical vertebra; beyond this they are in a normal condition. The spinal cord itself, at its anterior part, is softened in places, but the substance of the brain seems to be unaffected; the plexus choroïdes, are, however, highly injected with blood. Satisfactory as we may consider these abnormal appearances in this particular case to be, you must, nevertheless, not expect that you will find them in every instance, as in no disease do the morbid lesions differ more than in tetanus.

APRIL 8, 1845.

The TREASURER in the Chair.

Mr. E. Drake, M.R.C.V.S., and Mr. W. Brown, student, were elected Members.

CASE OF OBSTRUCTION OF THE BOWELS CAUSED BY A FUNGOIDAL TUMOUR ATTACHED TO THE INNER COAT OF THE INTESTINES.

By Mr. WOODGER.

Mr. Woodger.—The horse from which the morbid parts now before the members were taken, was in good condition, working and feeding well, and had not been attacked with colic for several years, although he had previously been very subject to it. On the 31st of last month, however, he experienced an attack, for which he was bled, and had an antispasmodic draught administered to him, and afterwards castor oil, combined with the oil of croton. No mitigation of the unfavourable symptoms taking place, I was called in, and, ascertaining that a powerful cathartic had been exhibited, and seeing that the pain continued unabated, I gave opiates, and threw up a tobacco enema. The animal appearing better in the evening, I repeated my opiate; but in the night the spasms returned with increased power, and the pulse became accelerated. I now applied a mustard poultice to the abdomen, and as the bowels had not acted, I gave a dose of linseed and croton oil, and emptied the rectum of the fæces. While performing the latter act, I observed a symptom to be present that I have frequently been convinced denoted a fatal termination in such cases,—the intestines seemed to press backward against the arm of the operator. I at once told the proprietor I feared the case would prove unfavourable, and although the animal did not manifest the acute pain generally exhibited in cases of obstruction, yet from the bowels not having responded to the two powerful doses of cathartic medicine administered, I expressed my conviction of some mechanical impediment existing in the alimentary canal. On the following morning the horse died, and, being called elsewhere, my assistant, Mr. Broad, conducted the post-mortem examination.

Mr. Broad.—On opening the abdominal cavity, I found the in-

testines contained but a very small quantity of ingesta, although they were greatly distended with gas. The peritoneal coat was altogether devoid of inflammation, and at first sight, I felt at a loss to account for the death of the horse, being convinced from the symptoms that the disease of which he died was abdominal. One circumstance, however, soon attracted my attention. I have said that the intestines contained but little ingesta, and that little was found only in the smaller ones, which are generally seen empty. This struck me as being strange, and led me to trace the whole of the alimentary canal, when I found the cœcum caput coli to be the part where the ingesta ceased to be present. I therefore laid this open, and exposed such a state of parts as I believe has not been before seen. Immediately at the commencement of the colon there was a fungoidal growth nearly as large as my fist, and of a highly vascular character. This tumour was pedunculated, and in figure not unlike a large mushroom. In its ordinary state it must have hung from its stalk or pedicle, looking towards the apex of the cæcum. Some spasmodic action had, however, caused its position to be reversed. Its body or head had been carried backwards, and forced into the origin of the colon. The valve-like structure which guards that orifice had contracted on the tumour, and with spasmodic energy retained it, thus causing the singular obstruction of which the animal died. On inspecting the mucous membrane of the intestine, we found it to be inflamed, but devoid of that dark colour which in more acute cases is generally present. It is obvious that no treatment could have been of any service whatever, it being one of those cases for which a practitioner cannot be prepared.

Case of Tumours resembling Polypi occupying the Intestinal Canal.

By Mr. J. B. Simonds.

A bay mare, in good condition, used for the purposes of draught, was first placed under my care, supposed to be labouring under spasmodic colic, about the beginning of the year 1830; the attack not being severe, her recovery was speedy, and in a few

days she resumed her work. About six months afterwards she was again admitted into my infirmary. The abdominal pain was not intense, but it continued more or less until the bowels were acted upon by cathartics, which, however proved tardy in their action. Scarcely a month had elapsed before another attack came on, when I began to suspect that a calculus existed in some part of the intestinal canal. The fæces presented no unusual character, and the food had been well masticated. She was, however, discharged within a week, apparently well, and directions were given for her to have a bran mash every other night, instead of the usual feed of oats. From this period the attacks became more frequent and severe, the pain never yielding until purging was established, and this required the exhibition of large and repeated doses of medicine. On the 24th of June, 1831, my old patient was again admitted, presenting the following symptoms :—Pulse 40 and full, respiration laboured, extremities and surface of body cold and clammy, and tongue slightly furred; she paws, wanders round her box, makes many efforts to lie down before doing so, and when down appears easier; lies about a quarter of an hour at a time, shakes herself on getting up, and goes to the manger for water, which she partakes of with avidity; the intervals between the paroxysms are short, and she frequently turns her head to her flanks, and often sighs. The treatment consisted of repeated doses of sol. aloës et ol. lini, back-raking, enemata, and the free use of diluents.

25*th*.—The groom reported that she had suffered more during the night than he had before seen her, and was not so well this morning. We have some ambiguous indications of the presence of inflammation of the bowels. The pain is more acute, the abdomen tympanitic. Pulse 60 and wiry, breathing laboured and quick, conjunctival membrane injected. These symptoms are associated with a dejected countenance, a loathing of food, and a continuance of the constipation of the bowels. Bleeding was had recourse to, hot fomentations were applied to the abdomen, opium combined with sol. aloës, and oft repeated enemas were given, but without any diminution of her sufferings. She became evidently weaker, and worn out with pain towards night; the pulse, however, indicated no immediate danger.

26*th*.—A small quantity of fæces has been passed, but there is no abatement of the abdominal pain. The pulse is 70, and all the

other symptoms are increased in severity. This day was also passed without the treatment adopted affording any relief.

27*th*.—Some more dung has been voided, and with it, the groom says, "*a large piece of flesh*," which, on examination, I find to be a tumour covered by mucous membrane. It is of a pear-shaped form, having a ragged pedicle, presenting the appearance of having been detached by force, of a bright colour, excepting at its root, and weighs eleven ounces. I was now able to form a correct diagnosis of the disease, but could only give an unfavourable prognosis. Examination per rectum did not detect any other tumour, nor was there any hæmorrhage within the alimentary canal. The general symptoms soon denoted approaching death, and which took place early on the morning of the 28th.

Post-mortem examination of the Abdominal Viscera.—Considerable inflammation of the peritoneum, especially where it covers the colon. This intestine was distended with feculent matter, almost to bursting, up to where it forms the "single colon;" beyond this the gut, and also the rectum, were empty. On laying open the intestines from the rectum, we first came upon the spot from whence the tumour voided had been dislodged: the villous and muscular coats were highly inflamed and lacerated, the injured part being about two inches in diameter; a little anterior to this, a cluster of tumours resembling polypi, seven in number, presented themselves; the largest being, at its floating extremity, about the size of a goose's egg, the others varying from that to the size of a walnut, but having their peduncles larger in proportion to their rounded ends. They were covered by the mucous membrane, and seemed to have originally grown from beneath it. They shewed no appearance either of inflammation or of strangulation, but were growing from all sides of the intestine, occupying its whole interior, and most effectually blocking up the passage; their direction was backwards, this being no doubt determined by the peristaltic action of the bowels. In no other part of the intestines did we find any signs of similar formations. There was great discolouration of the coats of the colon where it was distended with ingesta, but which gradually became less in the small intestines. The stomach might be considered as healthy, as were also all the other viscera. These singular abnormal productions are now deposited in the Museum of the Royal Veterinary College.

Case of Sacculated Intestine, containing Sand. Also of excision of the Uterus of a Cow.

By Mr. G. T. Baldwin, *M.R.C.V.S.*

Dear Sirs, *Fakenham, April* 5, 1845.

I have transmitted to you a portion of one of the small intestines of a bullock, on which is a sacculus, containing what appears to me to be fine sand; but I have not opened it, preferring that you should do so before the members of the Association, as the case is one of not every-day occurrence. The history of the case is very brief. It is simply this: the specimen was taken from an animal in perfect health, and given to me by our butcher.

Last year a successful case of excision of the uterus of a cow occurred in our practice, which may be deemed worthy of notice. The animal had been driven for some distance on the road, when symptoms of approaching parturition shewed themselves, and, being turned into a field, she there quickly calved. Immediately afterwards an inversion of the uterus took place. My father being sent for, he soon returned the uterus, and passed metallic sutures through the labia pudendi. On subsequently visiting the patient, we found her making violent throes, as if endeavouring to force down the womb, which at length she effected, bursting out the sutures: it was again carefully returned, and fresh sutures inserted, taking a deeper hold of the labia. The throes, however, still continued, and, increasing in violence, an opiate was administered, and a compress applied to the parts. The exhibition of the opiate was repeated at intervals, and a dose of laxative medicine given; but, despite all our efforts, on seeing the animal for the third time, we found the uterus again down, and the labia now so extensively lacerated that no more sutures could be inserted. What was to be done? All the compression we could employ was of no avail, and the appearance of the animal was most unsightly, and her sufferings great. We resolved on extirpating the womb. For this purpose a large clam was made, into which some caustic being placed, it was passed over the neck of the uterus, and made to embrace it firmly. Two days afterwards I removed the uterus with my scalpel. It weighed about two stones. In two days from that

time I took off the clam: slight hæmorrhage followed its removal, but the parts quickly suppurated, and although for some time the pus discharged was of an unhealthy character, yet, by the aid of tonics and a generous diet, the animal soon recovered and became fat.

Believe me,

Truly your's, &c.

Mr. Mayhew having examined the sacculated portion of intestine, described the sac as being formed by the peritoneal coat only, which had become distended by the siliceous matters taken in; for such Mr. Morton had found the contents to be. From some cause, which at this time it was impossible to assign, the two inner coats of the intestine had become ulcerated. Within the cavity thus formed, foreign substances had lodged, and in process of time accumulated; for from the edges of the orifice being perfectly healed, it was clear that the primary injury was not of recent date; and likewise from the absence of any symptom of inflammation on the distended peritoneum, there could be no doubt but that the case was of a chronic nature.

Mr. Fowler related a case of a horse that was known to eat earthy substances, after which he was observed to eructate very frequently. After six weeks' illness, during which the animal was on and off its feed, he died of an attack of colic, when the stomach, duodenum, and jejunum, were found in a state of distention; no less than four pottles of sand and dirt being removed from them.

Case of parturient Apoplexy in a Cow successfully treated.

By Mr. W. Thacker, *M.R.C.V.S.*

Dear Sir, *Twickenham, April 7th,* 1845.

I beg leave to forward you an account of a case of puerperal fever, or perhaps, more correctly speaking, of parturient apoplexy in a cow. It may contain nothing peculiar, the symptoms having developed themselves as in similar cases; the result, how-

ever, was different to what we generally look for in this immediate neighbourhood, and more especially in this particular dairy. It is from this fact, coupled with that of your having had the medical attendance of the same establishment for some time, that has induced me to give you this but imperfect history; and should it possess any thing to interest the members of the Association, I shall be pleased at having been able to contribute something, although it may be of only comparatively trifling importance, to that body.

The patient was a cow of the pure Alderney breed, six years old, and in fair condition. She was the property of his Grace the Duke of Northumberland. On the evening of the 23d of March she was placed in an open shed, being near her time of parturition. About six o'clock the same evening she calved, and that without difficulty. A pound of the sulphate of magnesia was subsequently administered to her, and but little food allowed; this consisting of bran mashes, of which she freely partook, and appeared to be going on very well. About five o'clock the following morning she was observed to refuse her food, and to stagger when moved; usually the first visible indication of the approach of this sad malady. I was immediately sent for, and upon my arrival found her still standing, though with great difficulty—pulse about 65, and full—extremities warm—mucous membranes somewhat injected—rumination and secretions suspended—loss of appetite—breathing much quickened—frequent raising of the hind legs—and a wild expression of countenance. From these symptoms being present I anticipated an attack of the disease termed by you parturient apoplexy. Although I entertained very little hopes of effecting a cure, yet, having taken a different view of the nature of the disease to what I formerly had done, I commenced my work boldly by detracting six or seven quarts of blood, which produced a decided impression on the pulse; indeed, by the time I had secured the vein the animal fell. I now administered a brisk purgative, removed what fæces were lodged in the rectum, clothed the body warm, and firmly packed her up with straw, so that she might rest on her sternum and the inferior surface of the abdomen. In about three hours I again saw her, and repeated the bleeding to the amount of four or five quarts, until a second impression was made on the pulse. I now commenced administer-

ing the extract of belladonna in four-drachm doses every four hours, and when the rumen became distended I gave in the intervals the spt. ammoniæ aromat. At night the symptoms had become worse: she was continually throwing her head about—was quite unconscious—and the eye so sunk in the orbit as to allow the finger to be introduced into the cavity and passed round the eye, which was done without producing the slightest sensation, nor could any feeling be produced in the extremities by pricking with a pointed instrument; in fact, she was in a perfectly comatose state. Injections were thrown up from time to time, and the sedative medicine continued throughout the night. On the following morning the symptoms had undergone but little change—the pulse was lessened in force, but increased in frequency, and the head was being continually thrown from side to side, as if in great agony. The eyes had now become almost lost within their orbits—the extremities and surface of the body were quite cold—no evacuation of the bowels had been produced; in short, all the appearances indicated a fatal termination, and that somewhat speedily. The doses of ext. belladonnæ were now lessened, and combined with liq. ammon. acet. given every six hours, and another cathartic administered, enemas being still employed. This treatment was continued throughout the day, and at night some amendment was visible: the eyes had become more prominent, the pulse firmer and fuller, and a degree of warmth was felt about the body. The ext. belladonnæ was now omitted, and spt. etheris nit. substituted, which was given in the night at the same intervals, namely, six hours. The following morning the improvement became more apparent: the pulse was more natural—the eyes still brighter—the natural degree of warmth was restored to the body, and sensation and consciousness had likewise returned. During the day she got up, and remained standing for an hour: after a short time the bowels responded, and she ruminated a little on partaking of a small quantity of bran. The following morning she was much better, having stood up several hours together. Her diet was now gradually increased, and she is at the present time in perfect health.

I stated that I now entertain a somewhat different view of this disease to what I previously did. You may perhaps inquire what it is. I had formerly considered this disease as one of a pecu-

liar character, although not inflammatory. I am inclined now to consider that we have it in two characters, one of a truly inflammatory nature, and the other not so, this last most probably being engorgement or even rupture of the vessels of the medulla oblongata, or its meninges. Those which I conceive inflammatory are the cases most frequently curable, such as the one I have ventured to give you the history of. In them we have at the commencement of the attack a full pulse, warmth of extremities, much fever, and all the other accompaniments of inflammation; but in the other we have a small and very feeble pulse; coldness of the body from the onset of the disease, and nearly all such terminate fatally. I probably ought not to make this distinction; but that some assume an inflammatory character I have no doubt, and these cases prove the most tractable. Apologizing for thus occupying your time, I beg to subscribe myself,

Your's, &c.

To Mr. J. B. Simonds.

To this succeeded the reading of an Essay on Puerperal Fever in Cattle, by Mr. Gregson, the discussion on which occupied the remainder of this and the succeeding evening; but as no observations marked by any great degree of novelty were elicited by it, it is withheld.

The closing meeting of the Association consisted of a

CONVERSAZIONE,

held at the Freemasons' Tavern. There was a full attendance of members, and on the tables were placed most of the morbid specimens that had been received during the session, with the books presented to the library. Mr. Goadby likewise brought many of his beautiful preparations, and several microscopes were kindly forwarded by Dr. Goodfellow, Mr. Erasmus Wilson, Mr. C. Varley, and Mr. E. Braby, in which living objects, shewing the circulation in plants and animals, with others of considerable interest, were exhibited.

After a few introductory and congratulatory remarks by the President, Mr. J. Curtis, M.R.C.S., proceeded to give a condensed but lucid lecture on the Comparative Anatomy of the

Nervous System in Animals, which he illustrated by numerous diagrams.

[The Editors deeply regret their inability to do justice to Mr. Curtis' interesting and important observations, but all their endeavours, however laboured, would prove perfectly futile without the aid of several engravings.]

The following paper was then read :—

On the Grouping of Animals.

By Mr. James John Garth Wilkinson, *M.R.C.S.*

The relation between man and animals is a subject which has variously occupied the attention of the naturalist, the anatomist, and the philosopher, ever since the early days of the sciences; and the order of the animal creation has also been an object of incessant inquiry, and many are the modes in which it has been viewed. The pure naturalist has attempted to trace it by a reference to the habits and visible peculiarities of living beings: the pure comparative anatomist, by a scrutiny and comparison of their interior organization: and the pure philosopher, by doctrines, derived in the first instance from his own mind, and applied afterwards to natural history, and to comparative anatomy and physiology. Frequently also,—perhaps most frequently,—the attempt to follow the series of animated nature has been of a mixed kind, and has consisted of a combination of all the three methods just alluded to.

I have chosen this subject,—the relation between man and animals,—as the text for a few homely remarks, not in order to add to your practical knowledge of a department in which so much has been accomplished (for I am neither a naturalist nor a comparative anatomist), and not to lay before you any new philosophical scheme; but as a mere looker-on, watching the game of science, to make a few comments which would be out of place in the mouths of the learned, and, in short, to start objections and frame inferences on the untechnical ground of common sense.

Each walk of nature may be studied for very different purposes; but the purpose will determine the order into which the knowledge gained during the study is distributed. Thus animals may be

classed either, 1, To assist the memory; for instance, to enable it to hold together a multitude of facts by virtue of some general point of connexion. Or, 2, To aid the rational faculties, to strengthen their perceptions of the order of nature, of man himself, and of the human mind, and of the relations in which all things stand to the Creator. Natural history, therefore, as a ground, like all the other series in the universe, may furnish any thing, from a bare catalogue to an order reflecting a profound philosophy.

In agreement with this, Lord Bacon well says, in his *Novum Organum Scientiarum*, that "a natural history, compiled for its own sake, is one thing; and a natural history, collected for informing the understanding, in order to the building up of natural philosophy, is another." (Sect. VI.)

When the end proposed in a classification of animals is to fortify the memory and to facilitate the record of knowledge, it would seem that similarity of form, and similarity in general, may constitute the basis of the classification. On the other hand, when the end is of a philosophical character, when we wish to treat our classification as a truth, and to reason from it, we must have recourse to something more vital than analogy of form, and in this case, as I hope to shew, we must rather consider affinities of use and character than the resemblances perceptible to the senses.

I am not aware that either naturalists or anatomists have hitherto attempted any other classification than one based upon the principle of similarity, either of points of external form and habits, or of interior organization. Thus, in the system of Linnæus, we find man and the monkey forming part of the same group, and standing conjointly among the primates of the animal kingdom. In the system of Cuvier, man and the monkey are again contiguous to each other; and species are associated into genera on the ground of similarity in their hands, teeth, claws, and feet,—of similarity in the substances they eat, &c. &c.

This is in some respects a convenient distribution of knowledge, and it must be allowed that, in the existing state of science, it is the most obvious one that presents itself to notice. It is well adapted for the formation of a sort of dictionary of animated nature; that is to say, a tabular statement of the most elementary kind; and so long as it is confined to this it can do no harm to the cause of truth. Yet I submit that a classification framed upon

the one principle of uniformity involves a hypothesis and not a fact; that, if used for higher purposes than those of reference and *memoria technica*, it will carry us away from the laws of nature; and that, when so abused, it must cause small facts to extinguish great ones, particular instances to over-ride general laws, exceptions to put down rules, and the senses of the body to be discordant with the common sense of the mind.

It is to be observed, that the rule of uniformity desiderates for its due carrying out a far more equable chain of beings than we know to exist on this globe: any sensible break is an imperfection to it, and seems to draw upon our faith and not upon our science; or, indeed, to suggest some further law. Although the species in each order and genus may possibly, without much violence, be reduced to analogical proportions, yet the differences between the genera are so vast as to amount to a disruption of all fair analogy, and to proclaim either that nature is broken, or that the understanding requires a better instrument than the doctrine of external resemblances to guide it through the maze of living things.

I propose, then, in place of the rule of similarity of form or structure, to make trial of the principle of affinity of use as a ground of classification; and I will now endeavour to illustrate the position, that any arrangement of things by external marks of similarity discloses nothing of the inner laws of nature. I shall attempt this, with your leave, by other than purely scientific considerations; for the scientific faculty is not the highest power of the human mind, but must borrow all the order, light, and life that can ever belong to it, from the rational and moral sphere. The author of man's faculties, the author of the good in human society, and the author of nature in all its kingdoms, is one and the same Being; and he works with the same principles, because for the same ends, in all these fields. Of this point I attempt no demonstration: it is sufficiently proved to us, as practical men, by the fact that human reason is paralytic without it. And I state it here, because it justifies me in pursuing a course of analogical reasoning, by which instances in one department are brought to bear in the way of illustration upon what is dark or obscure in another.

In the first place it may be observed, that animated nature is not a museum of stuffed specimens, in which species are neatly brought together, and where every end is attained by a simple

apposition of an orderly kind; but it is a vast social organization of living things, in which not apposition but conjunction is required; in which independence is the exception and mutual dependence the law; in which beings subsist for no other reason than because they have a part to play, and a distinct cause to represent, on the theatre of the universe.

And, accordingly, the grouping of animals in nature is not according to a scale of similarities, but according to a scale of differences. We do not find all the cat-tribe pushed into one end of a continent, and there surrounded with an impassable barrier, or, in museum-fashion, with a glass case; but, on the contrary, they are spread in different species, and intermixed with other animals, throughout the globe. Although we are such great admirers of fox-hunting in England, we do not find all kinds of foxes concentrated here; but nature, like a cruel mother, has gratified us with only a single species. No one land has a monopoly of the rat species, but nearly every climate has its own rat: and so of other cases. This is the mode in which nature distributes the species of animals and groups the genera: she groups the species very sparingly, because they are too like each other to admit of conjunction. Each climate has its own so-called animal kingdom, more or less perfect; and this associates as a whole, through man, its universal representative, with all the similar wholes upon the face of the planet. But in no other way does the general mother group her children.

I speak here, not from theory, but according to common facts; and these, I assert, are Nature's representatives in the sciences.

This method of nature may be exemplified by various comparisons, which, indeed, are themselves real instances of the same method. Of these I may be permitted to use one or two, untechnical though they be, in order the better to convey my meaning.

Take, first, a case from ranks in society, and look at the upper classes. Now, human society is a wonderful instance of grouping. But are its grades associated by extrinsic similarity alone? Who are the parties that most closely copy the nobleman? Decidedly his own servants and the swell mob. Do *they* come next to him in rank? No. The classes who really approach the upper, as a general rule, have an order and manner of their own,—a manner

determined by their rank, and which flows naturally enough from the functions they have to perform. They are joined to the upper classes, not by virtue of apishness—which, wherever it does exist, is a cause of disjunction – but because they accomplish indispensable uses, without which rank itself must stand nearly on the bare ground, like a statue without a pedestal.

Such, also, is the relation of man and animals. The animal which is an imitation of man, does not enter into the grouping that nature brings about between the human race and those good and useful creatures that adorn our fields and gather round our homesteads; for the ape is no more next to man in the nature of things, than the actor is next to the monarch he personates, or the valet next to the peer.

It is true the ape is like man, disgustingly like; but this very fact it is that degrades him and removes him from his prototype; for he is a copy without a useful character of his own; and the poorest creature with an originality is nearer to man in essence than he.

Indeed, there is no real order, whether in history, art, or science, but exemplifies the same thing. Take the similars, copies, or *simiæ* in any case, and you will find you cannot construct a series by placing them next to the originals. Were it wished, for instance, to construct a series of English poets, and to shew the order in which genius was succeeded by genius, you would probably name Shakespeare and Milton as two of the brightest links in the chain; but the bare imitators of each would drop clean out of your consideration: those who had copied these great writers might, indeed, constitute a subordinate series by themselves, but you would never place them between Shakespeare and Milton. Shakespeare's imitators are far more like Shakespeare in form than is Milton: Milton's imitators are more like Milton in form than is Shakespeare; but the imitators are altogether unlike either in essence, because they have no poetic originality; and Milton and Shakespeare themselves are allied, not by similarity of form, but by harmony of variety; each contributing something which the other could not give, to realize that which was the common end of both, namely, the exaltation of human art.

Take another illustration, borrowed from language, which also is an organic reality, and shews in its use, that the higher intel-

lectual powers are constantly working to produce a unity, not out of similars, but out of dissimilars. I before stated, that existing classifications may be likened to dictionaries of animated nature, and the parallel involves an interesting truth. In an ordinary dictionary, the words of a language are brought together by the rule of literal similarity; and a mighty convenient thing such a dictionary is. But in making use of language as an instrument of thought, we depart at once from the order of the dictionary; and in proportion as the subject lifts us into the art of expression, we avoid similarities of sound, lest the progressive spiral of ideas should be drawn back into a circle of jingling terms. Now, there is just the same difference between the present method of the naturalist and the method of nature that there is between a dictionary and a grand composition: the former coheres by a single thread, namely, the rule of uniformity; the latter is a connected tissue of ends, means, and uses, and the bond of connexion throughout is the harmonious working of the parts, all with each, and each with all.

Is it not, then, curious that classification should be based exclusively upon similarities, when the grouping of nature is effected between dissimilars? It argues little for the docility of the human mind that it persists in substituting a single kind of order, and that the lowest, for the combined order of creation; and this, too, so long after Bacon began to expound the inductive method, and taught that "man is the minister and interpreter of nature." It is also curious that the prime link in our classifications—I mean the relation of man to the monkey—should be typical of all schemes of the kind, as involving a series in which different forms *ape* each other, without any bond of principle or use.

I am led to dwell somewhat on this latter circumstance, because eminent naturalists, forgetting that their artificial systems were not framed to stand as truths, but only to aid the memory (in which light, indeed, they are commendable and excellent), have fabricated a dirty hypothesis of developments, which leads them to consider that man himself is no better than a monkey, duly curtailed, cultivated, and extended. Passing by the fact, that no development of imitation (which is the bodily and mental characteristic of the *simiæ*), could give man more than the one faculty of imitation, and could furnish him with nothing to imitate but what was lower than him-

self, which want would drive him back again into monkeyism, it may be observed, that this hypothesis is incapable of being carried out. Were it worth any thing, the monkey must have come from something else; the quadruped from the bird; the bird from the fish, and so forth. Now, although imagination, which can do much, may seem to shew some of the stages by which monkeys might become men, yet it is not so evident how all the other animal forms could be made to pass into monkeys. It would be hard work, for instance, to resolve an elephant into a monkey. But I trust I have said sufficient to shew that the hypothesis itself is inept, as supposing, on sensual grounds, that two beings stand together, which yet, in the order of nature and reason, are wide as the poles asunder.

Were a theory of developments sound in itself, and were the animal kingdom that from which man was to arise, still the world's master could proceed from no one animal, but the whole kingdom must be developed at once to produce him; and this, not by an evolution of forms, but by a spiritual outgrowth, expansion, and concentration; in which case we have recourse to a principle which virtually extinguishes the theory of development, so far at least as it is one-sided, and attributes activities to nature which can only belong to the Creator.

But if external analogies will not furnish a principle of classification accordant with the grouping of nature, so neither will the internal analogies which it belongs to comparative anatomy to discover. The same reasoning applies to both cases. Comparative anatomy is inestimable as a handmaid to human anatomy; but it deals with parts, not with wholes, and can have no function, or a most subordinate one, in indicating the order of natural history. The voluntary grouping in human society is according to the perceptions of a common sense, and is not founded upon the dissection of our friends and acquaintances; and so the grouping of the animal kingdom must be perceived by a common sense appropriate to itself, and not by virtue of comparative anatomy.

Before passing to the conclusion, I will venture an opinion, which I think is not without practical validity, that the question, "What animal comes next to man?" involves in its statement a radical inaccuracy. It is based upon the notion, that man, as a physical being, is a part of the so-called animal kingdom, whereas

I hold that, instead of being a *part*, he is *the* animal kingdom *itself*, and contains all below him, as the universal includes the partial, or the accomplished end the means; and therefore, if we are to have a theory of evolution, we must seek the matrix of the human race not in the animal but in the vegetable kingdom, from which, according to any such theory, the animal kingdom must originally have been evolved. But in this case the question, What animal comes next to man? would be changed into this other question, In what order do animals stand, as ministering to human uses, and representing the scale of human faculties? For as all animals are related to man by use or its opposite, and as they all shadow forth somewhat of his mental constitution, so are they all proximate to some part of his nature.

This it is which must render the natural history of animals dependent, in some degree, upon the higher science of the natural history of mankind. For as different climates support distinct races of men and animals, so the grouping is various according to circumstances; and these circumstances primarily consist in the character and wants of the various nations and tribes into which the human race is divided. These nations, moreover, are associated with each other according to organic laws, and form higher combinations or larger groups; constituting at last the great ethnic series, of which every point has its own specific relation (I speak here from fact) to some corresponding point in the so-called animal kingdom. I repeat, then, that in order to complete the study of natural history, and to see it in its flexibility and organic variety, we must, perforce, take account of the mutual relations of mankind.

A few words now on the doctrine of use as the highest principle of grouping. I need not enter upon this subject abstractedly, for it can, indeed, be better treated practically, as being but a piece of common sense, which is the ultimatum of all sound philosophy. I remark, then, that every day-experience shews certain animals in immediate and harmonious contact with man. And herein lies the main object of my paper, to hint to you that the domestic animals, speaking generally, constitute the first rank in the array of animated nature.

If man be indeed the "paragon of animals" (and who has doubted it?), then we may proceed from him as the centre. Now

I put it to you as practical men, whether either nature, or the force of circumstances, or necessity and physical want, has not grouped the domestic animals close around the human race. They are of the most immediate use to us, and in evidence thereof, live almost under the same roofs with ourselves. They are near our affections, and near our thoughts. They exalt civilisation, and in return receive more and more of the benefits of our advancement. The need we feel of them, and the good we owe them, bring into existence a distinct branch of the healing art, which becomes forthwith an integral part of medical experience. Last, not least, the relation of man to *them*, calls forth in our breasts the ennobling sentiment of humanity, which is nothing less than religion, extending its regards by means of man to whatever is good and useful in the creation.

And are these great, broad facts, to pass for nothing, simply because the horse does not *ape* man in external appearance? Is the harmony they imply between man and the domestic animals, the harmony of use and variety, to be overlooked by the scientific naturalist, because it puts him out of those first leading-strings of the human mind, similarities of form? If it be so, he must continue for ever to be a dictionary-maker, and an order of men must be instituted for the investigation of nature.

The mental qualities of the domestic animals shew precisely the same thing as their natural grouping. In them alone do we recognize an analogy with the highest qualities of the human mind. All animals, indeed, manifest peculiar faculties, tending to self-preservation and to the perpetuation of their species; and some, as the monkey, alternately amuse and disgust us by their cleverness, cunning, and perverse imitations. But the domestic animals, properly so called, have one distinguishing *trait*, the power of yielding obedience to a being higher than themselves, which power practically is the representation of wisdom. Such a power no animal *can* exhibit which is not either domesticated or domesticable.

I may here remark, however, that the word domesticated involves a hypothesis which has hitherto been quietly assumed, without any attempt at proof: this, namely, that certain animals were once in a wild and uncultured state, and have been gradually brought into agreement with man. To the best of my know-

ledge, such a view is not supported by history, nor do I regard it as a dictate of reason. We have certain universal traditions in the world, which are not without their value in determining obscure points of history. But where is the traditive light that informs us who was the first tamer of the horse, or who it was that first brought flocks and herds about the dwellings of mankind? Why, I ask, at the beginning of things, when the world was divinely prepared for man,—why should not the sheep be ready for the shepherd? It costs as little to assume an order of gentle and obedient creatures, as to assume a man capable of reducing them to gentleness and obedience. True it is, that some animals, as the horse and elephant, exist in both a wild and a domesticated state, and that those in the wild state are caught and subjugated at the present day: but why should not the wild races have proceeded from the tame, rather than *vice versâ*, and, on this very account, be capable of the wonderful change involved in domestication?

But to return to the former question,—it is plain, on the view here propounded, that the domestic animals give us at once what we want,—a number of centres to commence from in our classification.

Be it observed, however, that I by no means put this forward as a scheme which may be easily carried out. For besides that these animals are various in character, and therefore require an arrangement among themselves, and that the grouping of them is different in different countries and among various nations, it may be doubted whether they yet form a complete series, and whether certain individuals fairly represent the beginnings of their respective orders. But one thing, I think, is clear, that at present the horse is the prime unit of the whole, and the most allied to man,—that he is the head of animated nature. We ride upon his back, because the bond of use is indissoluble between us. The centaur is an ancient attestation of this, and, like all similar fables, involves a deep scientific and rational truth.

And suppose that our scheme is more difficult than dictionary-making, and that its execution must for a long time be imperfect,—this is no reason why we should give it up. At all events, we see a distinct luminous spot, man and the domestic animals shining as a great light in the centre of animated nature. What if it be surrounded, as worlds always are at first, with a dark circumference of chaos and obscurity; this is the very matter out of which

order and beauty are to be created. It only shews that, as followers of Nature, she imposes upon us the same difficulties that she imposes upon herself. She works, and we must learn, by rational methods. The organization of knowledge must begin from principles, and be accomplished progressively, precisely as the organization of matter begins, and as solar systems are created. We have no right to be disappointed, if the one condition of exploring Nature consists in following that gradual order which she herself obeys in her operations.

Briefly to recapitulate the heads of this imperfect paper;—I have endeavoured to prove to you that the naturalist adopts one kind of arrangement, and nature another; that the classification of the naturalist is based upon the principle of uniformity, the grouping of nature upon the principle of variety; that uniformity alone produces apposition, and not unity; but that the harmony of varieties determined by use produces unity and apposition as well: that by the very bond of nature, the bond of want and sympathy and fact, the domestic animals are allied to man: that, therefore, according to the dictates of reason and common sense, they, under man, are the primates of creation; and the rest of animated nature is to be grouped round them, on the principle of harmony or its opposite, in the same manner as they are grouped round man; and that when this is done, and not till then, natural history will be a mirror of actual nature.

After the company had partaken of tea and coffee, Mr. Goadby, M.R.C.S., described his mode of

Mounting and Preserving Morbid and other Specimens.

He said: I have been requested to give you some account of my process for preserving anatomical parts, and I most cheerfully comply with the request. It is, perhaps, unnecessary that I should describe to you the manner of making the glass cases in which the preparations are inclosed. The fluid by which they are preserved more concerns you, because you may substitute it for alcohol, and thereby very considerably lessen the expense, which has often deterred persons from attempting to form a museum. Alcohol, you know, is a light fluid, and therefore most substances readily sink in it; but the fluid I am about to

describe is of great density, and on that account means must be employed to submerge the body you are desirous to subject to its action. This fluid comes recommended by its cheapness, and also by the facility with which it is made. It is composed of

Bay salt four ounces
Alum two ounces
Corrosive sublimate four grains
Boiling water two quarts.

The alum gives hardness to the preparation, which effect the bichloride of mercury no doubt aids in producing by its action on albumen; but it is likewise of service in preventing any tendency to vegetate; and in exposed vessels you will have to contend with this disposition to the production of fungi. These however only form in the first instance, and by the exercise of a little care they become not of the slightest consequence. A more serious objection to the employment of this fluid depends on the fact that it cannot be used to preserve parts of an animal that contain carbonate of lime. For the preservation of such substances alcohol presents no objection; but when my fluid is employed to preserve any of the molusca for instance, the sulphuric acid of the alum, having a great affinity for the lime, displaces the carbonic acid, and forms sulphate of lime, which falls to the bottom of the vessel. To preserve objects that contain carbonate of lime, I have been obliged to compose another fluid in which the objectionable agent is withdrawn and another substituted, possessing an equal preservative power. I have been enabled to accomplish this by using arsenious acid instead of alum; for the arsenic not only has a preservative influence, but it also softens the body subjected to it; and any part that has been hardened by being sent from abroad, or kept for any length of time in alcohol, can by its use be rendered perfectly fit for dissection. This second fluid, which in certain cases should be substituted for the first, is composed of

Bay salt half a pound
Arsenious acid half a drachm
Bichloride of mercury two grains
Boiling water two quarts.

I must be permitted to direct your attention to the bay salt, which is to be used in preference to common table salt, since it contains both iodine and bromine, and it is not unlikely that these substances assist materially in the preservation of the objects kept in

the solution. Both the fluids are very dense, on which account it is necessary to dilute them considerably in the first instance, as otherwise the parts are submerged with difficulty; moreover, the substances are much better subjected to their influence when the strength of the fluid is thus diminished. When I wish to preserve a brain, I make the fluid of only half the strength, using four instead of two quarts of water. The preparation being placed in the weaker fluid will sink in a few hours, and after a day or two I add a stronger solution, when it again rises to the surface, but it will soon fall a second time to the bottom, and after a short period it may be permanently preserved. The arsenical fluid when used to large masses may be considerably diluted, and it is astonishing how greatly the aluminous solution may be lowered without destroying its qualities in the first instance. I have had placed in my hands this evening a preparation which has surprised and delighted me, for I regret to say hitherto I am almost the only person who has used these fluids with success. It is therefore extremely satisfactory to me to know that some one besides myself has been able to employ these solutions effectively. When I first saw this preparation I feared to touch the pus, but I was informed it was hardened. It looked soft and fluid, but I soon found that it was firm. I was gratified by being told that this had resulted from the employment of my fluid, and that the preparation was at my service. It is a most beautiful specimen—one of which I am loath to deprive you, but it having been presented to me, I cannot find it in my heart to let you have it again.

[The morbid specimen alluded to by Mr. Goadby was an abscess in the brain of a sheep, the history of which is given at page 426. We have for some time past employed Mr. Goadby's fluids, and found them to answer admirably. His manner of enclosing the preparations in glass boxes, uniting their sides together by marine glue, is, however, a peculiar feature, admitting of dissected parts being minutely examined in all directions; and few can hope to attain to the expertness and neatness with which he accomplishes this. We have seen some small and splendid beetles so delicately and chastely mounted, that they might be worn as brooches; and, when Mr. Goadby's numerous and beautiful preparations have been displayed, they have not been inaptly compared to a collection of pictures painted by nature.]

On the Acarus Pheasiani.

By Erasmus Wilson, *F.R.S. M.R.C.S.*

At the Conversazione last year I had the pleasure of exhibiting to you the mange insect of the horse, the acarus equi. On that occasion I pointed out certain distinctions between the male and female. I told you each insect had eight legs, four of which were in front and four behind. That the four which were placed anteriorly were each provided with a lobulated membranous disc, susceptible of retraction by means of a special muscle, and thus convertible into a cup exhausted of its air, like a cupping-glass. By this action the animal is enabled to cling to any thing with remarkable power.

The third pair of legs is gigantic, and also provided with these membranous discs, which serve to grasp the female during the act of copulation. Last year, you will remember I shewed to you a specimen which illustrated this use. The characteristics of the male are, however, yet more remarkable in another species of acarus taken from the pheasant, and which I have termed the acarus pheasiani. In the female of this creature the abdomen is larger and longer than in the acarus equi. In the male the third pair of legs are extraordinary in point of bulk; indeed, they seem to have absorbed an unreasonable share of the development of the animal, giving to the entire creature, as viewed by the microscope, a resemblance to a pair of leather breeches,—an object all legs. I can compare them to nothing else; and if the simile is not elegant it will be the more like the animal. These third pair of legs are so large, that the fourth pair are quite eclipsed by them. It has been a question at your meeting, What is the habitat of the acarus equi? In man it lives in the scarf skin, in which it makes long burrows, and, according to a French author, comes out of its habitation only during the night. Its food consists of the disintegrated scarf skin, and of the fluids derived from the true skin; for the little creature sinks artesian wells in the small cell at the extremity of its burrow, and thus obtains its means of nourishment. In the horse, however, the acarus does not exist in the scarf skin, but upon the epidermis, feeding on the sebaceous and perspiratory matters which collect about the roots of the hairs when the horse is not properly

groomed, or when morbid secretions of any kind are poured out and concrete upon the surface.

I had the good fortune to be the first, as far as I know, to demonstrate the existence of the acarus equi in this country. I have now the satisfaction of directing your attention to another member of this tribe. A very fine pheasant was presented to me by a friend; and, though it may not be correct to "look a gift horse in the mouth," I could not forbear an exploration of its skin, as I was at that time engaged in some observations upon the acarus of animals. In the pheasant I found the acarus upon the fine hairs or downy part of the feather, feeding apparently on the epidermis raised by the growing feather, or on the feather itself.

I have brought with me this evening specimens of the little animal, and I invite the attention of such gentlemen as may feel curious with regard to it. All must, I think, feel an interest in the subject, inasmuch as it points to the existence of a living parasite upon the skin of all animals, not intended as a source of annoyance or torment to the animal, but performing some beneficent and necessary purpose in the animal economy, probably removing from the skin matters which otherwise might act as cause of irritation and disease. The specimens under the microscope are only moderately magnified. They are preserved in the manner just described by Mr. Goadby.

Mr. C. Varley.—Perhaps you will allow me to make a few remarks respecting the acarus, of which tribe there is not a more beautiful species than the acarus Crossii. The cheese mite belongs to the same order, but is, when placed under the object glass, opaque and dull in its appearance, whereas the microscope exhibits the acarus Crossii as a beautiful transparent little creature. I placed some cheese mites in sweet oil, and observed that in this situation they lived a fortnight, but the acarus Crossii in the same situation did not exist for so long a period.

It is easy by aid of the microscope to distinguish between a vegetable and an animal. An animal has arteries and veins, and the ascending and descending fluids have their proper tubes to carry them; but in plants the two currents flow in the same cell, one occupying its outer portion, the other its inner. The only peculiarity is, that one fluid is insoluble in the other. The circulations are so different, that when seen it would at once decide between

an animal and a vegetable; and I am further of opinion that in the vegetable the two currents are in opposite states of electricity: the ascending one I hold to be positive, the descending one negative, which will account for some of the phenomena of vegetable life.

The remainder of the evening, which was protracted to a late hour, was passed in a free discussion on the different subjects that had been brought forward at the meeting, and in the interchange of those sentiments which tend to unite together the members of a common profession in terms of amity.

NOTE BY THE EDITORS.

In closing the first volume of THE VETERINARY RECORD AND TRANSACTIONS OF THE VETERINARY MEDICAL ASSOCIATION, the Editors beg to thank their friends for the support they have received: it has more than realized their most sanguine expectations; and its continuance—which they earnestly solicit—will lead either to an increase in the size of the Journal, or its more frequent publication; as hitherto they have hardly been able to shew their intended arrangement, and much matter has not been inserted through want of room; while they have to apologize for Reviews of Books received not having yet appeared.

INDEX.

DIRECTIONS TO THE BINDER.

Plate 1, with explanation, to face page 104.

Plate 2, with explanation, to face page 205.

ERRATA.

Page 66, *for* "1837," *read* 1737.

— 98, *for* "stamineous," *read* strameneous.

— 98, *for* "cereulea," *read* cerealia.

— 194, *for* "P. Verhegen," *read* P. Verheyen.

— 392, *for* "E. Boddington," *read* G. Bodington.

THE

VETERINARY RECORD,

AND

TRANSACTIONS

OF THE

VETERINARY MEDICAL ASSOCIATION.

EDITED BY

PROFESSORS SPOONER, SIMONDS, AND MORTON,

ROYAL VETERINARY COLLEGE.

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ILLUSTRATED BY ENGRAVINGS AND WOODCUTS.

"PRÆSTAT IN OMNIBUS EXPERIENTIAM STRICTE PREMERE; UT ET, NATURÆ ORDINEM SEQUI."

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ROYAL VETERINARY COLLEGE.

The Scholastic Session commenced at this Institution on Monday, November 10th, 1845. The Introductory Address was delivered by Professor Sewell to a full class.

The Lecturer, after having stated the course of instruction that would be adopted during the session, the curriculum of study being now both more extended and more perfect than it was some years since, proceeded to observe that it might gratify curiosity to trace the early history of veterinary medicine; it is, however, obscure, and not very profitable to the student, since, in all probability, it was at first practised empirically.

"In the early state of society we can merely conjecture how this art or profession was practised from what has been observed by enterprising travellers in those countries where habits and customs appear to remain almost unchanged since the primitive ages, when kings and princes were shepherds and herdsmen, and flocks and herds constituted the wealth of these countries, as they do at present in some parts of Asia and Africa, and also other parts of the world.

"Horses are not mentioned as being employed in early times for agricultural labour, the ox and the ass being the first animals thus used. From some recent discoveries made by a commission of medical officers in China, the records of medical science of that ingenious and singular people are said to afford proofs of its advanced state 4900 years ago, and that their most learned physician lived and wrote scientific works at that time. A medi-

cinal agent, similar to Glauber's salts, was then in high reputation for most diseases: it appears to have been a natural product.

"If this account be correct, judging from their present practice of medicine, they have lost the knowledge they once so eminently possessed; or, we have not been able to discover how it is now exercised in the interior of that country, which is the most extensive and populous empire in the known world, it being estimated to contain above 300 millions of inhabitants. When I was in Paris, Professor Huzard shewed me a Chinese veterinary work, with coloured plates, but the date was unknown. That the veterinary art was practised at a remote period, as well as human medicine and surgery, there can be no doubt, as both are, even at this time, in most countries by those persons who pretend or are supposed to possess more knowledge than others—such, for instance, as the Great Medicine Man of the Indian tribes. Doubtless, it was also very rude and barbarous. Captain Sir John Ross, in his account of the polar expedition, describes the novel but primitive mode of amputation adopted by the Esquimaux. A sharp fish-bone was the only instrument they possessed to cut through the skin and muscles. Having done this, they then inserted the limb in a crevice in the ice and snapped off the bone, afterwards applying burning moss to stop the hæmorrhage.

"The aborigines of all countries would naturally seek relief under disease or from accidents, and practise medicine and surgery in some uncouth manner. Among some charms and incantations have been employed, and these not by the most ignorant and uncivilized, but even by the most learned and polished in Europe. The most powerful ancient nations, that had acquired the highest degree of civilization, cultivated the arts and sciences to such a degree, that they excite our astonishment when we behold their remains, which exceed in stupendous grandeur the works of the present day. Such are their temples, pyramids, and other buildings, many of which were submerged at the deluge, but are now again exposed by volcanic action.

"The armies of the ancients appear to have been composed chiefly of cavalry; and it may be inferred, from the value of their horses, that properly-educated persons were appointed to take care of them when sick or wounded in the battle field, since they were too highly prized to be employed as beasts of burden or to be used

for draught, being kept only for military service, for hunting, or for pleasure. All inferior work was done by the ox, ass, mule, buffaloes, and even dogs and goats. Elephants, camels, and dromedaries are still much employed in the East; and the lama, an animal between a sheep and a camel (for size), is used in South America. Those veterinary surgeons who hold appointments in the Honourable East India Company's service have the care of the camels as well as the horses. I was informed by one that he had charge of no less than two hundred camels, which were almost all affected with influenza at the same time.

"Humanity and attention to the wants of domestic animals were enjoined by the most ancient laws: both are now much neglected, to the digrace of modern legislation.

"That the ancient and skilful artisans were capable of making all requisite surgical instruments and apparatus of every kind for veterinary purposes, if there were persons to use them, there can be no doubt; we may, therefore, infer there were such; but we have no records to be depended upon that any regular practitioners of medicine existed before the time of Hippocrates, styled the Father of Physic, who lived four hundred years before the Christian era; and whose works shew that he attended to the diseases both of animals and of man. He dissected quadrupeds and apes instead of the human being.

"Galen, also, about the same period, followed the practice of physic, and employed vegetable substances chiefly, originating what is termed the Galenical practice, which was continued until the science of chemistry introduced more potent agents.

"Many of the operations in surgery may be learned by observing the instinctive habits of some animals. I am assured by a gentleman who resided several years in Persia in a diplomatic capacity, that occasionally their horses, when in a plethoric state, will lacerate and open with their teeth the superficial cutaneous veins about their shoulders and fore arms. Does not this teach us the necessity of bleeding, scarifying, and cupping? We have also seen both horses and dogs cleanse their own wounds and sores with their tongues, thus allaying irritation, similar to what is effected by the use of fomentations.

"All must have observed the last-named animals intentionally vomit themselves by eating a peculiar kind of grass; from which

the use of emetics may have been derived, as that of purgatives from goats, and enemas from birds."

[The state of veterinary medicine during the time of the Greeks and Romans was then cursorily passed in review, and its progress traced to modern times, when veterinary schools were first instituted].

"This brings us to a period when veterinary science began to be encouraged by the various governments of Europe, and in which France took the lead; her political economy being generally attended to and administered in a manner worthy of imitation. In 1761, eighty-four years since, a farm near Lyons was converted into a veterinary school until a convenient building in the town could be obtained for that purpose, and M. Bourgelat was appointed Professor. In 1764 a larger school was instituted at Alfort, near Paris, and that gentleman removed to it. At the conclusion of the late war I visited both these schools, and experienced the kindest attention and acquired much valuable information.

"Since that period the French Government have established at Toulouse, in the south west of France, a school for that branch of the veterinary art applicable to cattle, which are much employed in agriculture in those districts. The Austrian, Prussian, and Hanoverian Governments followed the example of the French, and established schools in their respective capitals, Vienna, Berlin, and Hanover, which schools I visited in 1816 with the same pleasure, interest, and advantage I derived from those of France. A few years since, Austria established a school for the instruction of shepherds in the province of Gallicia. I think this worthy of imitation, considering the immense value of our flocks. In George the Third's time, the Hanoverian school was formed for his German electorate (now the kingdom) by that government; and it may appear singular that, up to this period, no school had yet been established for our own country, which abounds in the finest and most valuable horses, cattle, sheep, and other domestic animals in the world, from every part of which they are sought after and exported to.

"This circumstance made a deep impression on the minds of a few English gentlemen, among whom were Mr. Granville Penn, of

Stoke Park, near Windsor, Mr. Arthur Young, Secretary to the then existing Board of Agriculture, Mr. Holme Sumner, Earl Grosvenor, and Sir Charles Bunbury. These gentlemen most zealously exerted themselves, and persevered with others in establishing this College, and appointed as its first Professor, in 1792, M. Chas. Vial de Sainbel, from the school of Lyons.

"The Odiham Agricultural Society had, previous to this, determined on sending some pupils to the French schools, but subsequently assisted this institution by their funds and patronage. Subsequently, other continental schools have been formed in Denmark, Holland, Belgium, Saxony, Italy, and Egypt. From those kingdoms, in which as yet no schools are established, students are generally sent to France or Germany, and also to this College, at which numbers of foreign pupils were educated during the late war. M. Sainbel died about two years after his appointment, and was succeeded by Mr. Coleman and Mr. Moorcroft, in 1794. The latter, however, seceded in a few weeks, and afterwards practised in London several years, and then accepted a lucrative appointment to superintend a breeding stud in India, in which he effected great improvements.

"Some hundreds of pupils educated at this school have gone forth to practise veterinary medicine, not only in Great Britain, but wherever her colonies extend; to the East and West Indies, America, and Australia. The British and East India Company's Cavalry have also the benefit of regularly educated veterinary surgeons appointed to them: they hold the rank of commissioned officers. Establishments employing great numbers of horses have also found it to their interest to engage superintending veterinary surgeons, as collieries, mines, breweries, dairy establishments, and zoological societies.

"This reflects some degree of credit upon the teachers, and is gratifying to the governors of this institution, whose original object was to send out scientifically educated young men, who, by adopting an improved and more humane practice, would supersede much of the old and severe treatment had recourse to, especially that derived from our barbarian ancestors, the ancient Britons, who fired themselves as well as their horses. This practice is still pursued to the same extent, and with but little benefit, in many half-civilized countries, as Arabia and other parts of Asia;

but it is falling into disuse in this country, as are the cruel operations of cropping, nicking, cutting out the membrana nictitans or haw of the eye, and the growing gums of young horses, called lampas, and others, several of which are almost extinct. Many capital operations, as they are termed, have been performed for diseases which, before anatomy and physiology were taught, were either unknown or deemed impracticable, such as œsophagotomy, tracheotomy, neurotomy (of which above one thousand cases alone in this infirmary have been operated on), lithotomy, paracentesis thoracis et abdominalis, subcutaneous periosteotomy, and division of the muscles and tendons to straighten contracted and deformed limbs. The cure of acute and chronic glanders by a systematic plan of constitutional treatment, and operations on the parts affected, has also been introduced; likewise improvements in shoeing of both healthy and diseased feet, and the application of artificial soles to preserve them unimpaired during the life of the animal: all these, with several other methods of treatment of diseases of various kinds, may be said to have originated at this institution.

"Several veterinary surgeons, educated at this school, have extended their usefulness by becoming authors and teachers. The late Professor Coleman published works on Diseases of the Foot and Shoeing. Mr. Coleman advocated the use of the thin heeled shoe or long tip, and Mr. Moorcroft the seated shoe, which was introduced during the last century by Mr. James Clark, of Edinburgh, and upon which he wrote a treatise. It is still called the Scotch shoe. Mr. Moorcroft had it stamped by a powerful machine, which rendered the iron brittle, and the shoes thus made, failing in work, the manufacture of them was abandoned at a considerable loss.

"Mr. Bracy Clark introduced a jointed shoe for the purpose of allowing the expansion of the foot, similar to the old travelling or hunting shoe, used to supply the place of one lost or cast by accident. It was recommended by Blundeville during Queen Elizabeth's reign.

"Mr. Clark's sanguine expectations have not been realized by an extensive adoption of it in practice. It, however, has been found effectual for relieving contracted feet, and, therefore, is useful as an infirmary shoe.

"Many other forms of shoes have been introduced from time to time by veterinary surgeons and amateurs, some of whom took out patents for them; but which, not being adopted by the public, were generally attended with pecuniary loss to the patentees.

The last shoe deserving particular notice in this place is that introduced by Mr. Turner,—the side-nailed shoe. Many persons use it, and that successfully; others have tried it, but not continued it as a general shoe: at all events, it is highly beneficial in particular feet and cases, and, therefore, deserves commendation.

"Singularly formed shoes are met with in other countries, adapted to the peculiarities of the soil and climate, from the arctic to the temperate and tropical regions, from Iceland to India."

Professor Sewell then enumerated the several veterinary authors, and closed a lengthened lecture by recommending to the student the study of comparative and morbid anatomy; in the pursuit of which latter division of science so many and abundant opportunities present themselves at the slaughter-houses in London for horses and cattle. A familiarity with the changes that take place in the healthy structures, he said, would cause them to speak confidently when consulted respecting diseases, and also enable them to give a correct opinion when called upon in courts of law, or when requested to settle by arbitration cases in dispute: general veterinary knowledge, in its most extended sense, being required both for advice and consultations.

The principles of veterinary jurisprudence would be laid down in the lectures they would hear delivered; but, in the infirmary, practical demonstrations would be given of those alterations of structure and the lesions of parts, the existence of which give rise to unsoundness in horses.

Nor must the study of cattle pathology be neglected; but this, with chemistry and veterinary materia medica, would be taught them by those on whom these important duties had devolved, each acting in his several capacity; and as each had been now long tried, solicitations on account of inexperience, and praises for well-performed duties, were alike uncalled for.

In the evening of the same day,

THE NINTH ANNIVERSARY MEETING

OF THE

VETERINARY MEDICAL ASSOCIATION

was held at the Freemasons' Tavern,

The President, PROFESSOR SPOONER, presided.

AMONG the visitors present were, J. Arnold, J. Curtis, R. Lord, J. Reddish, J. Trevett, J. J. G. Wilkinson, and Erasmus Wilson, Esquires.

The veterinary surgeons present were, Messrs. G. Balls, J. Broad, J. Field, J. Hall, A. B. Henderson, H. Lepper, E. Mayhew, W. C. Spooner, J. Turner, and the President, Treasurer, and Secretary.

The Secretary read the following

REPORT

FOR THE NINTH SESSION OF THE ASSOCIATION, 1844-45.

The revolving wheel of time has again brought round the return of the Anniversary of the Veterinary Medical Association, and from another eminence we are enabled to look back upon the ground we have traversed over. In reviewing the proceedings of the past session there is much that is gratifying, although, perhaps, but few objects will stand prominently forth in the retrospect. That which has marked it, and which, indeed, may be said to constitute an epoch in the history of the Association, is the publication of its Transactions as an open and unrestricted journal, under the title of THE VETERINARY RECORD AND TRANSACTIONS OF THE VETERINARY MEDICAL ASSOCIATION. In the Report of last year the reasons were assigned why this step was about to be taken: still we have been much censured for the act, and many unkind thrusts have been made by those from whom we had anticipated better things. But, although we have not attempted even to parry these thrusts, we are yet unhurt, being panoplied by the rightful-

ness of our cause. We feel convinced that no science was ever benefitted by exclusiveness; and it is an error to suppose it could be. What are the sciences, so called, but streams from the fountain of knowledge?—a development of the laws that govern nature, which, when rightly traced, lead the mind

"From Nature up to Nature's God."

There was a time when knowledge was confined to monasteries, or, at most, extended itself to the cloisters. And what did it then for mankind? Are there any who wish that these darksome days should again return, or who desire to be found among the advocates for partial or restricted knowledge, by which we deceive both ourselves and others? If so, they are deluded. Truth in its very essence is diffusive, and its votaries must partake of this heaven-born principle, or they err. Let those who hold adverse opinions be assured the day is for ever gone by when exclusiveness in any science or art could, even in thought, be the means of enhancing its estimation or its worth. Let such attempt to stop the present onward progress of the mind, and they will find their efforts altogether futile. As well might they hope to stay the mountain torrent with a straw, or lull the tempest with a feather. We profess to have no feelings in common with them; and we repeat the assertion before made, that a desire for exclusiveness bespeaks either a conviction that something has remained undone, or something done of which there is cause to be ashamed.

Well do we know there were some friends who kindly wished us well, and yet doubted of our success: it will be as pleasing to them to be informed as it is to us to state, that the result has exceeded our most sanguine expectations. The quantity of matter received for the Journal was so great, that the Editors found themselves unable to compress it within the space at first allotted to them, and they were, therefore, obliged to add a supplementary number to complete the volume; and even then many communications were excluded, lest they should be thought presuming. As to its *quality*, they have only to refer to the names of its contributors. Is it not, they would ask, a subject of just exultation, that within one short year they should be able to enumerate above sixty correspondents, among whom are to be found many distinguished for their high attainments both in medicine and the collateral

sciences? Some of these, too, are from beyond "the sea-girt isle." There is much that is encouraging in this; much that presages future advancement; much that cannot fail to act as incentives to increased exertions on the part of those on whom the labour has devolved of recording, and communicating to their professional brethren, that which is taking place in veterinary science.

But to place beyond the "pale of doubt" the idea that exclusiveness could obtain, we take leave to reiterate a fact—a fact the existence of which we have now cause to rejoice at. Influenced by the advice of those whom we deemed wiser than ourselves, we restricted the sale of our Journal to members of the profession; the result was, that for three consecutive years it was published at a considerable loss. Moreover, those who had been our strenuous advisers to adopt this plan did not become contributors to its pages during this long period. The inference we were compelled to draw was obvious, and but one step left us to take, unless, indeed, we had ceased to publish altogether. We took that step, and, we repeat, we have had no cause to regret it.

In the retrospective report that is now to follow, nearly the same arrangement will be adopted as in antecedent years.

Essays.

The prevalence of an epizootic among horses—the influenza—during the earlier part of the year, called into exercise the pens of several members of the profession, and we were favoured with papers on the subject from Messrs. Ernes, Garrard, and Wright. The consideration of these drew forth many valuable and important observations, and occupied several meetings of the Association. To these succeeded a paper titled "Miscellaneous Observations on the Action of certain Metallic Compounds on the Animal System," by Mr. Robb, which was followed by one on the "Modes of Analysis and Antidotes for Poisons generally," by Mr. Jekyl. These two theses constitute a perfect whole, and their introduction redounds to the credit of their respective authors, while at the same time they serve to shew that some advancement, at any rate, is being made in the science of veterinary medicine. It is unnecessary to particularize each Essay that was subsequently brought forward by the members; suffice it to say, there was no

lack of subject-matter, nor of argumentative spirit to canvass freely the views each propounder of a theme entertained; and as "iron sharpens iron," so, doubtlessly, mutual profit was obtained from the discussions which took place at the hebdomadal meetings.

An outline of most of these Essays will be found in the published Transactions of the Association; and this it is which supersedes the necessity of dwelling longer on this section, except to observe, that from among these Essays the Council have deemed

Mr. G. Robb's "on the Action of Metallic Poisons,"
Mr. J. Jekyl's "on the Tests and Antidotes for Poisons,"
Mr. T. Wright's "on Influenza," and
Mr. W. Cox's "on Diarrhœa in Cattle,"

worthy of the special thanks of the Association, by which their authors rank as Honorary Fellows of the Association.

Prize Essays.

The paper "on the Anatomy of the Fauces and the Physiology of the Voice and Deglutition," by Mr. J. K. Lord, will have been read with pleasure, affording, as it does, proofs of a love of research, and talent. But it is to be regretted that this division, which is so eminently calculated to arouse the intellectual powers and to elicit facts by which the profession at large may be benefitted, thus enhancing its usefulness, should have to encounter so much apathy. The cause is altogether unassignable. Again, this year the Council have to deplore the absence of all competition. From one practitioner only was an Essay received—subject, "The minute Anatomy of the several Tissues of the Foot of the Horse, &c." This having been carefully read by the individual members of the Council, they were compelled to come to the following resolution:—

> "That, having taken into consideration the Essay received from a practitioner, on 'The Anatomy, &c. of the Foot of the Horse,' we find that several consecutive pages thereof are abstracted from a work on the Foot of the Horse, by Mr. James Turner, *without the slightest acknowledgment whatever;* we therefore deem it, although otherwise in many respects well written, altogether undeserving of the prize."

From among the students, not one was found to enter the lists as Essayists. Fain would the Council hide these statements from the public eye, but that the truth must be told. They are most desirous of exciting to emulation the aspirants for professional fame, and with this view they have determined on giving another prize, during the ensuing session, for the best anatomical preparation made by students, of the eye, foot and leg, or half the head of the horse, *muscular*, *nervous*, and *vascular*; hoping that this will prove a fresh incentive to exertion, since they need not say that the amount of honour will be proportionate to the degree of rivalry that exists.

The subjects chosen for the Prize Essays of the present Session are,

For Practitioners,

"*The Anatomy and Physiology of the Stomachs of Ruminants, with the Process of Digestion.*"

For Students,

"*The Comparative Anatomy of the Tarsus of the Horse, Ox, Sheep, Dog, and Pig, illustrated by drawings or preparations, with the Physiology of the Joint, particularly noticing its influence over the several movements of the limb.*"

COMMUNICATIONS AND PATHOLOGICAL CONTRIBUTIONS.

On what an interesting field do we now enter! Any attempt at classification would be useless, and only a cursory review will be taken. During the recess we received many valuable morbid parts; and from Messrs. Hagger and Hoey, of the Hon. East India Company's Service, we were presented with specimens of drugs from India. Mr. Clarkson, Senior Veterinary Surgeon to the same service, kindly furnished us with specimens of *filariæ oculi* and *filariæ medinensis*, taken from the horse; also, an account of the epizootic that prevailed in her Majesty's 13th Dragoons while stationed at Bangalore. The numerous contributions to pathology transmitted by Mr. J. Purves, of the Bengal Presidency, we have from time to time inserted selections from.

Of cerebral diseases, the only known instance on record of

ossification of the cerebellum of the horse by our patron, Professor Sewell; with one of supposed ossification of the entire brain of a cow, by Louis Patellani, translated by Mr. J. S. Gamgee; of carcinoma in the brain of a horse, by Mr. Barrow; of hydrocephalus in a foal, by Mr. Dickens; and a disease similating phrenitis, communicated by Mr. Wallis, are cases of more than ordinary interest in a pathological point of view. Next in importance, perhaps, because associated with much that is obscure, are the cases of Rabies in the horse, by Mr. Raddall and Mr. Markham; with the same disease in a mare, cow, and heifer, as recorded by Mr. Mannington. On this formidable malady medicines appear to have no controlling influence: the symptoms as soon as manifested have not as yet been known to yield to remedies; but, despite all that have been tried, the exacerbations return again and again with increased violence, until Nature, exhausted, gives up the contest.

Mr. Litt's case of dislocated fetlock joint, with Mr. Cartledge's of entire removal of the hoof, and its reproduction, are somewhat unusual occurrences, and therefore of greater value. The singular chronic abscess containing masses of hair and pea-shaped bodies consisting of inspissated pus, received from Mr. Christian, and the pilary tumour from Mr. Read, with his ingenious theory of its formation, need only be adverted to, since they cannot have been forgotten. We were indebted to Dr. Goodfellow for a microscopic examination of the last-named. The strangely introsuscepted cæcum of a horse, by Mr. W. Robinson; the case of ruptured rectum, and of fungoidal tumour on the inner coat of the intestines, by Mr. Woodger, with a similar one recorded by Mr. Simonds, and an instance of strangulated testicle within the cavity of the abdomen, by Mr. W. Baker, and of strangulation of the rectum by one of the ovaria becoming pendulous and twisted around it, by Mr. Sansom, are all rare morbid lesions; and scarcely less so were those of carcinoma within the nasal cavities, by Mr. Case, and of ossification of the right auricle of the heart, by Mr. Thacker, with rupture of the iliac vessels, by Mr. Broad. The instances of fracture of the pelvis by Mr. Daws, Mr. Hall, and the President, from horses slipping down upon the wood pavement, with the case of fracture of the basilar process of the occipital bone related by the first-named, may well awaken inquiry into the best means to be

adopted to prevent those accidents, by which life and limb are often sacrificed. The paper on constitutional ophthalmia, by Dr. Lémann, with the novel view taken by him of the nature of the disease and its treatment, will have been read with interest. Mr. Erasmus Wilson gave us a description of his mode of endeavouring to stay the escape of synovia in a severe case of broken knee, in which strict surgical principles were adopted; but, unfortunately, he found the horse a far less manageable patient than the human subject. To the same gentleman we are indebted for a microscopical examination, and also drawings of a portion of the ossified brain of the horse, already alluded to; likewise, of the echino coccus, engravings of both of which have enriched our Journal.

It is gratifying to know that cattle pathology continues to receive elucidation from the morbid parts and communications forwarded. Mr. W. A. Cartwright's case of sciatica, and diseased and imperforate gall-bladder in a cow; Mr. Mannington's of glanders in the same animal; Mr. Litt's of pericarditis in a bull from puncture in the heart; Mr. Carlisle's of carditis; the removal of mammary tumours from the flanks of a heifer, by Mr. T. Walton Mayer; Mr. Lord's case of melanosis in a cow; the singular disease affecting the spleen of cows, by Mr. Howell; Mr. Leech's case of open parotid duct successfully treated; Mr. Baldwin's instance of excision of the uterus, and of sacculated intestine containing sand; with Mr. Thacker's, of parturient apoplexy terminating favourably, all come under this head. Nor must the presence of calculi in the bladders and urethra of sheep, communicated by Mr. Silvester, be passed over unnoticed.

Of parasites infesting our domesticated animals, we may allude to the sudden development of pediculi in a calf, by Mr. W. Baker; to the existence of the larva of the helophilus pendulus on the spinal marrow of a horse, by Mr. E. Stanley; of strongyles surrounding the kidney of a filly, by Mr. Harvey; and of filariæ in the bronchi of calves, by Mr. Holmes.

As it regards the action of medicinal and other substances; from Dr. Daunt, of Brazil, we received the information that the natives use the "chioccocca racemosa" successfully for charbon; a paper on which disease was contributed by Mr. Ernes. The prickly shield fern *(aspidium lobatum)* was found by Mr. J. J. Hughes to be a

poison to calves; the deleterious effects of wheat on horses was detailed by Mr. T. M. Leech, and the beneficial action of strychnia in paralysis shewn in a case given by Mr. T. Taylor.

Among the aids the veterinary surgeon needs while pursuing his vocation, the apparatus either to give pressure, or to apply topical remedies to curbs, by Mr. Robb, and the use of Mackintosh's solution of India rubber to stay the escape of synovia, as advocated by Mr. King, merit notice.

Lastly, although not least esteemed by us, we must acknowledge the contributions to comparative anatomy received from Dr. Knox. Unsolicited as they were, they proved the more acceptable; and while we continue to receive such support as in this rapid survey has been shewn, it cannot be but that prosperity must attend the VETERINARY MEDICAL ASSOCIATION.

The closing meeting of the session was a CONVERSAZIONE. In this we were so kindly supported by our friends, who richly contributed to the intellectual feast, that not to thank them were ungrateful indeed. We have already recorded the names of those who took part at this interesting meeting.

Turn we now to a less pleasing theme, as we have been wont.

Among those whom the fell tyrant Death has taken from us during the past year—and they have been many—we have to regret the loss of one who had long been associated with us, and who always manifested a warm interest in our proceedings, aiding us by his pencil, although he rarely did so with his pen. We allude to Mr. W. W. Barth, late Demonstrator of Anatomy at the College.

He had left England a few months only, having obtained an appointment in the Hon. E. I. Company's service, and was proceeding by steam-boat to Allahabad, to take the charge of his regiment there. Still young, and apparently in health, and, it may be, "counting on long years of pleasure yet to come," he little anticipated that the final summons had gone forth—that the unerring bow had been bent, a shaft from which in two short hours numbered him with the silent dead.

Apoplexy has been stated as the immediate cause of death: it is, however, more than probable that it was a *coup-de-soleil.*

Even more sudden, although perhaps not so unexpected, on account of his being known to labour under an organic disease of the heart, was the death of the late Mr. Parker, of Birmingham, V.S.

Death, certainly, has no attractions,—it should have no fears; yet we start back at its approach, and tremble at the notice of departure hence,

"To be, we know not what; to go, we know not where."

Yet man is a responsible being; his conscience tells him so, and his constitution proves it. Annihilation is to him a dreadful thought. The soul recoils, and, shuddering, turns from it. He finds more that is congenial in the illimitable "for ever and for ever," although this baffles all computation, and overleaps the boundaries of time.

Surely, then, it is wise to talk with our past hours, and ask them the report they bear, since here we have no abiding place. Too truly has the poet said—

"Nor beauty's pride, nor birth, nor power,
Nor fame, nor wealth, nor age,
Hath found a voice to stay the hour
That ends life's pilgrimage."

The accession of members has not been so great as during the previous session. Certificates of membership have been awarded to thirty-eight, of fellowship to eleven, and of honorary fellowship to four.

The LIBRARY has received several additions, both by presentation and purchase, and its works continue in undiminished request.

The exchange of journals with foreign Societies similar to our own has increased. From these periodicals Mr. Ernes has continued to give us, from time to time, translations of the most interesting cases, which have been transferred to the pages of THE VETERINARY RECORD. Thus we are enabled to index the advancement that is being made by our Continental brethren, and to become acquainted with the views entertained by them of particular diseases, while they avail themselves of the practical information to be found in our Journal: thus we reciprocate advantages.

And now, in closing this Report, we may, we hope without fear of being charged with self-laudation, be permitted to say a word or two for the Officers of the Institution. Each, it is believed,

has endeavoured to perform his duty;—how far he may have succeeded, he leaves others to decide;—and each has been desirous to add his quota to the general stock of knowledge. When opportunities presented themselves, they were eagerly embraced to communicate any thing that was deemed of moment, or conducive to the interests of the Association. Many experiments were instituted by the President, Professor Spooner, the results of which are recorded; and illustrative cases were adduced whenever a particular disease was under consideration, or similar ones happened to be brought forward at the weekly meetings, for each was anxious to escape the degradation of being

> "Lost in the world's wide range, enjoined no aim,
> Prescribed no duty, and assigned no name."

W. J. T. MORTON,
Secretary.

The President having, with appropriate observations, presented the Certificates of Merit to the successful candidates or their representatives, W. C. Spooner, Esq., delivered the following

ORATION.

I am afraid, Gentlemen, I made a somewhat rash engagement when, in compliance with the request of my predecessor, Mr. Simonds, I consented to give the Oration which for some years past it has been customary to deliver on the present occasion: for, whilst fully alive to the honour of the task, I am no less sensible of my inability to do it justice; and were it otherwise, I feel that I labour under a difficulty from which the majority of those gentlemen who preceded me were free. Many of them, you will bear in mind, were practised lecturers, who had been in the habit of directing your attention to various branches of professional science; and from the verdant and extensive fields through which each had been wont to range, but little difficulty was experienced in culling many valuable herbs and fragrant flowers wherewith to form a bouquet worthy at once of your admiration and delight;—

a bouquet which, while it afforded gratification to the Senior Members and Fellows of our Association, likewise served to awaken the interest of the tyros of our art, and wile them onwards through those paths of science which it was the pleasing duty of the Orator afterwards to explore and develop: so fertile, indeed, were their themes, that the difficulty consisted, not so much in knowing what to select, as what to discard.

It is not thus, however, with the present speaker; for I must confess that I have experienced much difficulty in finding an appropriate theme wherewith to occupy your time. One subject certainly presented itself to my mind as being not altogether unsuitable either to the hour or the place, and also calculated to excite a lively interest. That subject was Veterinary Politics. Nevertheless, it required but little consideration to induce me at once to dismiss the idea from my mind; for I felt that, though I might awaken your interest and fix your attention, I could not do so either with pleasure to myself or profit to you: that, although I might open old sores afresh, I possessed not the balsam that would heal them: that, although I might probe the sinuses to the bottom, or, by means of the bistoury, lay them bare throughout their whole extent, yet my humble pharmacy supplied me with no medicament wherewith to neutralize the morbid virus, and prevent its further spreading.

The case appeared to be past all surgery, or, at least, all that I possessed: not, however, that I regard it as one entirely hopeless; for, to drop the instruments of the surgeon and assume the office of the physician, I would respectfully suggest a soothing system of treatment, such as opiates, fomentations, and cooling lotions, or rather their moral synchronisms, peace, good temper, and charity: these will, I feel assured, with the aid of time, effect that cure which the knife or the cautery will fail to accomplish. The day, I trust, will not be distant when our body corporate may successfully pass a rigid examination, and answer to the warranty with which we are all so familiar,

"Warranted sound, free from vice, and quiet in harness."

Another reason which induced me to decline this difficult and unsatisfactory topic was the recollection that the present dry Oration will be succeeded by the more agreeable banquet in another room; and I was unwilling to run the risk of spoiling the

appetites or marring the pleasure of any of my hearers, which possibly I might do were I freely to express my opinions on these political topics, opinions that may not be in unison with those of all my auditory. There being, then, neither honour nor profit to be obtained by plunging into the arena of political contention, it next occurred to me that a brief retrospect of veterinary science, a review of our past and present state, with a glance, perhaps, at the future, would be at once a legitimate, an interesting, and not an unprofitable occupancy of your time.

The subject presents itself to our notice under two aspects:—One may be termed the public, the other the private view;—one, the scientific, the other the pecuniary: one relates to the benefits our profession has rendered to the public, the other the remuneration we have received in return. I am sorry to say that a remarkable dissimilarity at once presents itself. If we view it in one aspect, we behold it bearing smiles, the harbingers of intellectual happiness, caused either by the past discoveries made in the science, or the anticipation of the brilliant future; but if we turn to the other, we see a brow contracted and depressed with thought, and features furrowed with care. The one appears to belong to a being of the highest order, in the habit of associating with the great and good; animated on the one hand with the purest love of science, and on the other with the pleasure derived from the relief of suffering quadrupeds. The other seems depressed by the study of the day-book and the ledger, smarts under the inflictions of petty annoyances, or seems haunted with the apparitions of quarter-days, rents, taxes, *et hoc genus omne*. Turn we first to the brighter side of our subject, and, by contrasting the state of veterinary science prior to the establishment of the Royal Veterinary College with that as it exists at the present day, let us endeavour to ascertain if any progress has been made, and whether the public have derived any benefit from us or not.

It appears to be an acknowledged fact, that the veterinary art was in a higher state of excellence in the classical ages of antiquity than during the many dark centuries which succeeded the destruction of the Roman empire. In proof of this, we have only to turn to the writings of veterinary authors of the one period and the other. The works of Xenophon and Virgil abound with excellent and sensible remarks both on the domestic management of

animals and the prevention and cure of their diseases; while the works of English writers prior to the last century are filled with the most absurd notions, nostrums, and nonsense. It is difficult, indeed, to imagine that the former were actually penned so many hundred years before the latter, or to reconcile oneself to the idea that such could be the retrograde movement of veterinary medicine. We find Virgil admirably instructing the Roman husbandmen on the treatment of cattle in his inimitable Georgics, and Xenophon developing the most sound and rational precepts on the management of horses' feet; while, if we take up almost any of our veterinary works prior to the last century—Markham's Masterpiece, to wit—we perceive the most cruel and torturing practices recommended in the way of operations, and the most incongruous and barbarous compounds prescribed as infallible specifics for disease. It seemed as if the god of folly had usurped the medical treatment of the horse from Æsculapius, or that Momus and Vulcan had combined their forces to persecute this unfortunate animal.

We must confess that it is principally to the professors and practitioners of our elder sister, Human Medicine, that we are indebted for reclaiming our art from the depth of degradation into which for centuries it had been plunged. When educated surgeons and men of science occupied the place of the barber-surgeons of old, the dissection of animals was found of the most essential service in the obtainment of anatomical and physiological knowledge; the more so, as there was a strong prejudice against the dissection of the human subject. A knowledge of anatomy and physiology naturally led to the consideration of pathology, and the diseases of animals (and those of the horse more particularly, he being the most valuable animal) became at once the study and pursuit of many practitioners of human medicine, and, in fact, their means of living and emolument. This was more especially the case in the metropolis, where the most valuable animals in the kingdom were congregated, and where wealth was at all times available to obtain the best advice for both man and animals. Prior, therefore, to the establishment of the Veterinary College, there were many persons in London, who, although they were not styled veterinary surgeons, yet practised the art with advantage to their employers and credit to themselves, and in the course of

their practice accumulated a great many truths which have been handed down to us, and on which, indeed, have been founded the more systematic hippopathology of the present day. The names of Gibson, Bracken, Bartlett, Snape, and others, occur familiarly to our recollections; nor should that of Strickland Freeman, and many other zealous amateurs, be omitted from the catalogue.

It is not for us to say what would have been the present state of veterinary science if the London college had never been established; it is enough for us to know that it immediately became the nucleus around which was soon collected some of the most active spirits, and the most learned and honoured of our calling. An immense amount of zeal, and energy, and life-blood—so to speak—was thrown into the profession, the effect of which was speedily evinced in the sending forth of a phalanx of enlightened practitioners, who, when distributed throughout the land, became, as it were, many light-houses of veterinary knowledge, serving, on the one hand, to warn the owners of horses of the dangers of ignorant pretenders, and, on the other, to display before them the high road of science, leading from the confines of death and disease to the goal of convalescence and recovery. Among the earlier pupils, all hail to the names of Blaine, Clark, Field, Percivall, and White, *cum multis aliis*, the majority of whom have now passed from off this mortal stage, and gone to "that bourne from whence no traveller returns."

As year succeeded year, a number of able practitioners (with some few exceptions) were distributed throughout the country, and the army soon became supplied with men of science, in the place of the old farriers, to whose tender mercies the British cavalry was previously consigned.

It is quite unnecessary for me to enter upon the history of the Veterinary College, or to state with whom it originated or by whom it was established; these are all matters of history, with which you are, doubtless, familiarly acquainted; and, indeed, you have been told it all this day by Professor Sewell, in his Introductory Address. You were then informed that M. St. Bel was the first Professor; and on his decease, which soon occurred, Messrs. Morecroft and Coleman became joint professors: the former gentleman (who was also the proprietor of the extensive practice so many years carried on by Mr. Field with such

splendid success) soon seceded from the College, and afterwards left this country for India, to fill an important appointment in the Hon. East India Company's service. The long occupancy of the Professor's chair by Mr. Coleman, extending over the space of half a century, and during the reign of four British sovereigns, throughout the greater portion of which time our present Senior Professor, the Patron of this Association, was associated with him, forms a long chapter in the history of veterinary science.

Inducted into his professorship in the spring-time of life, Mr. Coleman, who had already distinguished himself as a physiologist, brought to bear on his new pursuit no small amount of zeal, energy, and talent, which compensated for the absence of that practical knowledge of the horse which his previous studies had not enabled him to attain, and which he was ready to acknowledge. Though he had more to learn than some individuals, he had less to unlearn than many others; and although, at first, he might be more exposed to the commission of errors in practice, he yet had fewer prejudices to combat and to conquer. Then his ardent zeal after truth, his powers of inductive reasoning, his happy and forcible rhetorical abilities, rendered him at once an accomplished and a successful teacher. Thus continued our late respected Professor

> "'Till Time had made his temples bare,
> And chang'd to white his once dark hair:"

And, although for some years previous to his departure the effects of increasing years and infirmities were manifest to his friends and pupils, giving rise, as it nearly always does, to that dislike for change, that love of the past, and that unwillingness to move onwards with the advancing times—great faults, it is true, but such as we are almost as much disposed to honour for their association as we are to regret for their consequences;—notwithstanding this feature, however, the same fire which burnt up so brilliantly in youth, and shone so steadily throughout middle age, would occasionally, in spite of advancing years, burst forth with all its pristine vigour, like the last flashes of an expiring conflagration, or the light of a brilliant meteor ere it sinks below the horizon for ever.

I have lingered the longer on this pleasing theme, because it is very intimately connected with our subject; for it must be un-

questionably conceded, that to Professor Coleman the merit is due of reforming, considerably, the stable management of the horse, by pointing out the danger of heated and foul stables, and introducing an improved system of ventilation; the quick result of which, in large establishments, was to banish to a great extent diseases that were previously of daily occurrence, such as grease, glanders, farcy, ophthalmia, and others. These were almost uniformly present in the cavalry service, but are now comparatively of rare occurrence: this happy change, I believe, in a great degree, is due to the late Professor Coleman. Though warmth, in some form or other, is essential to a fine coat and good condition, as it is termed, of the horse, it was formerly carried to a ridiculous extent; every crevice in the window, or chink in the door, was completely closed, and the air of the stable necessarily became loaded with ammoniacal fumes, and poisoned by repeated respirations; the consequence of which was, that inflammatory diseases, and their fatal sequelæ, were far more frequent than they are at the present day.

Such was the state of things prior to the establishment of the Veterinary College, and such were some of the improvements and benefits it was the means of effecting. But are these all? Certainly not:—

> "These are our tales, but if you wish for more,
> Sir Joseph's wallet holdeth many a score."

How many hundreds, nay thousands, of unfortunate horses were blistered, and fired, and pegged, and rowelled, and otherwise needlessly persecuted, for what was erroneously supposed to be shoulder-lamenesses, but which we now well know to have been cases of navicular disease, I cannot tell. The consequence, as is frequently the case, was mistaken for the cause: the absorption of the muscles of the shoulder, the natural effect of their diminished employment, was supposed to be the cause of lameness, and judgment was passed accordingly. And even when in numerous cases the failure of the remedy had shewn the fallacy of the theory, and when the coffin-joint was empirically pronounced to be the seat of the mischief, oh! how much firing and blistering of the pasterns, and scoring of the hoof, have been performed, and performed in vain! It was the Veterinary College that produced a Turner to discover and develop the true seat of this hitherto mysterious ma-

lady, and a Sewell to point out a remedy when all other means had been practised without effect. We look upon the discovery of the navicular disease, and the operation of neurotomy, as two splendid triumphs of veterinary science. In recording their value, it is gratifying to know that their authors are still of us and among us. Long may they be so, is our universal aspiration; and distant, far distant may the day be, when they will have to occupy the niche of fame, which no true lover of our art will ever seek to deprive them of.

But happily the improvers of veterinary science are not confined to its earlier disciples; so numerous, however, are they now, that we must refrain from recording names, although I see many of them around me, and content ourselves with rapidly glancing at other improvements effected. We will say nothing of the old custom of swimming horses to cure sprains of the shoulders, real or supposed; or the still more sapient practice of putting a lame horse to hard work, in order to get him sound: let us also pass over the barbarous custom of applying a blister and the firing-iron on the seat of recent strains while still in a state of inflammation; and the custom of forcing into the horse's stomach cordials and other strong stimulants while fever is raging in the system:—these absurd practices are now, happily, banished from every well-regulated stable, although now and then they may be met with in the practice of country farriers, among other relics of a past age; a sort of archæological curiosity, interesting to the antiquarian, if they are not so beneficial to the unfortunate animals, nor so profitable to their owners.

In the same class of exploded errors must we place the "Sangrado" system, which, previously banished from human practice, established itself in equine pathology as a strong hold, and which was defended with a pertinacity worthy of a better cause against all the efforts of reason and common sense. Was a horse too fat and fleshy, bleed to reduce him; or was he too weak and poor, bleed in order to remove his bad blood, and assist the system with a cordial ball: an ingenious method of blowing hot and cold with the same breath, or knocking a man down in order to make him stand up the better. In short, whatever was the disease, whatever the state of the system or the symptoms manifested, blood-letting was the panacea for all grievances—the universal remedy.

A mighty and a salutary change has taken place; the lancet is now guided by reason, it being either withheld, or, when employed, it is used with moderation or with vigour, as the peculiarity of the case may demand. Nor must we ascribe the full credit of this change to the earlier pupils of the College; for although they discountenanced the absurdity of having recourse to blood-letting in opposite states of the system, and the preposterous custom of bleeding regularly at spring or fall, yet it must be confessed they took a too limited view of the effects of depletion, and often employed it too extensively and with too little discrimination. They did not properly distinguish between fever and inflammation, nor pay sufficient attention to the *peculiarities* of the pulse. The quickness of the pulse merely was too generally regarded as the principal guide to the repetition of bleeding, and from this erroneous principle being enforced, many and many a horse has been consigned prematurely to his last home. The best works on the science then recommended blood-letting in all cases having the semblance of inflammation; and not only this, but its repetition once, twice, or thrice, unless or until the patient got better. Alas! the disease and the remedy combined proved frequently too much for the unfortunate subject!

The practice of blood-letting on sound and rational principles, founded on its effects on the action of the heart and the nervous system, and regulated in great measure by its influence on the pulse, is, comparatively, a modern improvement, for the establishment of which living practitioners may fairly lay claim. Nor is it the only claim we have to the title of improvers, for, in the list of modern innovations, we may enumerate tenotomy, or the division of tendons, which we often practise not only with impunity but advantage: not, however, that we would hold forth to the younger pupils that they may always expect success from this operation, for there are some cases in which the suspensory ligaments are greatly contracted, as well as the flexor tendons; and others in which such extensive adhesions have taken place around the joints, as to preclude the possibility of a restoration of parts to their normal state. In the majority of cases, however, we may confidently augur benefit. Periosteotomy, too, is a modern and successful mode of treatment for splents and other exostoses; and the various success-

ful operations for hernia that have been recorded by Mr. Simonds also speak well for the onward progress of our art.

Nor must we confine our notice of improvement to the surgical department of our profession. Internal diseases have been studied throughout all their ramifications, and their nature, and the treatment necessary to be adopted, are now far better understood than they were. We may instance particularly the numerous affections of the chest, which are no longer jumbled together under one general term of inflammation of the lungs, and, as such, to be invariably treated on the principles of Dr. Sangrado. We now discriminate between diseases of the mucous and those of the serous membranes as causing a very considerable modification of our treatment; and we distinguish, with similar care, cases of congestion of the lungs from those of active inflammation of these organs. In almost all these cases, we lay it down as an axiom to avoid purgation, our treatment being based in this respect, as in many others, on a careful study of the idiosyncrasies of the horse.

The immense extent of surface presented by the intestines of the horse, being as large, if not larger, than that of any other animal, and exceeding that of the external surface of the body, will sufficiently explain the reason, if we consider for a moment the highly nervous and vascular structure of their coats, why very great danger attends superpurgation in him.

The diseases of the liver, and the heart too, are also far better understood than they were, and those of the former are treated, we think, with much greater success. The maladies of the heart, however, being too frequently connected with a structural alteration of this important organ, and which is often congenital, are, as might be anticipated, but rarely examples of successful treatment.

In the treatment of some internal diseases, we must not forget to notice the benefit we derive from the careful administration of the proto-chloride of mercury, and the employment both internally and externally of the various compounds of iodine. The use of this latter medicament admits of a very extensive application, and we have all, no doubt, satisfactorily witnessed the successful development of its peculiar properties. In our own practice we can call to mind cases of farcy, diseased lungs, roar-

ing, ringbone, and other morbid depositions, in which we have obtained very considerable advantage from its employment.

Our time will not permit us to enumerate the very many instances in which improvements in veterinary science have been effected; but I think we have said enough to shew that we have not stood still, and that we shall not pass away without having done some little good in our day and generation. In thus assisting the commonwealth of science, it is no more than our duty to acknowledge the very great assistance we have experienced from our veterinary literature. An humble author myself, it becomes not me to ask for praise for our labours; but I allude more particularly at present to our periodical works. True it is, that we have, in our dislike of mystery, spoken at times rather too undisguisedly on the treatment of our cases, and thus afforded weapons to those who are far from being our well-wishers, wherewith to do us injury and filch from us some portion of our humble means of emolument; but, are we to throw away the rose because it contains a thorn, or to undervalue the precious ore because it contains an alloy? Certainly not,—the good preponderates greatly over the evil; the benefit of our periodical works greatly exceeds their bane. We take it that one cause of the dormant state of veterinary knowledge, before the establishment of the College, was the want of opportunities amongst practitioners of communicating their ideas.

Among the host of farriers and others, there were, no doubt, *some* men of talent and ability; but the knowledge which long experience gave, for the most part, died with them, and their successors had again to go over the same ground, to discover the same truths, to observe the same facts, and to commit the same blunders. Are we to be surprised, therefore, at the result of such a state of things?

This, too, was the case, to a great extent, during the first quarter of a century, after the establishment of the Institution to which we belong; and thus various practitioners in different parts of the country were at the same time labouring assiduously to discover the same truths, which, if they had had the advantage of our present periodical literature, they would have been informed that the remarkable discoveries they were making were actually no discoveries after all.

We should support our Periodicals, therefore, if for no other

reason than that they cause the saving of much mental labour; an intellectual economy, so to speak, which secures to the individual the advantages of the many, and enables our mental powers to seek other and different paths for exploration.

If we may be allowed to make a suggestion to the Editors of our Periodicals, it is this;—they would render their works more useful to their readers, if they were to give, from time to time, an epitome of all the novelties in human medicine, surgery, and chemistry, and other branches of science connected with our art. With that ample access to books which they enjoy, and that leisure which they ought to possess, we, who have not these advantages, would be grateful to them to cull for us the *dulce et utile;* and, if I may be allowed the homely metaphor suggested by the anatomy of one of our patients, to digest in their capacious *rumen* the crude elements of nutrition, and, having chewed for us the cud of reflection, present to us the well ruminated morsel, which will thus furnish food for our mental sustenance.

I have thus adverted to the improvements in veterinary science; but to whom, let me ask, are they due? Who are our authors, our editors, and our lecturers? Who are our best and most scientific and successful practitioners? Do they spring from the anvil? Do they issue from the harness or the saddle-room? Are they transformed smiths, or metamorphosed grooms? or are they men of talent, respectability, and education?

I have spoken in terms of praise of Professor Coleman's labours, and I have an equal right to express censure when it is called for and deserved; and I must confess that I listened in days gone by, with feelings of sorrow, if not of disgust, when he used to express himself in terms of discouragement and disparagement of young men first studying human medicine, and then becoming veterinary surgeons. It appeared to me to be a species of moral suicide; a verdict which his own history, and that of some of his worthiest pupils, would confirm. Were not many, are not many still, members of the College of Surgeons?

The case appears to me to stand thus;—a Surgeon possesses two-thirds of the knowledge necessary for a Veterinary Surgeon to be acquainted with; but the remaining one-third is of such essential importance, that, without it, the former will be of no avail.

We must now approach the more unfavourable part of our subject, and endeavour to ascertain our condition as relates to the emolument we receive for our services, and the employment of our time and talents.

For some years after the establishment of the Veterinary College, the limited number of veterinary surgeons which could be sent from it were readily absorbed by the great metropolis and the larger cities and towns of the kingdom, to say nothing of the number that received commissions in the army. The certificated practitioners were now found to be so superior to the generality of farriers, that they readily secured a good amount of practice, without the necessity of any premium or good-will, as now-a-days. As their numbers, however, increased, the smaller towns became supplied, and practitioners trod somewhat on each others' heels, and the country farriers found some formidable rivals somewhat too near their thrones. The general expectation was, that, as that generation of farriers died away, they would be succeeded by veterinary surgeons; either by the sons of the better class of farriers becoming educated at the College (as is now occasionally the case), or that owners of horses would have had the sense to perceive the advantages derived from employing men of science.

But what is the fact?—The number of farriers, and that too of the most ignorant kind, at the present day, is as great, or greater, than ever: the consequence of which is, that, in a large number of small towns, a veterinary surgeon cannot obtain a sufficient amount of practice to support himself with respectability; and it is frequently the case that the unfortunate Vet., after spending a good portion of his patrimony in a vain struggle, relinquishes the contest, and seeks some happier and more fortunate spot.

Now this very fact (and it is one of common occurrence) is calculated to prejudice us as a body, and to give us the character of an unsettled class of men; for it is often the case that a young practitioner is seriously injured by the supposed roaming disposition of his predecessor, It is not so, however, with the farrier; if he cannot earn £200 a-year, he can live on £100, and, if this be above his earnings, he can subsist upon £50 per annum. If he cannot afford to keep a horse, he can perambulate his rounds on a forest pony; or, if this be too expensive, he has an acquisition at

hand;—with his inseparable companion the twitch, and his insignia of office the drenching-horn, projecting from his coat pocket, he walks abroad, "armed at all points," on his kill or cure expedition. Thus it is that he acquires a sort of indigenous character, and is enabled to boast at the pot-house, his favourite resort, of "seeing out" half a dozen veterinary surgeons.

Now, what is the general history of these men? What is the species of hereditary knowledge which they possess, and how did they acquire it? for we know well, that, in proportion to the ignorance and want of intelligence they exhibit on every other subject, are they frequently supposed to be learned on the horse. The majority of the descendants of the more respectable class of farriers have long since become merged into our body; and if each of us were to furnish the information which our own opportunities have enabled us to obtain, the result will be to shew that nearly the whole of these men are either old grooms, coachmen, horse-keepers, or smiths, or the sons of such men. Our own experience enables us to substantiate this assertion; and within a range of a few miles in our own locality we can point out No. 1, an old post-boy; No. 2, a retired groom; No. 3, a coach horse-keeper; and, No. 4, the son of a gentleman's coachman.

How can these men acquire any *medical* knowledge? Have they any? The groom, perhaps, has had the care of half a dozen or a dozen horses during as many years. Now we maintain, that, according to the usual average, this man could not have seen above a single case of one-half the ordinary diseases to which the horse is liable; and yet, whilst his ignorance is freely acknowledged, he is regarded as a man of great practice and experience. Why, I maintain that a veterinary surgeon in three months' practice, or an apprentice of one year's standing, or a diligent collegian of one session, sees more of the diseases of the horse than a groom does in his whole lifetime. Yet it is with this limited experience, and the recipes extracted from some old works, that he ventures to practise on the diseases of the horse and the credulity of his employers.

Doubtlessly all of us could recount anecdotes of the sayings and doings of such men. Not to mention the farrier related in *The Veterinarian*, who advised bleeding in a case in which the vital spark was extinct, we remember one who, whenever he had a

case of illness in a cow, wrote a note to a neighbouring druggist as follows,—"*Pleas, Zur, to send me a drink for a cow.*" Another, on being asked the nature of a splent, said, "It is a rottenness of the bone, it coming clean from the marrow, and firing is the only thing to kill it." A third, employed for cases of colic, gave Daffy's elixir and pepper, and explained their action thus;—"the pepper is to break the wind, and the Daffy's to drive it out." Several, to our own knowledge, have prophesied the recovery of an animal within half an hour of its death; so ignorant were they of the symptoms of disease and the harbingers of dissolution.

But I must not detain you, gentlemen, on this unprofitable theme. It is enough to know that these men, and such as these, considerably lessen the practice of hundreds of veterinary surgeons.

Another source of evil to us is the custom of many gentlemen allowing their grooms to purchase drugs of the druggist, and to treat their horses themselves; only sending for the veterinary surgeon in cases of great difficulty and danger, and which, from delay, have too frequently become hopeless. We thank them not for such cases; for, if our practice consisted entirely of them, why double the sum which we are in the habit of charging would not half repay us for the trouble, care, anxiety, and often the risk of the loss of reputation which we experience in treating such cases.

I am not naturally a grumbler, but I think I have furnished you with a pretty considerable chapter of woes and grievances. The discovery of the cause of a disease is said to be half the cure: I wish it was the case in the present instance, so that in searching for the cause we might obtain the remedy. Pardon me for expressing my opinion, that, for many of the evils to which I have alluded, we ourselves are much to blame:—we are to blame for not having long since associated more cordially among ourselves, and established a code of rules by which our charges should be regulated. I do not mean the actual sums to be made, nor that all practitioners should charge alike, but the system which should guide us in our charges. For what is it that we require to be compensated for in attendance on our patients? Is it not for our time, our skill, and our professional education? Instead of which, in the majority of cases, we charge nothing for these all-important and invaluable items, but a considerable sum for the medicines

that are supplied: so that, in a case requiring much attention and but little medicine, we injure ourselves, and where much of the latter and little of the former is demanded, we do an injustice to our employer. What is the consequence of this? Why, the owners of horses, seeing the great difference between our charges and those of the druggist, for physic and other medicines, get supplied from the latter whenever the personal attention of the veterinary surgeon is not required. Far better would it have been for us, if, long ago, we had established the practice of charging a fair sum for our professional services, and the druggist's usual charge for medicines; we should have then retained a considerable amount of business, of which we have now been robbed.

The best plan to obviate these difficulties is, in my opinion, whenever it is practicable, to charge a stipulated sum per annum for both medicines and professional services. Such a plan, I am fully persuaded, while it is advantageous to the owner, is far preferable to the veterinary surgeon. It effects that community of interest which it is so desirable to establish, for it becomes the interest of either party to preserve the health of the stud.

Gentlemen, whilst holding the Censor's rod which I have assumed, I cannot pass over silently the faults of our Alma Mater, at whose door we have cause to lay some portion of our grievances. She has been to blame for having in antecedent years sent forth a number of imperfectly educated or unfledged pupils. Commanding them to fly ere the down had left their wings, we wonder not that so many should have fallen to the ground. Beset with difficulties of no ordinary kind; attacked by enemies in the shape of grooms, coachmen, and farriers, who wielded weapons a man of honour could not employ, we cannot be surprised that so many should have relinquished the contest, and never again have entered the lists.

Blame, likewise, is justly due to the same respected lady for having, in days gone by, admitted within her walls some who never ought to have entered it; men who could never reflect credit on the College, nor receive from her hands those honours which she had to bestow without fouling the source which supplied them. We confess it with sorrow, that there have been amongst us those who have made the name of veterinary surgeon to stink in the nostrils of their employers. But I congratulate the younger part

of my audience on their now living and studying under happier auspices. With ordinary attention and industry there is no fear but that you (with the assistance of your various and excellent and talented teachers) will be well grounded in every branch of that arduous profession which you have selected as your vocation through life.

We will now bid adieu to the past, dismiss the present, and occupy the small portion of your time on which I can venture to trespass, by diving into the future. We will not blink the all-important question, What are the future prospects of our art, and its practitioners? We must not shut our eyes to the fact that we live in a moving age, an age in which great changes have already taken place, and greater still are yet in contemplation. Among all these none concerns us more than the introduction of railways. It would be unworthy of us, as men of science, to stand still with folded arms, and, bewailing the bitter iron times, repine at the formation of railways; for, while we are railing at the rails, the rails are nevertheless being laid down! Every part of the kingdom will shortly be intersected with railways; nay, for aught we know, the very globe itself will soon be encompassed with iron, and traversed with the speed of the whirlwind, through the all-conquering agency of steam. The effect, hitherto, has been to diminish the number of waggon and coach horses, though this has been partly made up by an increased demand for omnibus and cab horses. When, however, the numerous branch railways now in progress are completed, a road waggon will become a curiosity, and a stage-coach a "*rara avis in terris*:" commercial travellers will drop their gigs and tits, and merchants will visit their markets by the aid of a smoking Venus or a puffing Pluto, instead of on the back or behind a Pegasus. That such may be the case no one will deny, and that it will affect our interest it is idle to doubt.

Notwithstanding this, however, let NIL DESPERANDUM be our motto. Horses will be used in as great or greater number than ever for all the purposes of pleasure, for the turf, the hunting field, and the park; and the breed of horses, depend upon it, will become more valuable. It will no longer, or rather less than ever, answer the purpose of farmers to breed the miserable large-headed, flat-sided, low-shouldered mongrels, which are now so frequently reared. There will be no demand for them—no purpose to which they can be applied; neither will there be any demand for the nu-

merous breeds which now run before the bars of a stage coach as leaders, or rather which used to do so. More attention must be paid to breeding; for superior horses will be as much in request as ever, and for all inferior ones there will be no market.

Well then, gentlemen, if I am right, we shall not be so great losers by this change as may at first sight appear. We well know that it is valuable horses which bring grist to our mill. If a gentleman gives £100 for a horse, it will answer his purpose to have him examined by a veterinary surgeon when he purchases him, and to seek the best advice when he is attacked with illness; whilst the low priced animal is not thought worth sending to a veterinary surgeon for treatment: his owner will take the chance of his recovery—trust to nature, or, worse still, to an ignorant neighbouring farrier, who is thought to be *clever enough* for such an animal; as if, forsooth, the danger of a disease depended on the value of the patient. So, likewise, with agricultural stock: If a farmer has a team worth £30 each, they are, in his opinion, worth curing if ill, even at some expense; but if their value, as often is the case, be less than £10 a-head, he begrudges a few shillings to get them well when they are diseased. He will, by and by, find out that it will pay him better to keep two good horses than three bad ones; and when he has found out this, he will also make the discovery that it is advantageous to employ a scientific practitioner.

With the prospect, then, before us of the diminution of our *horse* patients, we must make a bold stand for our *cattle* practice. This will be greatly facilitated by the improvement and increased value of stock, rendering them more worthy of attention and care. Some time since, when Cattle Insurance Societies were first broached, I was consulted respecting their rules, and I expressed myself strongly on two points:—one was, that there should be no exceptions as to particular diseases; and the other, that the insurance fee, whatever it may be, should comprehend the proper medical attendance on the insured cases by *certificated veterinary surgeons*, who should be appointed and paid by the society. Both suggestions were objected to, but the necessity of the first has since been acknowledged, and is now adopted. But what of the second? In return for the valuable statistical information which veterinary surgeons have afforded to the Society, principally through *The Veterinarian*, they have received——what? why, that diseased

cattle are to be treated, at the option of the owner, by his usual attendant!

Now, an image built with iron and clay, it is well known, can never stand. A society professedly in advance of the age, yet pandering to the worst prejudices of farmers; such a compound of wisdom and folly cannot prosper. Veterinary surgeons would gladly have joined issue with these societies, and attended the cattle on such terms as would have been advantageous to all parties concerned; but they cannot consent to be sacrificed either to the ignorance of the insured on the one hand, or the mistaken worship of Moloch, or the want of moral courage of the insurers, on the other.

I feel, gentlemen, that I have been somewhat led away by my subject, and have trespassed on your time. I thank you for the kindness with which you have listened to me; and have the pleasure of announcing that the next Annual Oration will be delivered by Mr. E. Mayhew, the Demonstrator of the College.

Dinner was now announced; and an excellent repast partaken of, at which Mr. W. C. Spooner presided, who displayed considerable *tact* as the Chairman, and, by his judicious and well-selected observations, maintained the conviviality of the meeting to a late hour.

CONSULTATIONS.

Case of Eczema in the Horse.

Letter to Professor Spooner.

Dear Sir, *Bishop's Castle, Feb. 15th,* 1845.

The elevated position which you occupy in the veterinary profession, and the uniformly kind consideration which I have so frequently received at your hands, have induced me to submit to your notice a rather singular case of cutaneous disease at present under my care, in the hope that your more extensive experience will enable you to enlighten me on its nature and pro-

bable course; for I am not ashamed to confess myself, at present, somewhat puzzled as to the best mode of procedure.

For want of a better name, I have designated the disease in question "eczema;" and I think you will agree with me, that, although this term is not sufficiently expressive of so serious an affection, it is perhaps the best that can be employed under the circumstances. Veterinary nosology is seriously defective, and this is certainly not the only disease without a name that I have been called on to treat since I commenced practice.

My patient is a very valuable carriage-horse, about eleven years old; his colour dark bay without white, standing about sixteen hands high. He is a great favourite with his owner, and has been subject to slight periodical attacks of eruptions on the skin for the last two or three years. By a reference to my case book, I find that he first came under my care in the early part of January last year, at which time he was suffering from an acute attack of pneumonia. Under the usual course of treatment, however, he soon recovered; and I heard no more of him until about the end of the following March, when I was called upon to contend with the singular affection under a highly exacerbated state of which he is at present labouring. The disease then first manifested itself by slight circumscribed, and mostly circular, patches of swelling, appearing at irregular intervals on various parts of the body, attended with some degree of tenderness, but little or no pruritus that could be detected; and from all of which, about twenty or thirty hours after their appearance, a discharge, very much resembling serum, but highly acrid in its character, was perceptible. His appetite was unimpaired, his pulse and evacuations natural; and, in short, the animal seemed, in every other respect, to be in the enjoyment of robust health. He was treated by venesection and a dose of purgative medicine to commence with; and the sores were well washed three or four times a-day with a dilute solution of the bichloride of mercury in hydrochloric acid. No beneficial effect, however, following this, the treatment was varied by the frequent exhibition of antimonial alteratives, and the substitution of the sol. cupri sulph. for the mercurial lotion; and, in the course of a few weeks, all traces of the disease had left him, and from which time, up to within the last month, he has continued perfectly well.

As the early symptoms, on the present occasion, in nowise seemed to differ from those already described, he was subjected to precisely the same treatment, but with widely different results, as will shortly be seen. Each succeeding eruption was more extensive than that which preceded it, and the discharge was more copious and more acrid in quality, excoriating the skin and destroying the hair wherever it came in contact with the surface of the body; so that, after it had healed, which it did in the course of a few days (whether spontaneously, or in consequence of the applications employed, I cannot say), a large patch remained entirely denuded of hair, thus producing fearful disfigurement, and rendering him quite unfit for use. I now determined on another mode of treatment: I ordered him to be well washed every day with a weak solution of sulphuret of potass in warm water, taking care to rub him well with flannel rubbers until perfectly dry, and gave him drachm doses of calomel night and morning, until slight symptoms of ptyalism supervened; about which time there was a considerable amelioration in the symptoms, and I began to congratulate myself on having at last got the better of my singular enemy.

But the victory was not to be so easily accomplished. Not a little to my surprise, the disease soon again presented itself, and in a form ten times worse than before. The swellings are on their appearance much more extensive—the depilation following each is still greater—and, now, for the first time, I observe there is some pruritus. Still, however, his general health is good; and, but for his great disfigurement, I do believe he is as fit for work as ever he was in his life.

What then is now to be done? If left to himself, I verily believe he will not have a hair left on his body in another fortnight; and yet I am completely at a loss how to proceed. I have tried internally alteratives, stimulants, mild mercurials, and mercury to ptyalism; and, externally, I have made use of every application that offered itself with the smallest likelihood of effecting relief; yet all seem to be utterly inefficacious. I shall wait anxiously for your reply.

I am, &c.

Your's truly,

W. Litt.

C. Spooner, Esq., R.V.C.

LETTER *from Professor* SPOONER.

Dear Sir, *Royal Veterinary College, Feb.* 21, 1845.

Having been professionally engaged in the country during the past three days, I was only put in possession of your letter of the 15th inst. last evening; therefore you will perceive the delay in my answer has been unavoidable.

The case you have quoted is truly puzzling in its character, and the cure difficult and tedious in its progress; and it is fortunate for the reputation of the veterinary surgeon that it is one of somewhat rare occurrence. I have however, in the course of my experience, had occasion to contend with some few cases answering to the description you have so ably given me of the one now under your care.

I think you have very correctly designated the disease "eczema." At any rate, it is more like that affection in the human subject than any other.

That the animal in question is constitutionally predisposed to periodical attacks of the malady, there can be no doubt; and, as I have observed in every case which has fallen under my notice, each succeeding attack embraces a larger surface of skin, and becomes more obstinate in yielding to treatment. I look upon it as rather the result of debility of the capillaries of the skin, and a consequent misappropriation of the blood, than as being truly of an inflammatory character; and experience has proved to me that all depletive means, beyond that of well unloading the bowels, in the first instance, by a full does of aloes and calomel, are calculated rather to increase than diminish the symptoms; and that calomel, if given to produce severe ptyalism, produces general and long continued depilation.—I have generally found that a tonic-stimulating mode of treatment has been attended with the greatest success. Thus, I would let the patient have good nutritious food, frequently given, but in small quantities at a time, long continued gentle exercise, and pay marked attention to cleanliness. As medicaments I would give ferri sulph. ʒij ad ʒiij, cum pulv. rad. gentianæ ʒiij daily, combined with from ʒss to ʒj of aloes, as occasion may require. An occasional mild diuretic may also, I think, be given with advantage, and likewise from ʒss to ʒj of ant. pot.

tart. dissolved in the water the animal drinks. With regard to external applicants, I would advise the trial of solut. ferri sulph., in the proportion of about ʒss to a pint of water; and the way I have used it has been, first, to well wash the horse with tepid water, using a small portion of brown soap; then rub him all over with flannel rubbers till nearly dry, subsequently apply the lotion, and afterwards clothe him well, and give him gentle exercise until quite dry.

I shall be glad to learn the result of the case,

Believe me,

Very truly your's,

Mr. W. Litt. CHARLES SPOONER.

Second Letter to Professor SPOONER.

Dear Sir, *Bishop's Castle, Nov.* 22, 1845.

In accordance with your request, I beg to furnish you with the result of the case of eczematous affection in the horse about which I consulted you some nine or ten months ago, having now had sufficient time to ascertain the efficacy of the treatment.

You will, doubtless, be pleased to learn that the case terminated in a perfect cure; as also that my treatment, in effecting so desirable a result, was, as nearly as possible, the same as recommended in your letter of the 21st February, for which I am, indeed, much your debtor. Adopting at once your peculiar view of the disease, as a consequence of debile action of the extreme cutaneous vessels, I, of course, set about to act upon it without delay, and, as far as external applications were concerned, without the slightest deviation from your excellent advice. Internally, however, I administered neither the tartar emetic nor the small doses of aloes. Afraid of the nauseating effects of both, I trusted to warm clothing to do the work of the one, and to an occasional malt mash for the laxative effects of the other. His medicine, therefore, consisted simply of an ounce and a half of the ordinary tonic mass of the College every morning, with an occasional diuretic over night; and, in less than a week after the commencement of this treatment, there was a decided improvement in our patient—in fact, a total cessa-

tion of the appearance of fresh eruptions, and evidently a greater disposition in the old ones to take on the healing process. That abnormal action, which but a short time before had threatened such alarming consequences, was evidently now under controul, and it seemed only necessary to persevere in our efforts to effect its entire removal. And so it was:—within a month the animal was perfectly well, with the exception of a few bare patches on various parts of his body, on all of which, however, the hair was fast growing.

The appearance presented by him, after recovery was complete, was exceedingly curious. The new hair, being much darker in colour than his old clipped winter coat, made him look more like a spotted hybrid than an ordinary domestic horse, and attracted the attention of all who happened to see him. After moulting, however, it is scarcely necessary to remark that this appearance was no longer observable.

I must not forget to tell you, that, about a month ago, he was placed under my care once more, with a large edematous swelling under the abdomen. Here, again, a few tonic balls effected a speedy cure;—another triumphant proof, I think, of the correctness of your theory of the nature of his malady.

You are at liberty to make what use you like of this correspondence: its publication may not be without both interest and profit to veterinary readers.

I am, &c.,

Your's very truly,

W. LITT.

C. Spooner, Esq., R.V.C.

CASES OF PARASITES INFESTING THE BRAINS AND INTESTINES OF LAMBS.

Dear Sirs, *St. Alban's, Sept.* 22, 1845.

I HAVE sent two lambs for your examination and opinion as to the causes in operation productive of the maladies they are labouring under. They are taken from out a flock of one hundred and eighty, all of which were dipped in a solution made of arsenic, soft soap, and water: the strength is not exactly known, but it is sup-

posed to have contained 1 lb. of each of the former ingredients to fifty gallons of water. They were immersed about two months since, and were observed soon after not to "get on," although they were well kept. In about from three to four weeks after the dipping, many began to die. Some were attacked with an affection of the brain; others with violent diarrhœa, accompanied with protrusion of the rectum, which soon carried them off. The owner has lost between twenty and thirty, and has about that number affected now. Those that are attacked in the head, I think will all die; but those labouring under diarrhœa, we find that a dose of linseed oil, combined with opium, relieve; nevertheless, they do not thrive; in fact, the whole flock looks unhealthy, although every attention is paid to them. They have been changed to every part of the farm, (about five hundred acres), but neither change of situation nor food seems to do them any good. I should have told you that I examined three that died. In one that was "giddy," I found a large hydatid, containing from three to four ounces of water, pressing on both hemispheres of the cerebrum: all the other viscera were healthy. The brains of the others were perfectly normal; but the small intestines were highly inflamed, particularly the mucous lining; the stomachs and contents of the chest were natural; but one of the kidneys was four times its ordinary size, and gorged with blood. These two died of diarrhœa.

I shall feel greatly obliged by your opinion as to the cause of this disease. If it be the solution that they were dipped in, as is generally supposed here, it is strange they are not all affected alike: such, however, is not the case. The disease seems to divide itself, for as many die from the affection of the head as of the bowels.

I remain, my dear Sirs,

Truly yours,

F. R. Silvester.

[We had no hesitation in expressing our firm conviction that the arsenious acid in the solution had nothing whatever to do with the production of the diseases under which the lambs laboured; but that they were referrible to the state of the weather and herbage, and to the saturation of the wool with moisture. Had the animals been

exercised subsequently, in all probability much of the evil would have been prevented. Our opinion receives confirmation from the nature of the diseases themselves. Had but one malady attacked the flock, we might have suspected the arsenic to have been the cause; but some of the lambs laboured under spontaneous and protracted diarrhœa, and others died of an affection of the brain. It is true that both these diseases were produced by parasites, and this tends still further to establish the correctness of our views as to the causes in operation.

By some it has been thought that the arsenical solution employed was too strong; but we have been in the habit of using it even stronger, in the proportion of ½ lb. of arsenic to 12 gallons of water for a score of sheep, and have never seen or heard of any ill consequences following.

The first lamb sent by Mr. Silvester laboured under much debility, quickly fell away in condition, and shewed symptoms indicative of the existence of an hydatid on the brain. After death an hydatid, the *cœnurus cerebralis*, was found situated in the substance of the cerebellum; an unusual location, it is true, although there is no reason why hydatids should not be found there as well as elsewhere. The other lamb may be said to have been in a state of extreme emaciation on its arrival; profuse diarrhœa was present, and nature soon gave up the contest. On a post-mortem examination, within the abdominal cavity much fluid was found effused, but no traces of active inflammation were recognizable, the stomachs and intestines externally presenting a normal condition: the pelvic region and its organs also appeared healthy. On laying open the alimentary canal, commencing with the stomachs, the intestines here and there shewed patches of inflammation, but more especially were the colon and the cæcum implicated. The ingesta was in a fluid state, and the mucous lining membrane of these intestines much diseased.

On endeavouring to ascertain the reason why the mucous surface had thus become especially affected, myriads of worms were found embedded in it. These were subsequently ascertained to be the *trichocephalus affinis*. Some of them having been forwarded to Mr. Erasmus Wilson, he, with his usual kindness, has microscopically examined them, and given to us a description of their general anatomy, illustrated by drawings [*see Engraving*]; and although

there is an elaborate minuteness in the description given by him, and which we have the gratification to append, yet there exists no exaggeration whatever.

The employment of much thought and reasoning is requisite to explain the manner in which the remote causes alluded to gave rise to the generation of these parasites, both in the brain and the intestinal canal, while they call forth the employment of abler pens than ours to settle this debateable question. We will, therefore, content ourselves by remarking, that these cases shew the value of examinations after death; for, had they not been instituted, it is more than probable that to the arsenious acid would have been attributed all the effects produced.]

On the Anatomy of Trichocephalus Affinis.

By Erasmus Wilson, *F.R.S.*

The pathology of entozoic disease is a subject with which we are, at present, very imperfectly acquainted: it is one of peculiar interest, and its elucidation will undoubtedly lead to the discovery of new facts in relation to zoogeny, and at the same time to results of the utmost importance in the prevention and treatment of many serious and fatal diseases. During the past autumn I was shewn by Mr. Simonds a lamb, one out of many similarly affected, labouring under the effects of pressure on the brain from the presence of cœnurus cerebralis; and, after its death, the entozoon which forms the subject of the present paper was found in considerable numbers in the large intestine. The occurrence of entozoa in different parts of the body at the same time is a frequent phenomenon among the lower animals, and far from being rare in man; and is due, I am inclined to believe, to a chemical change in the condition of the fluids of the body dependent on disordered nutrition. What that precise change is, or how it may be annulled, are questions that close and attentive investigation can alone determine with certainty. The *predisposing causes* are more appreciable, and it is to them that our present means of treatment chiefly tend. Moisture occupies a principal place among these causes, and cold in combination with moisture a scarcely in-

ferior position. Moisture favours the decomposition of the animal fluids, and their re-composition in the form of animal organisms of the lowest kind. Life is the natural obstacle to this change, and any causes which contribute to lessen the powers of life are *remote causes* of the same phenomenon. The application of these principles I leave to my hearers, and proceed at once to the subject matter of my present paper; a humble, but I trust not unacceptable, contribution to the natural history of entozoa.

The cæcum of the lamb above referred to was infested with numerous small white worms, which upon examination proved to be members of the genus trichocephalus (τριξ, a hair; κεφαλη, a head). The trichocephalus is the third genus of the order nematoidea (the round worms) of Rudolphi, and is distinguished by the following characters :—

Body, round, elastic, the anterior part being capillary, and for the most part very long.

Mouth, orbicular and small.

Male genital organ, a thread-like style protruded from a tubular sheath near the extremity of the tail, the tubular sheath being in most instances prominent.

Of these animals one species is met with not uncommonly in the human subject, being found usually in the cæcum and large intestine, and less frequently in the small. This species, first noticed by Morgagni and afterwards described by Rœderer, is remarkable for the extraordinary disparity of size, both as relates to length and bulk, between its anterior or cephalic portion and the posterior or ventral part, and hence has been termed *trichocephalus dispar*.

The species found in the sheep and ox so nearly resembles the parasite of man, as to have been denominated, from its affinity of appearance, *trichocephalus affinis*. Rudolphi defines its characters in the following terms :—

Capillary part of great length.

Mouth orbicular.

Body of the male inclined to a spiral form; that of the female straighter.

Comparing the trichocephalus affinis with tricocephalus dispar, Rudolphi observes, that the former is a little longer than the latter, particularly the capillary portion. The colour of the body is more

brightly white (he uses the term "candidus" when speaking of the former, and "albidus" when referring to the latter) and less curled; and the male organ is less apparent, being a short, slender, and obtuse tubulus, out of which the style is not protruded. This latter observation I shall have occasion to shew is not correct.

The trichocephalus dispar, according to the same author, is one-and-a-half or two inches long, the capillary part engrossing two-thirds of its entire length. This portion is white, pellucid, reddish or brownish; the body white, and the male a little smaller than the female.

The first notice of the trichocephalus affinis is given by Abildgaard, in the catalogue of the Viborg Veterinary Museum. I will now proceed to describe it as it presented itself to my examination in the case under consideration.

The mucous membrane of the cæcum was thicker than natural, and coated with a large quantity of transparent mucus, apparently thrown out by the mucous membrane under the influence of irritation caused by the worms. Embedded in the superficial stratum of the mucus, in considerable numbers, were seen the brightly white bodies of the trichocephali; and the differences of form which they presented at once distinguished their sex, the males being recognised by their elegant spiral coil, and the females by their simple falciform curve (Fig. 1). Another distinction between the sexes is made apparent as soon as slight decomposition has commenced within them: the ova then become dark-coloured, and give to the body of the female a deep brown or blackish hue. The capillary portion of the animal was not visible even when the mucus was washed away, being embedded among the rugæ of the mucous membrane, and lying in a very tortuous position in contact with that tissue. It is not until we draw forth the worm that the extraordinary length of its capillary part becomes apparent; and at the conclusion of this operation we are made aware of the insertion of its head into the substance of the membrane by a momentary resistance to the tractive force.

The trichocephalus affinis measures between two and three inches in length, and in this respect the difference between the sexes is so slight as to amount to almost nothing. There exists, however, a greater degree of disproportion between the sexes in the relative length of the body to the capillary part. In the fe-

male, the body measures one-fourth the entire length of the animal; while in the male the same measurement is a little less than one-third. The body of the male is also a little more slender than that of the female. I subjoin the results of the measurements of fourteen specimens, seven males and seven females, to give the subject, trifling as it may appear to those inexperienced in the rigorous precision necessary to scientific pursuits, the advantage of the "numerical method."

Of these fourteen specimens the longest female measured 2 inches 9 lines; the longest male 2 inches 10½ lines; and the shortest specimens of both 2 inches. This measurement, it will be seen, is in favour of the greater length of the male than that of the female, but the aggregate of length of the entire seven was in favour of the female by a little more than half an inch; the length of the seven females being 17 inches, and that of the same number of males 16 inches 5 lines.

The length of the body in the two sexes was as follows:—

	Longest.		*Shortest.*		*Aggregate.*	
	Inches.	Lines.	Inches.	Lines.	Inches.	Lines.
Female	0	9	0	6	4	1
Male	0	10½	0	7	5	0½

And the length of the capillary portion:—

	Longest.		*Shortest.*		*Aggregate.*	
	Inches.	Lines.	Inches.	Lines.	Inches.	Lines.
Female	2	0	1	6	12	0½
Male	2	0	1	5	11	3½

In diameter, the trichocephalus measured near the extremity of the head $\frac{1}{10}$ of a line. From this point the capillary portion gradually enlarges until it dilates into the more ample body, and, near its junction with the latter, measures $\frac{1}{12}$ of a line. The body near its anterior part, namely, in the situation of the vulva of the female, measures $\frac{1}{8}$ of a line; it then gradually swells to its middle, where it measures from $\frac{1}{3}$ to $\frac{1}{2}$ a line, and then subsides to the extremity of the animal, where it forms a blunt and rounded end.

The capillary portion of the trichocephalus is very much convoluted and bent. The body, in the female, forms a simple falciform curve, the concavity of the curve corresponding with the ventral aspect of the animal, as we find indicated by the position

of the vulva and anus along its line. In the male there exists a primary curve of the entire body, of a semilunar form, to which is added a spiral curve of its inferior end, consisting of one complete turn and a half. Rudolphi, and other anatomists after him, have affirmed that the turns of the spiral curve of the body of the trichocephalus are ranged on the same plane; but this is not the fact: there is always a slight obliquity of the curve, and in some instances its figure is completely conical.

The Integument is moderately thick, brightly white in the body, duller in the capillary portion, and beautifully annulated, the annuli being flat and imbricated. Beneath the annuli is a transverse layer of muscular fibres of moderate thickness, and beneath the latter a strongly-marked layer of longitudinal fibres.

The Head of the animal (Figs. 4, 5) is conical and obtusely pointed, and terminated by a quadrilabiate orbicular mouth, each of the lips being armed by two short conical hooks, which are curved inwards towards the aperture of the mouth. The lips are moved by means of a strong apparatus of longitudinal muscles. Immediately below the point of the head the integument is raised from the surface beneath, and more or less distended, so as to constitute a prominent transparent collar. In some of the specimens which I examined this collar was absent, but in the greater number it was present, either partially or completely expanded. Its purpose I conceive to be, to fix the head in its position when buried in the mucous membrane in search of food.

The Alimentary Canal is a simple straight tube, passing directly from the mouth to the anus. In the capillary portion of the animal it is at first a simple cylindrical tube, but at a short distance from the head becomes sacculated, and further onwards presents a series of contractions and expansions which give it the appearance of a string of beads. The dilatations are angular in form, and retained in their position by a number of delicate ligamentous bands, which stretch from their outer wall to the inner surface of the integument. Between the alimentary canal and the integument, in the capillary portion of the animal, and occupying, in extent, about its middle third, I observed a layer of minute transparent granules closely packed together, and having a tesselated arrangement. This tesselated layer (Fig. 6) embraced about half the circum-

ference of the creature, and diminished in breadth towards each extremity. I am at a loss to comprehend the nature of this layer: at first sight, I was inclined to regard it as an assemblage of fat cells; but its occurrence in a particular situation, and the close and regular aggregation of the granules,—moreover, their nucleated character, led me to believe in its being a glandular organ connected in function with this portion of the alimentary canal.

The sacculated character of the first portion of the alimentary canal, and the strongly-marked bands which tie the dilatations to the inner surface of the integument, constitute together a well-defined line of demarcation between the capillary portion and the cavity of the body of the animal. Immediately beyond the last sacculus the canal contracts, and is received into the dilated head of the abdominal intestine, forming, in this situation, a muscular valve. The abdominal intestine then pursues its course along the left side and inferior border of the cavity of the abdomen to the anus. This intestine is thick, and its lining membrane is studded with dark rugæ, which remind us of the rugous appearance of the gizzard of a bird. They are largest and most prominent in the middle third of its extent, and are arranged in longitudinal lines. At a short distance from the extremity of the tail the intestine suddenly contracts and becomes transparent, and is then continued in a straight line to the anus. This contracted and transparent terminal portion of the intestine corresponds with the rectum. The anus is situated upon the lower or curved border of the animal, close to its blunt termination. It is an elliptical opening of moderate size, closed by a strong sphincter muscle.

As regards the analogies of the parts of the alimentary canal now described:—I am inclined to consider the portion contained in the capillary division of the animal as the *œsophagus* and *stomach*, the former being the cylindrical portion of the tube, and the latter the sacculated part, although there is no marked division between them. The constricted aperture by which the sacculated portion terminates is the *pylorus*, and the abdominal division of the canal the *intestine*. The latter, from the presence of the hard-looking tuberculated rugæ above referred to, seems, at first sight, to be intended as a triturating organ, and in this respect to be analogous to a stomach, but that is obviously not the fact. Nevertheless, I

am at a loss to understand the purpose of such an apparatus at so great a distance from the mouth of the animal; and, moreover, posteriorly to a powerful sphincter valve, the pylorus.

In the next place, I have to refer to a point in the organisation of the animal, that confirms my opinion of the nature of the abdominal portion of the alimentary canal. There are, connected with the dilated head of the intestine, and opening into it, two pyriform cæcal sacs, the large extremity of the sacs being directed forwards. There is some difference between the cæca in point of appearance, one having a light yellowish brown tint, like that of the stomach, the other presenting a deeper brown. They are the representatives of a liver or pancreas, probably of both.

THE OVARY (Fig. 2) commences as a transparent and contracted tube near the anus, ($\frac{1}{15}$ of a line), where it communicates with the rectum, and thereby converts the latter into a cloaca. Soon after its origin the ovary dilates into a cylindrical tube of moderate size, which pursues a very tortuous course forwards, along the left side of the animal, to near the anterior extremity of the abdominal cavity; it then bends upon itself, and, becoming smaller and less tortuous, returns to within a short distance of the extremity of the tail. It then makes a second bend, and again passes forwards, but almost immediately returns and forms a third loop. After completing its third loop, the tube gradually expands into a capacious sac, almost equal in breadth to that of the animal, and this sac is continued forwards, along its right side, to about the anterior fourth of the abdominal cavity. Here the sac contracts, while its walls become exceedingly muscular and thick and its canal serpentine, and, tapering gradually as it proceeds forwards, it terminates on the under border of the worm, close to the head of the intestine, in the vulva.

In regarding the analogies of the various parts of the ovarian tube now described, the first part, comprising the whole extent of the tube from the rectum to the dilatation succeeding the third loop, may be considered as the *ovary*. The dilated sac following the third loop, is, I apprehend, analagous to an *uterus;* while the contracted and serpentine tube which leads from the latter to the vulva, is an *oviduct*. At any rate, this division offers conveniences in relation to description, and as such I have adopted it.

The communication of the ovary with the rectum is, I appre-

hend, a provision for the reception of the intromittent style of the male; and the male fluid, thus introduced into the tubular organ, is conveyed onwards with the newly-formed ova into the successive parts of the canal. The contents of the ovarian tube offer, as may be anticipated, a gradual progression in development, as examined in different parts of its extent. In the commencement of the ovary, the ova are hexagonal in form, and measure $\frac{1}{750}$ of an inch in diameter. In the anterior loop they are similar in shape, and measure $\frac{1}{600}$ of an inch. In the uterus and oviduct they are elliptical, having the shape of a french-plum-stone, with rounded and transparent points, and measure $\frac{1}{400}$ of an inch in long diameter. They are composed of a thick transparent shell, with granular contents. The narrow oviduct, by which the ova are conveyed from the uterus to the vulva, is obviously a provision for arranging them in a linear series preparatory to their exclusion; while the thick walls of the oviduct probably secrete a tenacious mucus for their investment and defence.

The Vulva (Fig. 2, *n*) is a short and transparent papilla measuring $\frac{1}{200}$ of an inch in length by as much in breadth. It is flattened at is extremity, somewhat larger at this point than nearer the body of the animal, and curved slightly backwards. On its external surface it is studded with numberless minute recurved spines, and it is traversed by the contracted canal of the excretory duct of the uterus, which follows the curve of the vulva, and terminates at its flattened extremity.

Male. In the male (Fig. 3) the testis occupies the position of the ovary of the female, and the alimentary canal differs from that of the latter, in serving, near its posterior extremity, to contain the long intromittent style with its membranous sheath.

The Testis commences as a dilated cæcal sac at a short distance from the extremity of the tail, and passes forwards, becoming tubular and tortuous in its course, to the anterior part of the abdomen, near the pylorus, where it curves suddenly back, and dilates into a large elongated sac. At about the union of the anterior with the middle third of the abdomen, this sac contracts into a thick fleshy sphincter valve, and is then continued onwards as a large tube, with thick and fleshy walls to near the extremity of the tail, where it becomes narrower, and terminates by a small opening in the intestine. With regard to the analogies of the

before-mentioned tube, I conceive that the dilated sac, at its commencement, is the representative of the testis; the tortuous tube which passes forwards from the testis is analogous to a vas deferens; the large sac which follows is evidently a vesicula seminalis, and the muscular tube which terminates in the intestine, the ejaculatory duct.

In its course forwards in the abdomen, the testis at first occupies the dorsal border of the animal, while further onwards it approaches the ventral border, and becomes situated to its left side. The recurrent tube, namely the vesicula seminalis with its excretory duct, occupies the right side, and the intestine, though situated along the ventral border of the abdomen is pushed to the left by the broad vesicula. In one instance near the middle of the abdomen the intestine passed from the ventral to the dorsal border of the animal, coiled round the seminal organs, and returned to the ventral border.

THE INTROMITTENT STYLE (Figs. 3, 9) is a slender shaft $\frac{1}{3000}$ of an inch in diameter, and from two to three lines in length. It is situated along the ventral border of the worm, occupying somewhat more than its posterior third. It is enclosed in the first instance by a thick envelope or sheath, and lies in contact with the internal surface of the integument, and, nearer the tail, it enters the intestine and carries with it a thin membranous sheath, which is prolonged to the anal opening. The apex of the style is conical and sharp; its base is broad and gives attachment to a strong muscular fasciculus which arises at some distance farther forward from the longitudinal muscular fibres of the parietes of the animal, and performs the office of a retractor muscle.

As the intromittent style is a moveable organ, it necessarily presents some differences of relation according to its state at the time of examination. Its more frequent position is that in which it is protruded to a greater or less extent from the anal opening. When this is the case its membranous sheath is everted, and carried with it, forming a preputial covering. The preputial sheath is ordinarily of the same diameter throughout (Fig. 9), but not unfrequently is dilated at its extremity (Fig. 10) by the intervention of fluid between its layers. By Rudolphi, this distended condition of the prepuce occurring in the trichocephalus dispar, was regarded as its natural state. He terms it "tubulus obovatus,

fere pyriformis," and repels the notion of its being straight, as stated by Gœze and his followers. He remarks "neque linearis, qualem auctores passim referunt, et Gœzium secuti depinquunt." This is, in truth, a repetition of the tale of the figure with the brazen and silver shield.

When the intromittent style is withdrawn by its retractor muscle, the apex of the style becomes lodged within the rectum, enclosed in its membranous sheath. The condition of the style here described is accompanied by an alteration in the position of the intestine, which is bent upon itself, and forms a loop (Fig. 3, *c*). The peculiar position of the intestine in relation to the state of the intromittent style seems to explain the powers by which the movements of the style are affected. Its withdrawal by the retractor muscle is evident, while its protrusion would seem to be accomplished by the straightening and muscular extension of the intestine and ejaculatory duct of the vesicula seminalis.

COMMUNICATIONS AND EXTRACTS.

Cases illustrative of the Action of the Ergot of Rye.

To the Editors of The Veterinary Record.

Gentlemen,

The two following cases may not be uninteresting to the readers of your quaternal Record; may I, therefore, beg your insertion of them, in the hope that they may encourage those who have hitherto hesitated to administer an agent of the greatest importance to those engaged in veterinary practice in an agricultural district?

In the beginning of the year 1840 I was in attendance upon a farmer's wife; when, from her frequent inquiries about a cow, a person in attendance told me that there was one calving, and that she had been more than twenty-four hours in labour. Her pains were weak, and returned after an interval of from a quarter to half an hour. I was further informed that the presentation was natural.

From ample experience of the powers of the ergot of rye in reproducing uterine action in the human subject, I suggested to

the farmer the propriety of trying this agent, as he appeared to be of opinion that unless something was done to relieve the animal death must ensue: he assented to my suggestion, and I infused half an ounce of the ergot in two ounces of boiling water, which, after standing for a short time, was given to the animal, followed immediately by two or three quarts of gruel. From twenty minutes to half an hour had scarcely elapsed ere evident signs of increased uterine action shewed themselves; evinced by the animal moaning much louder than she had done before, and expulsive efforts of the uterus taking place, which continued to increase in frequency and strength until she gave birth to a fine living calf, which event occurred about three quarters of an hour after the administration of the ergot. The secundines immediately followed the delivery of the calf.

Calling in my professional vocation a few days after, the farmer informed me that the cow had done better than in any of her previous calvings (this being her third calf), and that she required no "cleansing draught."

In 1843 the same farmer called upon me, and desired to have some more of those "coffee grains," as he designated them, as he had another cow calving. He also informed me that the breech presented itself, and that he and a "wise-acre" of a cowleech had been, by means of ropes attached to the hinder parts of the calf, pulling with all their might, but could not succeed in withdrawing it. On further inquiries, he stated that her pains were slight, and they came on at long intervals. I complied with his request, and gave him half an ounce of the ergot, and desired him to administer it as I had done in the previous case.

In a few days afterwards he waited upon me, and stated that, in a short time after he had given the ergot, the labour-pains came on, the breech descended, and, with a little mechanical interference, the cow was soon delivered, and the placental membranes almost immeditately followed the birth of the calf.

I remain, Gentlemen,

Your most obedient servant,

T. H. WARDLEWORTH,
Member of the Faculty of Physicians and Surgeons, Glasgow.

Bury, Lancashire,
Oct. 11, 1845.

Carlisle, Oct. 15, 1845.

Sirs,

If the following singular case be worthy of a place in THE VETERINARY RECORD, I shall feel obliged by its insertion.

I am, your's, respectfully,

To the Editors, &c. THOMAS BROCKBANK, *M.R.C.V.S.*

SLOUGHING OF THE METATARSAL BONE, FOLLOWING PUERPERAL FEVER IN A COW.

June 18, 1845.—A cow, the property of Miss Holmes, of Botcherby, was attacked with the above too commonly fatal disease. She had calved the previous morning, and, on my arrival I found her down, and in a state of coma, with her nose turned to her side; pulse 76, full and bounding—the eyes prominent, and pupils dilated—surface of body and extremities cold—loss of sensibility of the hind extremities—secretion of milk stopped—and obstinate costiveness present.

Having nothing new to advance respecting treatment, I do not think it necessary to go into details, as my object is to shew the result only. Suffice it to say, she was bled until the pulse became affected, had purgatives and diffusible stimulants combined repeatedly administered; and severe stimulants were applied the whole length of the spine; enemata of warm water were also thrown up, the body well clothed, the milk drawn repeatedly every day, and the animal ordered to be turned over night and morning.

Although the aperients were given every sixth hour, it was not until the evening of the 21st the bowels responded: from this time she continued to improve.

The acute form of the disease being subdued, vegetable tonics were given; but she remained incapable of rising until the 27th, when she appeared to be well: she moved strong upon her legs, fed and ruminated as in perfect health, and yielded a fair proportion of milk. On the 29th the owner wished me to look at her, as she was very lame of the near hind leg. I found the whole of the limb enormously swollen and inflamed, particularly the thick part of the thigh; and, expecting that an abscess was forming, I ordered fomentations to be employed, and sent an embrocation for the part, to be applied that night, the fomentations

to be repeated the following day, and the stimulant again at night.

July 1*st*.—The swelling has left the thigh, but the hock and lower part of the extremity remain as before. Ordered a large poultice to be applied over the whole.

July 2*d*.—The swelling has left the hock, but the foot is doubled back, and she stands upon the fetlock joint; the foot is very cold, and almost destitute of feeling, and a sanious discharge issues from the coronet; in short, the inflammation has degenerated into gangrene.

July 3*d*.—The second stage, or sphacelus, has taken place, the foot and pastern, from the inferior end of the large metatarsal bone cold, and incapable of feeling or motion; but the animal feeds well, ruminates, and looks as healthy as ever. In this way she went on until the *7th*, when the parts were merely hanging together by a few tendinous fibres. Being from home, the foot was removed by a friend of the owner's. The following morning, I saw her, and found the wound swarming with maggots. I immediately washed it with a solution of chlorinated lime, and applied a poultice. There was about three inches of the metatarsal bone I wished to remove, but the owner objected to it, fearing it might give the animal pain; but in a week or so, nature threw this off, by exfoliation. From this time the part was treated as a common wound. She shortly after regained much of her lost flesh, and gave from ten to twelve quarts of milk per day. She moves about with her stump in a small bag stuffed with soft hay, but will soon have a wooden leg substituted.

Case of Hypertrophy of the Heart, with Patency of the Aortic Valves.

By Mr. Hugh Ferguson, *M.R.C.V.S., Her Majesty's Veterinary Surgeon for Ireland, &c. &c. &c.*

Royal Veterinary Institution, Denzille-street, Dublin, Nov. 5, 1845.

My dear Sirs,—I feel a pleasure in transmitting to you the following brief history of a case of somewhat more than ordinary interest. The subject was a large and very powerful draught horse,

upwards of twenty-three years old. For the last fifteen or sixteen years he was never known to have lain down. He, however, on several occasions fell, even while standing in harness; but he more frequently tumbled down when exerting his muscular powers to the utmost, as in pulling an unusually heavy load. His carriage or bearing was peculiar. Even when exerting himself to the utmost in dragging an unusually heavy load up hill he invariably held his head and neck remarkably high, never even extending them, as draught horses do when their powers are heavily taxed. These peculiarities induced me, about a couple of months since, to auscultate that portion of the thorax occupied by the heart. I at once pronounced him to have disease of that organ. His affection I concluded to be patentcy of the aortic valves, with hypertrophy of the heart. Yesterday morning I was called on to attend him. He had fallen during the night, and I found him lying in a yard into which he had been dragged from the stable. He was completely exhausted; indeed, I may say, powerless. I therefore ordered him to be destroyed at once. I have made a most minute post-mortem examination, the result of which is as follows:—Every organ and tissue perfectly normal, excepting the heart, the hypertrophy of which is astonishing; and the semilunar valves of the aorta are so contracted in their floating margins as to have been physically incapable of preventing a retrogade motion of the blood from the main trunk of the aorta back into the left ventricle. One of the valves is thickened to a most extraordinary extent. All the articulations of the skeleton are free from disease: my examination extended even to those of the vertebræ. Had I not done so, it might have been imagined that the animal's not having lain down for so many years was the result of articular disease, such as spavin or anchylosed vertebræ.

It is singular that to-morrow I am going to make another post-mortem of a case, the symptoms of which are, in many respects, very similar to that which I have just related: even the age of the animal is nearly the same; but I suspect the cause is different.

I am,

Your's sincerely.

Case of Comminuted Fracture of the Metacarpal Bone of a Mare, and its Re-union.

By Mr. J. Stevenson, *M.R.C.V.S.*

Whitby, Nov. 1, 1845.

Dear Sirs,—On the 21st of March last I was called to attend a valuable brood mare, belonging to a tenant of the Marquis of Normanby. She had broken her off fore leg that morning when out at water, by getting it into a hole at the edge of the pond, and being unable to extricate it, began to plunge, and threw herself down. A neighbouring farrier had been previously sent for, who considered it a hopeless case, but advised the owner to send for me. I found the metacarpal bone shattered into several pieces, from its superior to its inferior extremity, but without any external wound. It very correctly resembled the description given of it by the farrier, namely,—"it is like a coat-sleeve full of pieces of a broken pot." My prognosis was not favourable; but as she was at that time within a fortnight only of foaling, I determined to attempt a cure, trusting that I might be able to save the foal, if I could not the mare. She was accordingly put into slings. I then proceeded to adjust the fractured bones as well as I could, and which I effected by first spreading over the leg a thin layer of the Emp. picis c. P.L., drawing it moderately tight by means of a bandage. This last I wetted with starch, and over all applied splints, padded with tow also soaked in starch. I found it necessary, from the fracture extending so close up to the knee, to prevent any motion in that joint, which I did by applying two long splints, one on each side the leg, both reaching about an inch below the foot, and the inner one extending up as high as the breast, and having a sort of padded crutch at the top, on which she was able to rest some portion of her weight. Having thus made the parts secure, I left, ordering her to be kept upon bran mashes, carrots, &c., and to have a febrifuge occasionally.

March 23.—Much swelling has taken place, extending as high up as the breast; pulse 56; appetite good; bowels relaxed by the mashes. I eased the bandages, and ordered a cooling lotion to be frequently applied.

April 4.—Pulse 68, but swelling abated; the appetite still

good. The long splints having caused some excoriation about the knee, I had them removed, and in their place got a piece of wood hollowed out and made light and thin, somewhat resembling the fracture bed for the human subject. This was lined with wool, and the leg then fitted exactly into it; and being bound firmly round the leg above the knee, and also to the fetlock, I was afterwards enabled to remove most of the splints, &c., without at all disturbing the fractured bone, and, of course, I was also enabled to apply the lotions, &c. more directly to the part.

7th.—The animal continues much the same as when I last saw her. On the 16th she foaled, and was reported to be doing well. On the 20th, pulse 50, appetite good: she appears much reduced. Ordered her to have corn, and any thing she would take. On the 28th she is doing well, and has sufficient milk to support the foal.

From this time she continued to improve, and in the beginning of June was turned out to grass. By the latter part of the month the foal had got so fat, that the owner thought he might wean it, and let the mare have another to support, the dam of which had lost her milk.

When I saw her last week, I found that anchylosis of the fetlock joint had taken place, probably from the fracture having extended into it, and the flexor tendons adhering firmly to the callus at the further extremity of the metacarpal bone. This, of course, produces a great degree of stiffness in walking, but not so much as might have been imagined. The mare again took the horse in the beginning of July, and she will, no doubt, be as valuable as before for breeding, for which purpose she was entirely kept.

I am, dear Sirs,
Your's sincerely.

Observations on the Blood-stroke Disease of Sheep.

By Mr. Pearson Ferguson, *M.R.V.C.S.*

The disease, whose peculiarities I propose to treat of in my present communication, and which has lately been attended with much fatality in the south and west of Ireland, is remarkable for

the suddenness of its attack, the rapidity with which it runs through its different stages, and its general mortality to those affected with it. It is almost specially an ovine malady, rarely manifesting itself in any other species; and is of common occurrence on the Continent, where I have frequently witnessed it, and observed it to appear generally in the summer months only. There it is known by the different appellations, "Sang de Rate," "Le Sang," La Chaleur," "Mourroy Rouge," "Maladie de Sang;" which terms signify blood in the spleen, the blood, the heat, the red death, and disease of the blood. There are also other cognomens for it, used in different cantonments, which, however, as they do not occur to me just now, and the knowledge of them would be useless to my British readers, I shall dismiss for the present, and at once proceed with the consideration of this interesting malady, which, on account of the phenomena that appertain to it, I propose to call "The Blood-stroke Disease of Sheep, or general Sanguineous Congestion."

Now, although this affection is common on the Continent, it is comparatively rare in the British islands, and may almost always be guarded against by the observance of the hygienic principles I shall hereafter explain.

It consists in a sudden accumulation of blood in the vessels, and a general plethora of the system, which manifests itself subitaneously. Generally speaking, the ordinary observer sees nothing to forewarn him of the attack, and the animals about to succumb to it appear in the enjoyment of perfect health a short time before death. The vigour, the appetite, the good state of the wool, the colour of the skin; in short, all that denotes the strongest health, is remarked in those animals, when all of a sudden we see them in the extreme state of general congestion, and they die in a very short time, varying from fifteen to twenty minutes to two or three hours. Indeed, this disease always affects the fattest and most vigorous in the flock. A sheep which, up to the period of attack, presents no sign of disease, stops suddenly, grinds his teeth; the respiration increases—becomes rapid, laborious, and stertorous; the animal foams, holds his mouth open, and cries; blood, in most cases, escapes by the nostrils, the anus, the vulva, and the animal falls and dies quickly; when the body swells, and putrefies rapidly. Such are, *en masse*, the phenomena of this disease, which, however,

presents many varieties; in one of which, where there is no external hæmorrhage from the nostrils, the spleen will be found gorged with black blood, and much increased in volume; and to this form the name of *splenic apoplexy* may with much propriety be applied.

Characteristics.—Three varieties of this disease may be recognized, or rather three shades, relative, if not to the seat of the sanguinary congestion, at least to its degree; i. e., according as there exists a state of simple plethora, or true apoplexy, more particularly marked in the latter case, either in the cranial or abdominal regions.

1. The first, and most common of these varieties, affects but few individuals at a time, and the animal attacked shakes his tail quickly and very frequently, walks slowly and unsteady, appears dull, and sometimes swollen: his ears hang, and are hot; he heaves at the flanks, and opens the mouth in order to respire more freely; the facial veins are turgid, and the mucous membrane of the nose and eyes is injected and red: in short, all the symptoms denote that there is a superabundance of blood in the system which seeks some outlet as a means of relief.

2. The symptoms of the second variety manifest themselves suddenly, and would appear to characterize a kind of cerebral apoplexy: it is impossible to foresee them before the immediate attack. In this kind, the animal ceases to eat—stands still at once—carries the head down—appears giddy—grinds the teeth—vacillates—turns—falls—heaves greatly at the flanks—blood spouts from the nose or anus—the senses are lost, and death takes place *instanter*. In other cases the sheep rises and goes about as if in search of food, but soon falls again; the symptoms augment in intensity, and it dies in half an hour or so. It is common in the moment of death to see thick black blood issue from the mouth and nose, while the swelling of the body, to which I have before alluded, sometimes commences even before death. The successive series of these phenomena, however, are not always well marked, in consequence of the rapid progress of the malady from its commencement to the termination.

3. The invasion, progress, and termination, in the third variety, are not less rapid, and differ but little from that which we have just noticed of the second. It is to the third variety, however, that we should attach the affection so well described by Doctor

Guillaume, in the second series and third volume of the *Annales d'Agriculture*. It also offers a striking resemblance to the acute form of hæmaturia, which I wish to be distinctly understood to differ, in cause and effects, from what is called in this country red-water; the latter of which is owing to a diseased state of the liver, the kidneys being only sympathetically affected in carrying off the effete matters from blood altered in its constituents in consequence of disordered digestion, while acute hæmaturia is the result of local renal congestion. But, to return to the symptoms of the third variety of the disease under consideration. The sheep struck with the malady suddenly rushes on or jumps upon his nearest companion; his eyes sparkle or rather glare—they seem to start from their sockets; the lips are convulsed, the tail quivers, and the back is arched, the pubis being drawn forward. The animal then gets off, and strains violently to urinate; and when that takes place, after some terrible efforts, the fluid will be seen to be thick, and composed of clots of blood mixed with a very small proportion of urine, and then the animal seems much relieved; but if this want has not been satisfied he falls in dreadful convulsions. Some minutes after he rises; takes some few unsteady steps; his eyes appear insensible to light; the conjunctival membrane is very red and turgid; he foams at the mouth, arches the back, and strains again; then makes one or two bounds, and falls in convulsions; and to this succeeds the state of muscular inactivity called "coma," in which the poor creature dies without a struggle.

Post-mortem Appearances.—On opening the bodies we find the subcutaneous vessels gorged with blood. The internal surface of the skin, when examined after removal from the body, is quite red, and completely injected; all the tissues are redder than ordinary, and much softened. The general structure seems broken down, and the spleen is constantly gorged with blood. In the first variety the eyes, the face, throat, neck, and the interior of the nose and mouth, are of a dark modena red, or blackish colour — evidently the traces of active congestion; in fact, all the bloodvessels of the head are choked up. In the second variety there is a still greater engorgement, particularly of the vessels of the brain and its investing membranes. And in the third variety the abdominal viscera will be found to evince the signs of the most acute congestion. The liver, however, is a remark-

able exception, it being rarely engorged or broken down in structure, except when the animal dies on the right side; and then, the liver, holding a dependent position, becomes filled with blood by infiltration, from the parts superiorly placed: but even in such cases its structure is not broken down. Not so, however, the kidneys, whose structure is completely destroyed, and yields or tears with the least force; and whose efferent canals, as the ureters, bladder, &c., shew undeniable proofs of the late renal congestion. So much for the more marked features of the morbid anatomy in this malady, the minute details of which would be, although highly interesting, far too prolix for insertion in a periodical work like THE VETERINARY RECORD, in which so much more valuable matter has a right to a place.

Causes.—The principal causes which may be regarded as predisposing are those giving rise to plethora or fulness of habit, such as too luxuriant nutriment, and a *sudden transition* from a poor to a rich diet, for which the system is unprepared by gradual change. This was the cause of the appearance of the disease lately at Cahir, where the sheep were at once removed from a spare dry pasture to a newly laid down and most luxuriant one; the consequence of which is the formation of more blood (and of a richer quality) than could be used for the reparation of the system, or even be stored up and laid aside (if I may so express myself) in the production of adipose tissue (fat), that remarkable safety valve to the vital functions; and the quantity of this rich blood still increasing, the circulatory system at length becomes so full, that the bloodvessels themselves, in some part or other of the body, lose the power of acting upon their contents; and the result is congestion, which, if not relieved at once, goes on to such a height, that the blood ceases to be oxygenated by the lungs, and stoppage of the entire circulation, with consequent death, immediately ensues.

This disease may also be excited by long or rapidly performed journeys, especially in hot weather; or it may be induced by an impure state of the atmosphere when there are too many animals crowded together in an ill-ventilated shed, particularly if they be plethoric at the time. In short, it may be excited by any circumstances favouring congestion, or hindering the due oxygenation of the blood in a plethoric system.

Treatment in this disease is useless, if not had recourse to in the moment of attack; and even then the only chance is in copious *bleeding until the respiration is relieved*, and the membrane of the eye becomes pale. But as it attacks only those animals which are robust and in good condition, and as it is not likely that shepherds will act with the expedition required, in order to give a chance of recovery, I would advise all sheep attacked to be immediately killed by dividing the carotid arteries, i. e. by cutting their throats, so that the flesh may be saved, and, under those circumstances, eaten with perfect safety.

But although treatment is useless in those that have been attacked, we may save the rest of the flock by the observance of proper precautionary means; and the first thing that should be done after the appearance of the disease in a flock, if such be possible, is, to remove them to a higher situated and less nutritive pasture; or, if that be inconvenient, the sheep must be only allowed to feed a moderate time in the day on the pasture, and then be placed in temporary folds or pens. Indeed, the general rule should be to endeavour to feed sheep well enough to fatten, but not high enough to cause great plethora, and always to avoid sudden transitions from low to high diet; and, also, low heavy meadows during the early summer months, when the grass, in such pastures, is exceedingly strong, and only suitable to black cattle or horses, whose digestive organs are much more powerful than those of sheep: however, although sheep will be attacked in such pastures with the blood-stroke disease in the summer months, they may, with safety, be placed upon it in the autumn, after the first and strongest growth of the year has been eaten by cattle.

Again, many farmers often wish to economise feeding during winter, and barely keep their flocks alive; and then, in summer, place them on the most nutritious and exciting diet, because "it costs them nothing then," as they say. This is an exceedingly bad calculation, and is frequently paid for very dearly indeed; for, in such cases, the sudden transition from poverty to the most exciting nutriment is often more than the system can bear: the digestive organs become irritated under the influence of these alternations of poverty and plenty, and disease is the result, either of an acute form, as shewn in the malady under consideration, and other inflammatory ones, or of a chronic character, as the liver-

rot, fluke, &c.; which latter are induced by poverty of the blood, as an exciting cause, and in which, although the animal may afterwards be placed on abundant pasture, proper condition can never be obtained. The feeding, in such cases, is therefore lost.

With respect to the treatment adopted with the flock at Cahir, the removal of the fleece was very beneficial, for the depressing influence of cold on the circulation caused by the removal of clothing from the surface of the body is well known—a means that I very frequently have recourse to, with the happiest results, in the practice of my profession. Still, however, the change of pasture was, in the case of sheep, the most lasting and certain prophylactic. Indeed, with respect to very rich pastures, I have often been struck with the foolishness of some feeders in gorging their stock with the most exciting provender, particularly when they have been previously starved, and are wholly unfitted for the digestion of such large quantities of food as they are allowed to use all at once. If a few hours' grazing suffice, especially when the vegetable matter is very strong, and contains a great quantity of nourishment in a very small bulk, why gorge them, or make them eat as much as under other circumstances?

In considering, therefore, all the observations that have been made relative to this interesting disease, and especially the post mortem appearances, we see that sanguineous congestion always exists as the proximate cause of death. The strongest and most plethoric animals are those attacked: it is most frequent in dry weather, after sudden changes in the atmosphere, and transitions ill regulated from a poor to a very luxuriant diet; and all these circumstances together suggest reflections worthy of remembrance in a general point of view. It would seem that, recollecting the temperament of the ovine species, in analyzing the circumstances under the influence of which the disease is developed, and the peculiar conditions in which the animals are found at the moment of its apparition, we may, without much difficulty, comprehend why, in a certain species, one system of organs is more particularly affected than another, and why again, in the same species, there are exceptions to this rule. Indeed, generally speaking, the more important the part that an organ plays in the system, and the more the phenomena of life are therein developed, so also is it the more likely to become the seat of disease; and the sanguineous

congestions of the whole animal kingdom come to the support of this assertion. In fact, in the human race we observe them most frequently about the brain, the theatre of all intellectual and moral phenomena; and, *cæteris paribus*, they take place oftenest in those individuals in whom this organ is most active and most exercised. While the horse, whose temperament is eminently sanguine, and whose respiratory apparatus has a most remarkable development, is most exposed to pulmonary congestion; while again, on the other hand, ruminants possess a digestive system exceedingly complicated, and this complication in itself plainly enough explains the frequency of visceral congestion of the abdomen in them.

To conclude, then, I would observe, as a general rule, that when excessive plethora exists in ruminants, and which may be easily observed, on examination, by the redness and turgidity of the mucous membranes of the eyes and nostrils, together with distention of the facial veins, it must be combatted by bleeding, purging, and a lower diet; while, on the contrary, when there is poverty of the system, the subjects of it must be better fed and better cared for.

24, *Bachelors-walk, Dublin.*

Cases of Phrenitis in the Cow.

By Mr. W. Cox, *M.R.C.V.S.*

Ellastone, near Ashbourne, Nov. 6, 1845.

Messrs. Editors,—In the observations which I made on red-water at one of the meetings of the Veterinary Medical Association, and published in the supplementary number of The Veterinary Record, I find an error or two. The first is, it should be summer instead of the winter months, as the calving season is generally in the winter and spring. Secondly, where it says "Derbyshire," it should have been "Staffordshire." The same remarks will apply to Mr. White's speech. Perhaps you will have the kindness to correct it in some future number of the Record.

In the April number of your Journal there is a case of phrenic hernia recorded by Mr. Broad, V.S., of Trowbridge. Subse-

quently we find that gentleman correcting his former statement, and saying that no laceration had taken place, but the intestine had protruded through the foramen dextrum. Now this foramen is for the passage of the posterior vena cava, and the phrenic veins, which being very large at this part, are emptying themselves into it. How could a portion of intestine pass through this foramen without producing a rupture of some of these veins, or the cava itself? But it does not appear that such was the case, from the description Mr. Broad has given us. Perhaps you or Mr. Broad will return the answer.

I have recently had a case of puerperal fever in a cow, now called parturient apoplexy, the termination of which has been successful, and which I attribute to bleeding largely. To fill up this paper, I have added two cases of phrenitis in cattle; and, if you think them worthy a place in THE VETERINARY RECORD, they are at your disposal.

Case 1.—In the spring of 1841, Mr. Whillock, of Brown Edge, near Leek, informed me that one of his cows had calved four days previous, and that during the last day an extensive swelling had appeared in one quarter of the udder. As a friend of mine had bled her largely, an active purgative was administered, with directions constantly to foment the udder.

Early the following morning I found that the garget had disappeared, but phrenitis had shewn itself. The symptoms were,—the animal dashing herself unconsciously about against the wall, rack, &c.—a wild, staring countenance—her eyes almost amaurotic—conjunctival membrane injected—respiration much increased—pulse full, and quick—mouth, tongue, and nose, dry and hot.

The treatment adopted consisted of the bleeding being repeated, more purgative medicine given, and cold water applied to the head. The urgent symptoms soon began to subside, and in two days the animal was in a state of convalescence.

It has been asserted by some practitioners that metastasis of inflammation seldom takes place in the ruminant. I have found the reverse of this to be the case. Rarely, however, does inflammation shift to other organs from the udder; but very often it is transferred from most of the other organs to it.

Case 2.—On the 11th of October last I was requested to see a

cow, the property of Mr. Needham, of the Paddock, near Hartington. The history of the case is as follows:—Three days previously she was thought by her owner to be at œstrum. In this state she continued the whole of the three days, running the other cows about continually, and often jumping on their backs, until the fourth day, when she became paralytic. When I first saw her my impression was that it was a case of rabies; but I was soon enabled to pronounce it to be an attack of phrenitis. The symptoms were:—a wild, unconscious stare—muzzle, mouth, and tongue, dry and hot—pulse quick and feeble—respiration increased. She lay on the ground struggling, fighting, and bellowing, during each paroxysm, and refused all food, but she drank a little water without any difficulty. My prognosis was unfavourable, in consequence of my having seen several cases of paralysis in the latter stages of phrenitis in cattle terminate fatally. At the request of the owner, however, she was placed under treatment, which consisted of bleeding, the exhibition of purgatives, and the use of counter-irritants; but she died on the following morning.

Post-mortem examination.—The dura mater was slightly inflamed in patches—the pia mater was diseased to an extent I never saw before, particularly at the base of the brain, being nearly black, which discolouration continued through the fissures, affecting the velum interpositum, the vena galena, and the vessels of the plexus choroides: the plexus of the fourth ventricle was also very much distended with blood. In exposing the centrum ovale of the cerebrum there was no appearance of disease in it, except a fulness of the vessels, which might be seen by the number and size of the puncta vasculosa. The substance of the medulla oblongata and cerebellum was very much inflamed, and darker in colour than natural: the spinal marrow was not examined, in consequence of the carcass being disposed of. The other internal organs were healthy.

Remarks.—This is the only case of phrenitis in which I ever saw furor uterinus present as a symptom either in the early or latter stages of it. Priapism in the male I likewise never saw. It is very often a precursory symptom in rabies; but, from the symptoms and post-mortem appearances, I think there can be no room to doubt that this case was one of phrenitis.

Your's most truly.

Case of Phrenic Hernia in the Horse, with Rupture of the Pericardial Sac.

By Mr. Brand Garner, *M.R.C.V.S.*

Dear Sirs, *Hitchin, Herts, Nov.* 3, 1845.

Never having met with a recorded case similar to that which I am about to relate, I will, should you deem it of sufficient importance, submit it to the notice of the readers of The Veterinary Record.

At Foxton, in Cambridgeshire, during the month of July, I was in the field overlooking my father's hay-makers, when a messenger, sent by Mr. Titmarsh, came running to me, and requested my immediate attendance on a mare which had been seized with a violent fit of what appeared to be spasmodic colic, while at grass. As the distance was not great, I was soon with the animal, which I found lying in a ditch by the side of the high road, and, as she was comparatively quiet, I took the pulse before I made any attempts to remove her. The artery was full, its force remarkably hard, and numbering about 107 in the minute. The breathing was laboured, the body hot, and covered with perspiration. After I had observed these symptoms, as the animal made no efforts to extricate herself, and afforded no assistance to the men who endeavoured to relieve her, another horse was employed to drag her on to the road. No sooner was she withdrawn from the ditch than she suddenly got upon her legs, and, with a copious frothy saliva falling from her mouth, ran at the several persons who surrounded her as with an intention to bite them. Being either avoided, or driven back, by the various parties she attempted to injure, she then stood still, but continued either to champ the jaw after the manner of a dog affected with a distemper fit, or, thrusting forth her head, make an action as though she meant to seize and tear some visionary object with her teeth.

From these symptoms I suspected the brain was affected, and, as the animal had been attacked while in the field, and the early symptoms not having been noticed, I knew not whether it was a case of cerebral affection or one of hydrophobia, which the disposition to injure others made me in some measure fearful of. I or-

dered the men to get the animal into the stable as quickly as possible, while I hurried home to procure such instruments as I might require, which, as I was on a visit to my friends, and in no expectation of a professional call, I had not about my person.

On my return, which was in less than ten minutes, I found the mare had been got into the stable-yard, and there had fallen. Her action, while she was down, was very violent. She would roll about and knock her head against the ground; then, partially raising herself, sit upon her haunches, and, throwing her head to her sides, bite furiously at her body. Once or twice, after much struggling, she gained her feet, when she would commence running round and round in a very wild manner, snapping at any object which was within her reach,—after which she would again fall and roll upon the ground.

Desirous of extracting blood, I was obliged to watch my opportunity, and at length, at some hazard, succeeded in opening the jugular vein; but the stream was very dark-coloured and extremely feeble, although the orifice was large. Deeming it of all importance to abstract blood quickly, I now opened the temporal artery, and by this means obtained a full and vigorous current, which I allowed to run till twelve quarts of blood had been lost. The dangerous violence of the animal made it impossible to administer any medicine by the ordinary methods, and I therefore resolved to watch the effects of the venesection before I resorted to further measures. I felt the pulse: it slightly faltered, and had less strength than before; but, though enfeebled, was yet hard and increased in frequency. The breathing became more rapid and more laboured, if possible, and a loud snoring noise accompanied each inspiration. The phrenitic symptoms never seemed to abate, but only to be modified by the diminished strength of the animal. The disposition to injure herself or others was displayed to the last, the eye also being very vivid and prominent throughout the attack. No change whatever in the character of the symptoms could be observed, and in about fifteen minutes from the pinning up of the vessel the mare expired.

From the rapid progress of the disorder, I now rejected all my first inclination to attribute the symptoms to rabies; and, to the inquiry of the proprietor, stated that the post-mortem examination would probably exhibit some cerebral affection, or phrenic or

mesenteric hernia. On opening the body, I found the diaphragm on the left side extensively ruptured, and a portion of the colon protruding into the thorax: I also found the pericardium torn from the sternum, and the body and apex of the heart perfectly denuded of their natural covering. The brain was congested, but in other respects healthy.

The possibility of the pericardium being ruptured, would, I think, unless corroborated by a case like the present, be very generally questioned. The symptoms that might ensue on such a lesion it would have been difficult to imagine: I am therefore induced to lay them, with the case, before the professional public.

I have the honour to be,

Dear Sirs,

Your's most sincerely.

To the Editors, &c.

Case of Inflammatory Œdema in a Cow, accompanied with Emphysema.

By Mr. J. H. Shenton.

Pendleton, near Manchester,
Oct. 13, 1845.

Gentlemen,—If the following case be worthy of insertion in your valuable and increasingly interesting Journal, it is much at your service. I take the liberty of sending it you because it was a very severe case of inflammatory œdema, and much has been both said and written on the subject lately. While all seem to consider the above disease as fatal in the majority of cases, I think the following case will prove that, if it be properly combatted in its first stage, it may be easily subdued; which circumstance ought to teach the owners of cattle the great importance of an early application to persons competent to undertake the care of their live stock when attacked with disease.

The subject of the following hastily thrown together remarks was a cow of my own. She is of the old Shropshire breed, a very good milker, in excellent condition, and about six years old. On

the 3d of July last my boy came hurriedly into the house, and informed me that the above-named cow was not well, for her eyes were much swollen. He had just brought her up out of the field, and she appeared quite well until she reached the cow-house, but that as soon as he had tied her up she began to swell about the eyes. Upon hearing this I immediately went to see what was the matter, and to my great surprise found the poor animal labouring under the following alarming symptoms:—Neck extended, swollen, and very tense—the head carried in an almost horizontal position—the eyelids were so much thickened and congested, that I could not open them to examine the eyes, which were completely closed—the nostrils were expanded, the muzzle dry and hot, the mouth open, tongue enlarged and very hot, lips swollen and very tense, and an immense swelling existed under and between the jaws, extending their whole length; pulse 70, hard, and action of the heart very strong; breathing laborious, feet cold, roots of the horns very hot; rectum prolapsed, swollen, and of a dark purple colour; the vagina much the same in appearance, but not so much everted.

As I stood and watched my patient for a few minutes, I could perceive other swellings arise in various parts of the body, about the size of a man's fist, which, when pressed upon with the fingers, gave a crackling sound. In the course of a short time a great many shewed themselves, especially in the neighbourhood of the neck, chest, and belly. The poor animal stood still, unable to move, being as stiff, in comparison, as a statue. I soon perceived there was not a minute to lose if relief was to be afforded; I therefore immediately put the cord round her neck, in order to bleed her; but upon trying I found it was impossible to do so with the common fleam, on account of the cellular tissue being so much distended, and the vein, consequently, situated deeper than usual: I therefore made a longitudinal incision, about an inch and a half long, with a lancet, directly opposite the vein, through the integument and cellular membrane, until I could see the jugular. As I passed my lancet through the skin, &c., a crepitating noise was made by it. I then freely opened the vein, and withdrew, in a full stream, about eighteen pounds of the blackest-coloured blood I ever saw. Indications of syncope coming on, I slackened the cord and closed the orifice, securing it by a suture. I then administered, in a little warm water, a strong purgative, and had the cow rubbed all

over with straw wisps for a considerable time, which operation brought on a slight perspiration. I then clothed her well with woollen cloths, and left her for an hour or two. When I saw her again the medicine had begun to act powerfully on the bowels, and she seemed to be much relieved; her breathing was not so laborious, the pulse was lower, but the swellings were as numerous and as large as ever; the rectum was much lessened in size, and with slight pressure it returned to its natural place. I gave my patient some warm water, and had her well rubbed with the wisps again: I also applied a little camphorated oil to the largest of the tumours, and covered her up with the cloths as before. I paid her another visit in about three hours after this, when I found the pulse was rising again very fast, it then being 65 in the minute; I therefore repeated the bleeding, letting the blood flow until syncope took place. I next administered about half the quantity of purgative medicine, and had her well rubbed with camphorated oil wherever I could find any swelling to exist, clothed her up, and left her for the night. About six o'clock the next morning I saw her again, and she appeared much better; the pulse was lower considerably, the action of the heart not so strong, the tongue smaller and retained in the mouth, the skin felt more natural, the udder was softer, the extremities warm; she could open the eyes a little, but the eyelids were still much swollen: the tumours on the various parts of the body had almost disappeared, with the exception of that one under the jaws, which was still very large and tense. I administered a little more laxative medicine, and applied the camphorated oil to the tumour under the jaw, combining it with the water of ammonia, taking care to employ plenty of friction. In about an hour after the animal drank some tepid water, and ate a small bran mash, but her mouth was so sore and stiff that she could scarcely gather it up. A little more mash was given at noon, and as much water as she would drink. I ordered her to be kept quiet all day. At night she appeared much better in every respect, and yielded a fair quantity of milk: the tumours had all disappeared, except that under the jaw, which, nevertheless, was very much reduced in size, and softer. I applied the liniment as before, and ordered her a little more bran mash, but no hay nor any other food excepting this. The next morning when I saw her she appeared almost well; the skin felt loose, soft,

and natural, the breathing was normal, the secretion of milk fully established, the eyes were lively, and the appetite had returned. I had her walked out, and found she went well, with the exception of a slight stiffness in her hind quarters, which, however, gradually wore off. She looked brisk and lively. In about a week she had perfectly recovered, and has remained well ever since, and is now nearly in a fit condition for the butcher.

I remain, Sir,

Your's truly, &c.

To the Editors of "The Veterinary Record."

Case of Chronic Nasal Gleet.

By Mr. W. Kent, *Veterinary Student.*

On June 10th, being asked by a friend to look at his favourite hunter, which he said he was going to shoot, because glandered, I found the submaxillary glands much enlarged, and an abundant discharge of a muco-purulent character from both nostrils. I inquired how long it had existed, and was informed by the groom that the horse had had a slight running from the nose ever since the beginning of April. The question that suggested itself to my mind was, Is this a case of neglected catarrh, or has the animal contracted glanders by inoculation while in a strange stable? He was a fine chestnut gelding, four years old. Having seen a case operated upon at the College, during the past session, which proved successful, and the owner being anxious to save his horse if possible, I thought it a favourable subject for experiment. I therefore examined him most carefully. The pulse was quick and feeble, the conjunctival lining of the eyelids slightly injected, and of a yellow colour; the fæces hard and buttoned. These symptoms being indicative of febrile excitement, I gave solutio aloës ʒiv as a laxative.

June 11th.—The medicine has operated; the pulse is 78 and feeble; the feet hot. The discharge from the nose, which the groom had orders not to wipe off, I now examined, and found it free from smell, clotted, and of a greenish yellow colour. I sponged

the nostrils clean, and examined minutely their interior as far up as I could see. The Schneiderian membrane was of a yellow tint, dotted here and there with red spots about the size of a horse-bean. ℞ Liquor ammoniæ acetatis ʒiij, spiritus ætheris nitrici ʒss.

13*th*.—Pulse 70, and more tone in it; feet and legs still hot; breathing more laborious; breath hot and a little offensive; discharge from nostrils the same as before; the eye looks more sunken and yellow. ℞ Belladonnæ extractum ʒss, spiritus ætheris nitrici ʒss, liquor ammoniæ acetatis ʒiij, in haustus. Took off his shoes, and placed his legs in warm water, of course, drying them well after: this seemed to relieve him very much. Give every night in a mash cupri sulphas ʒij.

15*th*.—Pulse 65; feet and legs comfortable; fæces of a natural consistence; urine dark-coloured and having a strong smell.

I did not see my patient again for rather more than a week, being out of town. I however ordered, by letter, that he should have cupri sulphas ʒiij in his mash every night, and plenty of fresh green meat. During this interval I wrote to Professor Sewell, stating the symptoms of the case, the treatment already adopted, &c., and asked him if he would recommend me to trephine the frontal and maxillary sinuses. Having received his answer of approval, I visited my patient, and found him very much emaciated; pulse 60; the discharge from nostrils increased, and so very fœtid, that I smelt it before reaching his head. Upon inspection, I found that some of the spots on both sides of the septum had ulcerated. Applied to them the nitras argenti.

July 6.—Trephined the frontal and maxillary sinuses on both sides of the head. As I expected, there was more ulceration, and considerably more pus on the right side than on the left. This I prognosticated, as before the operation was performed I had, with the handle of the trephine, tapped the head, and imagined that the right side seemed more solid, i. e. not so sonorous as the left; besides which the horse flinched at each tap given. I passed a double-tape seton through the orifices, and freely injected warm water, thus thoroughly washing out the cavities.

8*th*.—Pulse 80, and wiry; profuse discharge from both nostrils, as well as from the lower artificial opening. Give in mash at night as before cupri sulphas ʒiij.

9*th*.—I was met at the stable-door by the groom, who told

me that the animal's legs were as big as his body. I stimulated the legs, applying tightly long narrow calico bandages; and gave gruel and port wine, as the vital powers were much depressed. The discharge being greater from the nostrils and very fœtid, I sponged them well out, and washed with a solution of alum. The ulcers upon the septum were throwing out a kind of watery pus. I now fumigated the place with chlorine, and left my patient to inhale the gas from eleven until two o'clock; and upon entering the box, I found that the discharge from both the nostrils and the apertures was very considerable, and tinged, or rather studded with clots of coagulated blood. I injected the sinuses with a weak solution of the sulphate of copper, which brought away some small clots of blood similar to those just mentioned.

10th.—I found my patient much better. He ate with appetite, and seemed cheerful. His eyes were much brighter, and not so yellow. Pulse 60, and more tone in it. In changing his seton to-day the knot was rather large, and in passing it through the maxillary sinus it met with some considerable resistance; accordingly I drew it back, and with it came a copious discharge of reddened pus. Had it not been for the clumsily made knot, I should not have discovered this, which would no doubt have baffled my utmost attempts to unprison, while at the same time it kept up the constitutional excitement of the patient. This "knotty" discovery I tried upon the other side of the head, but to no purpose; and as no like discharge had been seen to come away from that side, I did not pain the poor horse with any further attempts. I injected the solutio cupri sulphatis as before, occasionally fumigated with chlorine gas, and also gave the sulphate of copper, interposing a dose of laxative medicine when necessary.

29th.—Pulse 40: an evident improvement in the appearance of the animal has taken place. He looks lively, and the discharge from the nostrils is more healthy. I again applied to some of the ulcers on the septum the nitrate of silver. In one place I could put my probe through the septum, passing it from one nasal chamber to the other. I gave orders to keep the nose well sponged out with lukewarm water, and morning and evening to apply the solution of sulphate of copper. The setons to be continued, also the occasional inhalation of chlorine gas, and the sulphate of copper to be given as before.

31*st*.—Pulse 38. Discharge from the nostrils much less; very little from the sinuses, and that looking healthy. The submaxillary glands are again somewhat enlarged, and very tender upon pressure. Ordered a hot cataplasm to be applied. I was informed by the groom that he coughed very much after my last visit, which I attributed to the chlorine, and therefore did not fumigate to-day.

August 2*d*.—The swelling has almost disappeared from the glands. Very little pus is now brought away by the injections, and the artificial openings seem very much inclined to heal. Made the seton single. To-day his owner came into the box while I was there, and said that he had not seen the horse for nearly a fortnight; and that, upon entering the box this morning, he could scarcely recognise in him the poor emaciated creature of a month back. Administered in a quart of ale the sulphate of copper. Examined the nasal ulcers, and found them looking much more healthy

7*th*.—The ulcers upon the septum are evidently healing. Placed a hot hay fumigator on the nose, in order, if possible, to forward the healthy action set up in those parts that had become diseased, as well as to assist the effects of the lotion. Ordered this to be done morning, noon, and night, before the application of the lotion. The seton discharges but very little. Still change the seton every day, although it is now much smaller. Only inject the sinuses once a-day with the solutio cupri sulphatis. Ordered the groom, if the weather was favourable, to give the horse a gentle trot on the turf. He has had only very gentle walking exercise ever since the 10th or 11th of June.

10*th*.—Going on quite to my satisfaction: looking lively. Ordered daily exercise, and fumigated with chlorine again, giving the sulphate of copper as before.

13*th*.—Upon minutely examining the interior of the nose, I find that the disease has affected the upper part of the membrane, as well as those portions nearer the nasal openings. General treatment as before.

19*th*.—Very little discharge from either the artificial orifices or the nose. Continue the lotion, &c.

25*th*.—The horse had just come in from exercise on my arrival this morning. I saw there was still a little discharge from

the nose, but that it came entirely from the Schneiderian membrane. I removed the setons, as I attributed the still ulcerated state of the septum to the passage of the discharge over it. Use the lotion as before; discontinue the sulphate of copper.

28*th*.—His owner rode him between nine and ten miles to-day. I saw him in the evening: he said he went well, but thought his wind was rather thick. This I referred to the cavities of the head not having regained their proper functions.

Sep. 2*d*.—The orifices are closed; the septum discharges so little, that, were not attention drawn to it, it would be unnoticed. To-day I trotted him to ascertain if his breathing was really affected, but could not satisfy myself it was; I therefore ventured to tell his owner that I considered the horse cured, and advised that a carminative ball be given every fourth day.

On the 10th September, I returned to London, and on the 2d October I received a letter from his owner, in which he tells me that his "pet" is now in good condition; but that he still imagines there is after exertion a slight impediment observable in his breathing, and in addition, he thanks me for saving the "pride" of his stable.

Letter from Mr. W. Litt, M.R.C.V.S.

To the Editors of "The Veterinary Record."

Gentlemen,

In a series of articles which have appeared in *The Veterinarian* during the present year, and purporting to be so many reports of the "Cases of Disease occurring at the Edinburgh Veterinary College," mention has been occasionally made by Professor Dick of the cure of that affection called "broken wind;" although the highest veterinary authorities, continental as well as English, have hitherto held that the disease was, to use the precise words of Mr. Percivall, "in itself incurable." Now, I cannot help remarking, before I proceed further with this letter, that the fact of these assertions, emanating from a gentleman whose position as a teacher of our neglected art ought to entitle his opinions to some degree of consideration, having been made public for the greater part of a year, without attracting the slightest observation

from the veterinary world, seems to me to argue one of two things,—either that the members of our profession are utterly indifferent about the advancement of science, since they suffer an announcement of the most important discovery ever made in connection with our art to pass by wholly disregarded;—or, otherwise, that the Edinburgh Professor's statements are not held worthy of credit. I think few will be inclined to differ with me, when I say that neither of these conclusions are very creditable to us as a body; yet there is no getting rid of the inference: one or the other must be correct.

But the ice was at last broken. In the November number of *The Veterinarian* there appeared a letter from Mr. Fisher, of Waltham, calling upon Professor Dick to make public the secret of his discovery; and though it was evident that Mr. Fisher had some difficulty in keeping his countenance whilst asking the question, the Professor has replied, with the utmost seriousness, that he "does not feel himself at liberty to comply with the request," and alleges, in excuse, that "his knowledge is in some measure the property of his pupils;" and therefore we are to presume that he would not be justified in giving it to the world. Without stopping to inquire into the justice of such an excuse, I cannot help remarking that it seems to me absurd: and such certainly was not the conduct of Jenner, Bell, Hunter, or any other great discoverer who has preceded Professor Dick.

Now, let us suppose a case, gentlemen. Suppose, for instance, that I, a plain country practitioner, but having some connection with, for example, THE VETERINARY RECORD, which by virtue of allowing my name to appear on its cover as co-editor, gave me unquestioned access to its pages, was to take advantage of this privilege to report, from month to month, the occurrence of from two to three hundred cases of disease, as having been admitted and treated at my establishment; that these reports were illustrated by remarks on a few of the most serious cases, not however describing the manner in which the cures were effected in a way to enlighten your readers, but merely making use of the terms "proper applications," "necessary remedies," and other expressions equally indefinite; and pervaded throughout by a kind of dream-like indistinctness that gave them (the more especially when it was understood that I did not possess accommodation

for more than a comparatively few patients at any one time) rather the appearance of something imaginary than real: suppose all this, I say, to occur with regard to me, and what is the conclusion that the public would come to respecting my conduct, presuming, of course, that I was a teacher? Why, the most charitable conjecture would be, that I was perverting the pages of your Journal to an unwarrantable purpose,—that of advertizing and puffing myself for selfish purposes. And suppose, further, that having asserted in these same reports that I had succeeded in curing diseases which had hitherto baffled the skill of the whole veterinary world, I am called upon to explain the means by which such a desideratum has been effected, and refuse to comply with "so reasonable a request," urging in justification some such excuse as that just alluded to; what, then, would be said? Does any one doubt that I should be accused of monstrous empiricism, and my pretensions treated with absolute contempt? This, I confess, is the reward *I* should expect.

In looking over some of the back numbers of *The Veterinarian* the other day, I was amused by an almost parallel case to the present, related in that Journal for Nov. 1843. It is a laughable story of an offer made to Mr. Youatt of the sale of a "recipe" for the cure of glanders, "above a hundred years old." Professor Dick's, although his "recipe" for the cure of "broken wind" is without this beautiful halo of antiquity, is nevertheless, like that of Mr. Youatt's applicant, "to be sold,"—price only fourteen guineas. Who'll buy?

I have spoken something of "a dream-like indistinctness" as pervading certain reports; and though I would not be understood to insinuate that any of the Professor's patients are, like the figures in Banquo's glass, viewed in prospection, yet it must be confessed, that, when we compare the number with the means of accommodation, they must, indeed, like the phantoms of Macbeth,

"Come like shadows, so depart."

Some of them, however, we are told, are in private stables; and then we are amazed at the activity of that imagination which can convert them all into "Cases occurring *at* the Edinburgh Veterinary College." But the expression is figurative. It must be an interesting sight to see Professor Dick, with thirty or forty

students at his heels, threading the streets of "auld Reekie," to visit his patients. We have heard a good deal about the "tail" of a famous Irishman, but I fancy that of our Scotchman must rival it. No doubt it is one of the "lions" of Edinburgh, and, should I ever visit the "modern Athens," I shall expect a sight of it.

And "to this complexion have we come at last," notwithstanding that "priceless boon of our most gracious Sovereign," that "inestimable jewel," the Charter—Council—President—Royal College, and all. Advertise—advertise—advertise! Puffing and quackery are the true talismans of success.

"Motley's the only wear."

Go back a hundred years, and resume the "cap and bells" at once! Recollect, the Professor of one of the schools recognised by our Charter sets us the example; and our old established—and with all reverence I speak it—much valued Journal is the medium through which his purposes are effected.

One of the schools sanctioned by our Charter. This is a subject on which I could wish to dilate. The injustice of sanctioning more than one was indeed monstrous. An institution with a single teacher and one stable, inferior in its accommodations to nine-tenths of the private veterinary establishments in England, was admitted, by this "most perfect" Charter, to equal privileges with our own alma mater, whose advantages, as it possesses separate teachers to each branch of the art, and an infirmary capable of accommodating nearly a hundred patients, it would be idle to dwell on. Never was any thing more preposterous. But comparisons are indeed "odious," and I must quit the subject, although I mean to refer to this immaculate Charter on a future occasion.

But, it may be urged, it is possible that the Edinburgh Professor may really have discovered a means of curing broken wind. He asserts it with great positiveness, and, at the same time, informs us that *some* of his pupils have been equally successful. In sober earnestness, then, I call upon Professor Dick to name to me one practitioner in England, a graduate of his school, who possesses this enviable power, and I will put his pretensions fairly to the test. I will cause to be conveyed to him a well-marked case of

the disease in question; and if I find him successful in treating it, then will I confess that I have sinned much in ever questioning his teacher's powers, and recant all I have here written. Until this is done, however, I must be contented to doubt.

"Censure," it has been remarked, "is a kind of tax men pay to the world for being eminent." Professor Dick, therefore, must remember that he is professionally a public character, and not take offence if his professional acts are made matters of comment. Let him not hope to divert his veterinary brethren from the subject at issue by simply abusing me. I expect him to come forward at once, and name the individual who is to be his representative in this matter on this side the Tweed; and, unless he does so, I shall continue to be of opinion, in spite of his assertions and "reports," that we of the school at St. Pancras are quite equal in knowledge to any of the Edinburgh school, and that the advantages of our institution are much greater.

I am, &c.,

Bishop's Castle, Salop. W. LITT.

ON THE MODE IN WHICH PURE SALIVA ACTS ON FECULA AT THE NORMAL TEMPERATURE OF THE MAMMIFERÆ, AND AT 167° F.

By M. LASSAIGNE, *Chemical Professor at the Veterinary School at Alfort, H.A.V.M.A., &c. &c.*

OUR readers will remember that in our last volume we gave an extract, from the "Philosophical Magazine," of a paper on the Digestion of Starch, by Dr. R. D. Thomson, in which dextrine was found by him in the stomachs of animals. From the following it would appear that this conversion of a comparatively insoluble into a soluble substance rather takes place in the small intestines than the stomach.

In this memoir the author does not purpose examining the peculiar principle which M. Mialhe states having extracted from human saliva *(diastase salivaire)*, but to ascertain if pure saliva, obtained by dividing the Stenonian duct, acts like diastase on fecula at the normal temperature, or at 167° F.; and from experiments detailed concludes,—1. That the saliva of man and the horse at the normal temperature (100½° F.) does not dissolve fecula, and

that this substance is not changed either in its shape or in its other physical or chemical properties;—2. That exposed to a heat of from 158° to 167° F., and kept thus for about three hours and a half, the saliva of the horse acts like water on fecula—that is to say, the grains distend and swell, but are neither transformed into *dextrine* nor *glucose*;—3. That human saliva converts fecula rapidly into *dextrine* at a temperature of from 158° to 167° F., and finally into *glucose*;—4. That during the digestion of uncooked amylaceous matters, saliva, at the normal temperature, does not possess the influence attributed to it by M. Mialhe; it contributes only—as almost all ancient and modern physiologists have announced—to moisten the food and dissolve some of the principles soluble in the water it contains.

Medical Times.

On the Action of the Pancreatic Juice of the Horse on Fecula.

By the same.

The experiments of our author prove that the pancreas, placed in boiling water for five or six minutes so as to be parboiled, has no action whatever on starch at the normal temperature of the body; whereas, before it was placed in the water, the *pancreatic tissue dissolves* the starch at the same temperature and changes it into dextrine. This result is also obtained in one or two minutes at 100½° F., if to the parboiled a small quantity of raw pancreas is added.—*Medical Times.*

The Functions of the Pancreas.

MM. Bouchardat and Sandras; following out their researches on the chemical phenomena of digestion, have recently ascertained that the pancreatic juice possesses the same properties as the saliva. This liquid, taken from the pancreas of strong farmyard fowls, was transparent and viscous, presenting a slightly alkaline reaction. Mixed with amidon jelly, it liquefied it and transformed it into dextrine and glucose. By adding alcohol it formed a white deposit, which also acted on the jelly of fecula in the same manner as dias-

tasis. A temperature of 100 (centig.), or the addition of various substances, such as tannin, the mineral acids, or the metallic salts. destroyed its properties. The pancreas itself, extracted from animals and carefully separated from the different vessels which pass through it, and from the blood by which it may be soiled, possesses in a high degree the property of giving rise to the transformation of fecula. A few fragments of the gland mixed with starch, tepid and very consistent, convert it, after a few minutes, into a liquid free from viscosity. Pounded and mixed with water, they give a fluid, from which it is possible to separate, with the assistance of alcohol, a flaky precipitate, endowed with the power of dissolving fecula. Other organs, such as the liver, treated in the same manner, do not give the same results. We may therefore conclude, from these facts, that the principal function of the pancreas is to secrete a liquid able to dissolve feculaceous substances, to allow of their absorption in the intestine by the smaller ramifications of the vena porta, and, consequently, to admit of their utilization by the animal economy.—*The Lancet*.

Digestion of Saccharine and Amylaceous Matters.

M. Mialhe has recently made numerous researches with reference to the physiology of digestion. The essential basis of the alimentation of animals, he states, is constituted by three distinct groups of bodies,—albuminous, fatty, and saccharine matters. The labours of modern chemists have shewn that albuminous substances become assimilatable through the assistance of the gastric juice, which by its acid swells these azotized products, and by its *pepsin* liquefies them, a phenomenon analogous to that of diastasis on amidon. Fatty matter becomes assimilatable by the intervention of bile; but with regard to feculaceous and saccharine matter, says M. Mialhe, there is nothing positive known. This lacuna in science he has endeavoured to fill.

The new facts at which M. Mialhe has arrived tend to shew that all hydro-carbonaceous substances can only undergo the phenomenon of assimilation when they have been decomposed by the weak alkaline dissolutions contained in the vital humours; either immediately, as with glucose, dextrine, sugar of milk; or medi-

ately, as with cane-sugar and amidon, which have to be first transformed in the economy, the one (cane-sugar) into glucose, the other into dextrine or glucose. As to hydro-carbonaceous substances, which are neither susceptible of fermentation nor of decomposition by weak acids, or alkalies in solution, such as lignite or mannite, they escape, in man, the digestive and assimilating action. But by what chemical action is the amidon transformed into dextrine and glucose? Numerous experiments have proved to M. Mialhe that this transformation is produced by the saliva, through a principle which this humour contains, a principle comparable in every respect to *diastasis*. In order to isolate it, human saliva, first filtered, is treated by five or six times its weight of alcohol, alcohol being added until precipitation ceases. The *animal diastasis* is deposited in white flakes. It is gathered on a filter, from which it is taken still moist, and dried in layers on glass, by a current of warm air, at a temperature of from 40 to 50 degrees (centigr.); it is preserved in a well-stoppered bottle. This active principle of the saliva is solid, white, or of a greyish white, amorphous, insoluble in alcohol, soluble in water and weak alcohol. The aqueous solution is insipid, neutral; the sub-acetate of lead does not give rise to a precipitate. Abandoned to itself, it soon becomes acid, and whether or not in contact with the air. This *animal diastasis*, studied comparatively with diastasis extracted from germinating barley, presents the same modes of action. It transforms amidon into dextrine and glucose: acting on starch and elevating the temperature to 70 or 75 degrees, the liquefaction is nearly immediate. One part of this substance suffices to liquefy and convert two thousand parts of fecula. The agents, such as creosote, tannin, the powerful acids, the salts of mercury, of copper, of silver, &c., which destroy the properties of *diastasis*, act in the same manner with respect to the active principle of saliva. At an equal weight they both liquefy and transform the same quantity of hydrated amidon. It appears, even, that the active principle of germinated barley is seldom as energetic as that of saliva, which is owing to the greater facility of obtaining the latter in a pure state. Finally, as a last resemblance, the *animal diastasis* existing in the saliva of man rarely exceeds two thousandths, and this is exactly the proportion of the diastasis contained in germinated barley. *The Lancet.*

On the Feeding of Animals.

By M. Boussingault.

Oily grains contain a large proportion of animal matter, similar in its composition and properties to caseine from milk. Oil-cake retains the whole of this azotised principle: the proportion of azote, which amounts generally from 0·05 to 0·6, indicates about 42 per cent. of animal matter. Theory indicates so high a nutritive value, that 100 parts of hay may be replaced by from 22 to 27 of oil-cake. Its general use in cattle-feeding is ample proof of its nutritious qualities. One of our most skilful farmers in the south of France has succeeded in keeping sheep almost exclusively on this food. Being at the head of extensive oil-works in the department of Herault, and finding it difficult to dispose of the oil-cake, he determined to connect with his establishment one for feeding cattle, which he keeps on linseed-cake and the refuse of grapes. Cows subjected to this regimen give, on an average, nearly two gallons of milk a-day. Their food is about 15⅝ lbs. of oil-cake per head, taken at three meals, immediately after which they are supplied with water. Each cow has, besides, 13¼ lbs. of straw or corn chaff. The cake is broken into fragments, moistened, and kneaded with water till it is of the consistence of dough. Cows sometimes refuse it; it must then be given in balls about the size of the fist; and, in general, two or three trials are sufficient to reconcile them to their diet. Supposing them to be properly nourished with 33 lbs. of hay, and that 6 of straw are equal to 1·4 of hay, we find that 15½ of oil-cake take the place of 30 of hay; the equivalent of oil-cake then becomes 51·5, a very different result from 22, which is given by analysis. It must, however, be remarked, that the equivalents are very differently stated by authors, as 42, 57, and 108. M. Perrault de Iotemps has found, from observations made on four milch cows, that 500 parts of rape-cake, given in the form of gruel, are equal to 1370 of hay. The equivalent, then, is 36·5; analysis indicates 23. We see, then, that results obtained in practice, though very different, agree in giving to oil-cake a nutritive value lower than that which is indicated by theory. I am the more inclined to dwell on this disagreement, because it seems to me to depend on

a circumstance which it is highly important to observe; I mean the influence of bulk as distinguished from quality. Vegetable food has, for the most part, nearly the same specific gravity, viz., one slightly above that of water; the bulk, therefore, of the meal depends on its weight. A regimen, then, formed of some extremely nutritious food, and, consequently, of very small bulk, would present serious inconveniences. A cart-horse of ordinary size requires about 26½ lbs. to 33 lbs. of solid food, and 26½ lbs. to 31 lbs. of water in twenty-four hours. The bulk of this allowance, reduced by mastication to the ordinary consistence of the contents of the stomach, is about a cubic foot. Now if, for the ordinary food, one five times more nourishing is substituted, as oil-cake for example, the dry ration, according to the law of equivalents, would be reduced to about 6½ lbs., and its total bulk would be about ten inches cubed. The animal would not be filled, and would, without doubt, experience the pains of hunger. If, on the contrary, food of low nutritive powers be substituted, as wheat-straw, which has an equivalent of 500, the 33 lbs. of dry food would become 165 lbs., and be too bulky to admit of their being consumed in a day. In feeding, then, the bulk of food is a material element: the stomach must be properly filled; the bulk, whatever be the food, must be sufficiently great; and hence arises the difference abovementioned in the nutritive equivalents. The exact appreciation of the limit beyond which any substance ceases to be nutritive is very difficult. When we add to a regimen, known to be sufficient for the support of an animal, a new portion of food, the effect of the addition is scarcely perceptible; so that in practical observation we are subject to underrate the nutritive value of food, when administered in too large quantities. This has been proved to us by a series of experiments on the feeding of milch cows. A cow, which had in Jerusalem artichokes and dry fodder the equivalent of 33 lbs. of hay, had, in addition to this allowance, 6½ lbs. of rape-cake, so as, in fact, to double its nutriment. The cow took half only of the cake, and, notwithstanding this addition, she did not yield more milk. According to this observation, the equivalent of the cake, though one of the most nutritious substances, was in effect zero.—*Chemist.*

On the Formation of Fat in Animals.

By the same.

[Extracted from the Lancet.]

A letter addressed to M. Arago, by M. Boussingault, contains the following highly interesting remarks:—

"My researches appear to establish, 1st. That pigs, at the age of eight months, fed in the usual manner, have much more fat than they can have derived from their food. 2d. That pigs fed for six months solely on potatoes, produce no more fat than is to be found in the tubers themselves. 3d. That in fatting pigs (I have made experiments upon nine) there is much more fat produced than can be found in their food. 4th. That those articles of food which, given alone, do not enable the animal to form fat, acquire the power to do so in an astonishing manner, when mixed with some fat, although the fat by itself would cause inanition. 5th. That fattening food, which contains only the smallest quantity of fat, is always rich in nitrogenous principles.

"I have fattened geese, and, as M. Persoz first observed, have found that the fat produced considerably exceeds the amount of oil found in the maize. This fact I am anxious publicly to acknowledge, as one of the commissioners appointed by the Academy to examine his communication.

"I can tell you, in two words, how I satisfied myself of the rapid influence of fat in the process of fattening. Some ducks were crammed with rice, which contained scarcely a trace of fatty matter. To others of the same weight and brood I gave the same quantity of rice, adding a little butter. Those fed with the pure rice scarcely increased, whilst the ducks which took the butter and rice became, in a few days, perfect balls of fat.

"In all my experiments I have constantly observed the formation of flesh accompany the production of fat."

On the reading of this letter, M. Milne Edwards remarked that the experience of M. Boussingault agreed perfectly with his own experiments, made in concert with M. Dumas, in 1843, on the production of wax by bees.

"In our experiments," said M. Milne Edwards, "the bees gave no wax when we fed them with sugar and water only, but they

created it when we furnished them with honey, a substance which contains a very minute proportion of waxy matter. The quantity of fatty matter the bees obtained in their food, combined with that which pre-existed in the bodies of the insects, was altogether insufficient to explain the production of the wax formed during the course of the experiment, so that we must attribute to these creatures the power of making wax at the expense of the saccharine matter in their food. We have not attempted to assign the principle which thus acts as a sort of ferment in this transformation; but if we adopt the views of M. Boussingault, we can readily account for these facts. At all events, these new experiments of our colleague prove that the same phenomena occur in mammiferous animals as in insects."

M. Payen observed, "these researches demonstrate, in two different ways, the necessity of a certain proportion of fatty substances in the food of animals to determine a speedy and considerable accumulation of fat in their tissues; they thus agree with the conclusions deduced by MM. Dumas, Boussingault, and myself, from very numerous analyses of vegetable substances compared with their effects in fattening and in the formation of milk. We attach great importance to these facts, from their practical utility. They strikingly shew the necessity of knowing the immediate composition of every kind of food, and enabling us to decide upon the most appropriate mixtures for nourishing and fattening animals in the most rapid and economical manner. Altogether, these investigations prove, contrary to the opinion of a learned foreign chemist, that we cannot expect from the use of potatoes, and similar food, the same results which are so easily affected by bran, maize, bread, and other substances rich in oily matter. Thus we find those traditional practices fully justified of giving malt, the refuse of distilleries, chopped straw, &c. As to the purely scientific question, the truth seems to lie between the two extreme opinions which have been entertained, and thus the experiments on both sides have been useful in bringing us to a definite conclusion."—*Comptes Rendus*, June 16, 1845.

At a meeting of the Academy, July 7th, an extract from a communication of M. Persoz was read. He considers that his experiments prove that geese are capable of forming fat without the intervention of fatty materials in their food; but, nevertheless, the

oily matter of maize exerts so marked an influence upon the fattening of these birds, that MM. Boussingault, Dumas, and Payen, are quite justified in their remarks upon it as a fattening article of food. In those geese which formed fat without having fatty matter in their food, the growth of the liver was extremely small (in the lean animal it weighed from sixty-seven to seventy-eight grammes), and retained its normal reddish-brown colour; whereas whilst the birds are fed upon maize, the liver is white, and weighs as much as four hundred grammes. This is an important fact in reference to diseases of the liver.

"We have said," continues M. Persoz, "that potato-starch, given, unmixed, to geese, produces diarrhœa, and that this symptom is relieved by calcined bones, which in this case acts as a base; we have also seen that, notwithstanding the intervention of this saline matter, the goose only lives and thrives when a small quantity of sugar or caseous matter is added to potato fecula. The necessity for a mixture of aliments of various kinds for the nourishment of these creatures is a new proof of the justness of the physiological principle, deduced by a member of the Academy from his experiments on the feeding of animals with neutral vegetable substances, fecula, sugar, gum, &c.; but it still remains for us to determine chemically the part which each of these substances performs in the act of nutrition. The use of calcined bones is not doubtful; the saline materials composing bone act as saturating substances, and assist in rendering the chemical process of digestion continuous, in the same way as the carbonate of soda or chalk operates in the lactic and butyric fermentations, according to MM. Fremy, Boutron, Pelouze, and Gelis. We must defer the expression of our opinion respecting the functions of caseine and other azotized bodies, proteine, albumen, and fibrin, until we have completed experiments now in progress; but they seem to have a much greater influence on the formation of fat than is generally supposed. If sugar, added to a mixture of potato and starch, supports and fattens geese, we suspect the azotized matter present exerts some important influence; for as we have observed that geese thus fed lose flesh after a time, and therefore it is more than probable that their own muscular fibre supplies the azotized matter essential to digestion and nutrition. In one individual which had not eaten any maize, the increase of

its fat was greater than its increase of weight. We need, however, further experiments upon these interesting points. The influence of sugar may arise from its ready conversion into lactic acid, the effect of which in the digestive process is so well known. The practical bearings of these points upon fattening cattle render them highly important, and we seem to be approaching to a scientific explanation of the mixtures found by experience to be useful in feeding animals."—*Comptes Rendus*, July 7.

REVIEW.

A practical Treatise on Healthy Skin, with Rules for the medical and domestic Treatment of Cutaneous Diseases. By Erasmus Wilson, *F.R.S., Consulting Surgeon to the St. Pancras Infirmary, and Lecturer on Anatomy and Physiology in the Middlesex Hospital. Illustrated with six steel engravings by Bagg.* Churchill. 8vo., pp. 356.

Mr. Erasmus Wilson has made the subject of the skin and its diseases so peculiarly his own, and the majority of our subscribers and readers are so well acquainted with him through his works, that we deem no apology necessary for giving a brief analysis of the volume before us, and of selecting some of the many novelties which we find in its pages. The purposes which the author had in view in penning this elegant little volume are stated in his first paragraph:—"I propose," he says, "to make my reader acquainted with the structure and uses of the skin, in the hope of awaking his attention to the necessity and manner of training it to the purposes of health. I trust, moreover, by laying down correct and simple laws, to enable him to comprehend the principles on which a sound and effective domestic treatment of its diseases may be conducted."

At first sight it might appear that we were a little wandering from our legitimate path in reviewing a work devoted to human medicine; but closer reflection will convince our readers that a knowledge of human structure is as necessary an aid to comparison in veterinary anatomy as is comparative structure to the human anatomist. Moreover, we shall shew as we proceed, that

Mr. Wilson avails himself of the broad field of comparative organization to cull the blossoms that may serve to illustrate his subject. But there is another point of view beyond the preceding, in which we may do service to our cause by selecting from the book before us. It treats of HEALTH, and of the *means of preserving and maintaining health*. Now, as health is as necessary a possession to the labourers in the vineyard of veterinary medicine as it is to the public, to whom Mr. Wilson's book is especially addressed, we conceive it to be our duty to avail ourselves of the opportunity which it offers, and follow out the rule which we have established for ourselves of drawing TRUTH from its fountain wheresoever it may be found, and of presenting its flowing cup to our friends.

To begin with the beginning. Mr. Wilson divides his subject into eighteen heads, to each of which he devotes a chapter. The first five chapters treat of the scarf-skin, the true or sensitive skin, the perspiratory system, the oil glands, and the hairs. The next four point out the importance to the health of the skin, and at the same time to that of the entire system, of diet, clothing, exercise, and ablution. Chapter X discusses the "merits of hydropathy, or the treatment of disease by water;" and the remaining chapters are occupied with the diseases of the skin and their management. Having passed the threshold of the table of contents, we are next introduced to six plates, containing upwards of sixty figures beautifully engraved on steel by Bagg, and drawn by the author himself. The greater part of these figures, while they represent the structures they are intended to illustrate perfectly, are drawn to a scale, and hence afford a notion of their comparative size. This is an advantage on which it will be unnecessary for us to dilate, and, as far as we know, it is as novel as it is important. In Plate 2, there is a sectional figure of the skin drawn from nature, which enables us to perceive at a glance the relative thickness of the layers of the skin, and the position of the perspiratory glands with their spiral tubes. In this plate also we have a figure representing the mode of implantation of the nail upon the sensitive skin, an illustration that might pass for the connexion between the wall of the hoof and the plicated folds of its vascular base. Plate 3 places before us a variety of forms assumed by the sebaceous glands, their relation to the hairs, and the entozoon which is so frequently found between them. Plate 4 illustrates the anatomy

of hair, and the alliance between hair and feather, the hair of the Indian bat forming a kind of transition between those organs. In this plate also will be seen figures of the fibre of linen, silk, cotton, and wool, these figures being intended to illustrate the subject of the clothing of the skin. Plate 5 illustrates the acarus scabiei; and Plate 6 is devoted to some of the morbid conditions of the skin, such as wart, corn, ichthyosis, molluscum, and acne.

Respecting the development of the scarf-skin, the author sees reason to differ from Schwann in the explanation given by that physiologist of the growth of the cell. Schwann, as most of our readers are aware, conceives the growth of the cell to be the result of a simple process of imbibition, whereas Mr. Wilson has shewn it to be "effected by a series of changes within the cell analogous to those by which the cell is originally formed: thus new granules are produced" within the newly-formed cell; "they collect together in little masses, and after awhile a cell-membrane is developed around them, so that, when the original cell is fully formed, it is, in physiological language, a *parent cell*, containing in its interior secondary cells, granules, and granular masses. These changes constituting the growth of the cells, occur quite in the deepest strata of the scarf-skin; and as, by degrees, the deep layers are gradually pushed upwards towards the surface. the cells lose by evaporation their fluid contents, and are converted into dry flattened scales, which are closely matted together, and form a dense and laminated texture, adapted, on the one hand, to yield freely to every movement of the body, and, on the other, to resist the influence of chemical and mechanical agents in causing injury to the sensitive skin beneath."

Mr. Wilson's description of the adaptation of the nail to the sensitive skin, and its mode of growth, may be applied literally to the implantation and growth of the hoof of the horse, &c. He observes,—"A more beautiful adaptation is that existing between the nail and the surface of sensitive skin on which it rests. The latter, in this situation, is formed into very delicate longitudinal folds, which stand up perpendicularly to the surface. The nail, upon its under surface, is fashioned into thin vertical plates, which are received between the folds of sensitive skin; and in this manner the two kinds of laminæ reciprocally embracing each other, the firmness of connexion of the nail is maintained. If we

look on the surface of the nail. we see an indication of this structure in the alternate red and white lines which are there observed: the former of these correspond with the sensitive laminæ, the latter with the horny plates, and the ribbed appearance of the nail is due to the same circumstance. These sensitive laminæ are provided with an unusual number of capillary vessels for the formation of the nail, and hence they give a red tint to that portion under which they lie. But, nearer the root of the nail, there is a part which is not laminated, but merely rigid longitudinally, and is less abundantly supplied with capillary vessels. This latter part consequently looks pale, as compared with the preceding, and from its half-moon shape is technically termed the *lunula*. Beyond the lunula the root of the nail is embedded in a fold of the sensitive skin, and has the same relation to that structure that any single one of the thin horny plates of its under surface has to its corresponding pair of sensitive laminæ.

The mode of growth of the nail is peculiarly interesting. It must be apparent to every one that the nail is thicker at its free end than in the situation of the lunula, and, consequently, that it must grow in thickness as well as in length. The growth in thickness takes place by the addition to its under surface of an organizable fluid which becomes converted into cells in the manner already described in the formation of the scarf-skin. By this process the horny plates are gradually raised out of their sheaths, and their original depth is maintained by fresh additions to their free edge; and, moreover, their entire surface being in a state of progressive formation is soft and impressible. Let us now turn to growth in length. This takes place by means of a similar process, occurring at the free edge of the root. Additions are made to this edge, and, as the cells enlarge, they press the nail forwards; and the latter, being connected with the longitudinal laminæ by a soft medium, offers no resistance to the onward growth. Thus we have growth in thickness and growth in length proceeding harmoniously.

Passing over the chapter on the sensitive skin to that on the perspiratory system, we come to the following passage, which we quote without comment. "To arrive at something like an estimate of the value of the perspiratory system in relation to the rest of the organism, I counted the perspiratory pores on the palm

of the hand, and found 3528 in a square inch. Now each of these pores being the aperture of a little tube of about a quarter of an inch long, it follows that in a square inch of skin on the palm of the hand there exists a length of tube equal to 882 inches, or 73½ feet. Surely such an amount of drainage as 73 feet in every square inch of skin, assuming this to be the average for the whole body, is something wonderful; and the thought naturally intrudes itself, What if this drainage were obstructed? Could we need a stronger argument for enforcing the necessity of attention to the skin? On the pulps of the fingers, where the ridges of the sensitive layer of the true skin are somewhat finer than in the palm of the hand, the number of pores on a square inch a little exceeded that of the palm; and on the heel, where the ridges are coarser, the number of pores in the square inch was 2268, and the length of the tube 567 inches, or 47 feet. To obtain an estimate of the length of tube of the perspiratory system of the whole surface of the body, I think that 2800 might be taken as a fair average of the number of pores in the square inch, and 700 consequently of the number of inches in length. Now the number of square inches of surface in a man of ordinary height and bulk is 2500, the number of pores therefore 7,000,000; and the number or inches of perspiratory tube 1,750,000, that is 145,833 feet, or 48,600 yards, or nearly 28 miles."

When we contemplate the importance of chemical action to the animal economy, the multitude of chemical processes which are engaged in the maintenance of life, and the wonderful influence of vital agency, a step more would lead us to the belief that living and independent organisms might also be brought to minister to the functions of animal life. The myriads of fibrionidæ which are known to pass their busy existence in the secretions of the mouth, doubtless have some useful purpose to fulfil in that situation. The entozoa frequently so abundant in the alimentary canal are not wholly without their use; the acarus equi clears away morbid secretions, which, undisturbed on the skin, would occasion irritation and disease. The entozoon folliculorum, may it not also perform some useful part in the economy of the skin? Such is the opinion which Mr. Wilson entertains, and thus expresses. Referring to the presence of the entozoon in the follicles of the skin "at all ages, from youth to old age," he observes:—

"Under these circumstances, I see no other conclusion open than to assume that it performs some beneficent purpose in the economy of the skin; that purpose being, according to my belief, the disintegration of the over-distended cells, the impression of a new condition on the contents of the cells, and the stimulation of the tubes to perform their office more efficiently. In corroboration of this view is the fact, that these little creatures increase in number swhen the vital powers decline; so that, when the energies of the system are reduced by disease, and when the skin, participating in that reduction, is unable alone to fulfil its functions correctly, these little beings are produced to aid it in its work."

Describing the anatomy of a hair by its section, Mr. Wilson remarks, that "in its pigmy section" it "presents three different textures,—a loose cellular texture in the centre, a strong texture of parallel fibres, and becoming more and more dense towards the circumference: externally to this are a thin varnish-like layer of flattened cells, constituting the polished surface of the hair. We may compare this structure very aptly to the section of a twig or stem of a plant, with its cellular pith in the centre, its dense wood encircling the pith, and its smooth and polished bark at the surface."

And, proceeding to a comparison between human hair and that of animals, he further observes,—

"Although the central part of the hair of man is a loose pith, in which the original spherical form of the cells is more or less completely lost, yet in many animals this form is retained with the most exact precision; and such hairs appear to contain in their axes a very beautiful string of beads, rendered strikingly obvious, in dried hairs, by the emptiness of the cells. Such is the appearance of the very fine hairs of the hare or mouse. In thicker hairs from the same animals, there are two or three or more rows of cells, and the largest hairs from the number of these rows bear a resemblance in structure to an ear of maize. This is the chief modification which the pith of the hair undergoes in the animal kingdom, being more completely or less cellulated, and holding a greater or less proportion to the entire bulk of the hair: sometimes, indeed, as in some hair in my possession from one of the deer tribe, the whole texture of the hair is cellular, the other two portions being condensed into a thin envelope. In the feather of

a bird, which is a modification of hair, the white pith with its dense external covering is very evident in the shaft; while the quill is an illustration of the outer parts alone, the transparent puckered membrane, which is drawn out of the quill when first cut, being a single row of dried up cells. In the growing feather, the contents of the quill would be found distinctly cellulated.

"The fibrous portion of hair is the source of its strength, and, at the same time, the principal seat of its colour. In viewing a hair with the microscope, it is evident that the pigment is not diffused uniformly through the fibrous texture; that there are some cells which contain more than others, and appear as black spots amongst the rest, while, in all, that portion of the cell which is termed its nucleus is the most deeply tinted. It is upon this unequal mingling of the coloured with the uncoloured portions that the tint of the hair depends. Thus, the grey of the hair of the mouse is produced by a succession of coloured and uncoloured cells in alternate pairs, the blending of the colourless and the black giving their compound grey, just as alternate lines of blue and yellow produce upon the eye the impression of green; blue and red, purple; and red and yellow, orange.

"The exterior layer of the hair, composed, as we have seen, of flattened cells, or scales, of an oval form, exhibits a peculiar arrangement of these little pieces. They are so disposed, that each newly-formed circle overlaps the preceding, like tiles upon a housetop; so that if the reader will imagine a convex surface coated with oval tiles, disposed, not in measured rows, as upon the roof of a house, but irregularly, he will have a perfect idea of the appearance of the surface of a hair. The scales of a fish, or of a serpent, would give just the resemblance that I want, only that, in these animals, the plates are arranged with the most perfect and beautiful regularity. With this structure in our recollection, we have a key to the well-known phenomenon of a hair feeling rough when drawn between the fingers in one direction, and smooth in the opposite, or to the movement of a hair from its root to its point when rubbed longitudinally between the fingers. These are natural consequences of the projection of the edges of the scales. It also explains the circumstance of hairs working their way into wounds when the latter are not properly protected from their contact; the irritation to the skin caused by woollen garments; the

adhesion of dust and dirt to the hair, and the difficulty of separating from it the particles of scurf which become entangled in its midst."

When we consider the importance of the functions performed by the skin, we cannot fail of coming, with the author, to the conclusion, that it " must be an important agent for good or for evil in the animal economy." " It is, as it were, the thermometer of vital heat, the degrees upon its scale being computed by the expressions *agreeable* and *disagreeable*, in place of those of the common thermometer. The value of these expressions to health is not, however, sufficiently estimated; but it is nevertheless certain that a disagreeable impression of temperature in the skin is a warning note of something mischievous to health, acting either within or out of the economy. If the temperature be elevated above the agreeable point without an evident cause, there is fever; if it be lowered below the agreeable point upon only a part of the body, there is need of vigilance. The temperature of health is a genial summer over the whole surface, and when that exists the system cannot be otherwise than well. This brings me to the rule of health which I wish to establish—namely, *by food, by raiment, by exercise, and by ablution, to maintain and preserve an agreeable warmth of the skin*. Every thing above this is suspicious; every thing below, noxious and dangerous."

We would willingly lay before our readers the remarks made by Mr. Wilson on the relative value of linen, cotton, silk, and wool, as articles of clothing; but we have been already led into so many digressions, that our space will not admit of the number of quotations we could desire to make. We have, we trust, already said enough to induce our readers to consult the volume for themselves, and we are sure that our recommendation will meet with their approval. It is not a book of temporary interest, but one filled with useful suggestions and advice applicable at all times, in sickness and in health, and extending its influence from the first days of childhood to those of old age. In its pages may be found the principles most conducive to the rearing of the young, and the conduct of their physical education: youth is shewn to be the period for active sports and plentiful exercise, when strength and health are to be stored to encounter the storms of adult life. In the physical education of girls stays are strongly objected to, and the physiological actions of that article of female attire upon the

human frame are forcibly described. Passing from the period of youth, we have axioms for the use of ablution and the bath, agents which are calculated to avert disease from the animal frame, and bestow power and force; and, in addition to these matters, a clear and rational explanation of cutaneous diseases in a popular dress, with an assortment of such remedies as may be employed at home when medical assistance is not within reach and cannot immediately be obtained. We conclude by again strongly recommending the perusal of the *Practical Treatise on Healthy Skin* to our subscribers and friends.

Glanders and Farcy in the Horse. By WILLIAM PERCIVALL, *M.R.C.S., Veterinary Surgeon in the First Life Guards, &c.* London: Longman, Brown, Green, and Longmans.

THE above fasciculus is the concluding portion of volume iii of "*Hippopathology*, a systematic Treatise on the Disorders and Lamenesses of the Horse," by the same Author.

Mr. Percivall's works have been so long before the profession, and are so justly esteemed, that they need no commendations of ours. In his *Elementary Lectures on the Veterinary Art* he gave abundant proofs of his literary abilities, conjoined to an acquaintance with, and an ardent love for, his profession. We dare not assert that he was rewarded according to his merits by the eagerness with which these volumes were purchased by the public; but, being nearly all disposed of, he has deemed it wise to make them appear in another, and, as it is thought by some persons, an improved form. Although with this we may not, perhaps, altogether concur, nevertheless there cannot be a question but that, in his *Hippopathology*, an immense mass of practical information is to be met with; while the collected cases bespeak much industry and research, and are aptly illustrative of the different sections treated of. To these pages the established practitioner and the student of veterinary medicine may alike refer with advantage and mental profit; while they will prove of inestimable worth to every one with whom that noble and most useful animal, the horse, is a favourite.

The inability to cure one of the diseases of which this volume treats—namely, glanders—has been considered the *opprobrium* of

veterinary medicine. Why it should be we are at a loss to say, since the human practitioner meets with many maladies against which all his curative means prove unavailing, and to which his patients must succumb when the mandate has gone forth. As well might we hope to find out the boasted ELIXIR VITÆ, as to anticipate to be able to eradicate all the diseases which domestication has inflicted on the lower animals; indeed, the possession of that chimerical talismanic fluid would alone enable us to do so.

Referring our readers to the work itself for the most comprehensive description of the diseases adverted to that has yet appeared, with symptoms, modes of cure, &c., we may be permitted to extract the following introductory matter, as affording proof that no little benefit has resulted from veterinary surgeons having been appointed to our regiments of cavalry; nor can it be doubted but that a corresponding good has been derived by the community at large from correct principles having been applied to the practice of veterinary medicine, in place of the rude and barbarous system of the old school, or rather no school, of farriery.

"From perusal of the various works treating of hippopathology, even from ancient date down to the present time, we learn that diseases, as generations and ages have rolled on, have remained unchanged in their nature, notwithstanding the alterations in other respects they have manifestly undergone. In virulence or malignity many of them now are quite different from what they formerly were; in amount of prevalence or in epidemical character, others have shewn as striking changes. Grease, canker, strangles, farcy, glanders, are still in nature the same they ever were; yet how prevalent they were wont to be compared to what they are now-a-days! The state of horses in general, all large horse establishments, our cavalry in particular, bear record of these facts. I have oftentimes heard my father—who was for thirty years senior veterinary surgeon to the Ordnance—say, when he first entered the service, to such an extent did grease and canker prevail, and in such malignant and incurable forms, that numbers of horses infested with these diseases had been, for years past he learnt, annually shot as incurable: so bad was the stable discipline, and so wretched the state of veterinary practice. What, however, would be thought of an army veterinary surgeon at the present day in whose regiment was found a horse incurably greased or cankered? Nay, no very wholesome opinion would be formed of

such an officer, or of the stable-management practised in his regiment, were cases of this description, in any degree beyond a mere accidental occurrence, known even to *exist!* So great is the beneficial change wrought in our cavalry through the introduction into the service of veterinary surgeons.

"I can recollect, myself, the day when glanders and farcy prevailed to that extent among the horses of public departments, that hundreds—nay, thousands—of pounds sterling were yearly sacrificed at the horse-slaughterers' shrines: during the last seventeen years, however, that I have served in the Guards, I have had to treat but four regimental cases of these diseases; and these four —as I shall hereafter be able to shew—would not have occurred had not the regiment gone into the locality of contamination.

"Another most important, most tristful change that has taken place in respect to glanders and farcy, is the transfer of the disease from the quadruped to the human being. Many years ago the late Professor of the Veterinary College taught—and every disciple of his believed—that the disease was peculiar, in its infection restricted, to the horse and his fellows in species, the ass and the mule: sad, however, to relate, scarce twenty years had this doctrine, *ex cathedrâ*, prevailed, when a veterinary student, a schoolfellow of mine, through dissection contracted the disease, proving but too fatally in his own person, poor fellow! the complete fallacy of all notions about insusceptibility: since which, I need hardly add, the melancholy truth of the human as well as the equine species being obnoxious to both glanders and farcy has had but too many mournful realizations.

"In the investigation I am about to institute into the causes and nature of glanders and farcy, and into the efficacy of such medicaments as have at one time or another been brought forward as *remedies* or *antidotes* for those diseases, I do not anticipate being able to elicit or produce much, if any thing, that is *new:* should I, however, succeed in culling such materials from the ample sources of information lying open before me as shall, by judicious compilation, form what our neighbours the French are pleased to call, in briefer language than we can express the same, a *corps de doctrine*, I may, at least, become entitled to the merit of having laid a foundation serviceable to future inquirers in the same mysterious department of science."

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ON THE PURGING CROTON.

By W. J. T. MORTON, *Lecturer on Veterinary Materia Medica, &c.*

BY general consent the preparations of croton have obtained a place in the pharmacies of most veterinary surgeons. There are some practitioners who object to them on account of their not being always certain in their operation, while others say they have found them too irritating. These very discrepancies prove them to be agents possessing some degree of power; and, perhaps, we are yet in want of a well-conducted series of experiments, or a more extensive employment of them, before we can speak definitely of their action. As they have been most commonly resorted to as purgatives, I have no hesitation in expressing my firm conviction that in veterinary practice they will never supersede the more safe, certain, and efficacious extract called aloes. Yet they have other properties which recommend them to our notice, while occasionally there are peculiar circumstances and certain states of the system present under which the last named agent is inadmissible; where, too, we are desirous of administering an active purgative, and that in the smallest possible bulk or volume. As confirmative of this I need only refer to the disease designated Tetanus.

The tree furnishing croton seeds *(semina crotonis)* is an habitat of the greater part of the continent of India, and it is also found in the Molucca islands. The seeds resemble in appearance those of the castor-oil plant; they have no smell; an oleaginous taste at first, but which is quickly followed by an acrid and burning sensation that remains on the palate for some time: the testa is dark-

coloured, and incloses the dicotyledons, which abound with oil. In 100 parts of these seeds, Dr. Nimmo found 36 parts to consist of shell, and the remaining 64 parts to be kernel. By expression they yield an oil of an amber colour, having an unpleasant odour and a hot biting taste, which is partially soluble in alcohol, and wholly so in ether and oil of turpentine. Dr. Nimmo's analysis makes it to be constituted of

An acrid matter . .	45
A bland fixed oil . .	55
	100

Brandes has given a more complex analysis, making the seeds to contain a peculiar acid, called by him the *crotonic*, in combination with an alcaloid *(crotonin)*: these probably make up the acrid principle of Dr. Nimmo. This fatty acid is volatile, has a strong nauseous odour, and irritates the eyes and nose; hence to it has been referred the action of croton oil as a local irritant, while its cathartic properties have also been attributed to its presence. That it is the sole active principle, however, has been doubted.

An objection has been raised by veterinary surgeons to the use of croton from its irritating and inflaming the mucous surfaces over which it may pass or come into contact. This is seen when the expedient is had recourse to of giving the bruised seeds, or the farinaceous residuum after their expression, in the animal's provender, or by dropping the oil on the tongue. Yet on this its operation as a purgative principally depends. When externally applied, some of the preparations of croton prove powerful irritants. A terebinthinate solution of the acrid principle, made by macerating an ounce of the bruised seeds in eight ounces of the oil of turpentine for a fortnight, has been found to be so active as to cause much rubefaction, followed by a vesicular eruption, and even desquamation of the cuticle of the thick skin of the ox tribe. Occasionally this solution requires dilution with olive oil, and it would always do so for the horse; but for him we have better counter-irritants.

The acrid principle is also abstracted by alcohol. The form of tincture has therefore been advocated, which is made by digesting an ounce of the bruised seeds in sixteen ounces of rectified spirit for a fortnight. This, on the addition of water, becomes cloudy;

hence the existence of a resinous body has been suspected. The advantage derivable from this pharmaceutical compound is, that we are enabled, in cases of emergency, to administer a purgative in the water the animal partakes of.

But, as a purgative to the horse and cattle, the farinaceous matter that remains after croton oil has been expressed from the seeds is by far most generally made use of, it having being found less irritating than the oil, or the seeds themselves; its activity, however, must vary with the amount of acrid principle that remains in combination. The union of this with other cathartic agents renders them more active, while the quantity of each required to be given is lessened. The cause of this has been assigned to arise from the position laid down by physiologists, that no two therapeutic agents, even of the same class, cause action in precisely the same manner. Very considerable quantities of croton cake, I am informed, were at one time thrown away, from there being no demand for it. But the object I have in view in these remarks is not so much to speak of the general properties of croton, and its officinal preparations, as to advert to its poisonous influence, several instances of death resulting from its incautious use having fallen under my notice.

Each part of the seed has in its turn been described as the residence of the active acrid principle. Hearing it asserted that the plumûla was its seat, so that the rudiments of the future plant might not be preyed upon by insects, while the cotyledons, which preserved them, might even be altogether removed, it struck me that it was of little moment whether the plant itself were thus destroyed, or its sustenance withheld during the first period of its existence, since

"You take my life,
When you do take the means whereby I live."

I, therefore, instituted an experiment to ascertain its truth. Sixty grains of croton seeds were decorticated, the testæ and plumulæ carefully separated, and the remaining cotyledons administered in equal proportions to two horses. On the following morning both the horses were labouring under superpurgation, accompanied with much constitutional excitement. The alvine evacuations were profuse, frequent, and watery; the visible mucous membranes highly injected, the extremities and surface of the body cold, the

pulse and respiration accelerated, and the prostration of strength extreme. Astringents combined with sedatives were immediately had recourse to, and hot fomentations applied to the abdomen, but all in vain: one of the animals died about mid-day, and the other lingered in great agony till the evening. Inspection of the alimentary canal after death shewed the whole of its lining mucous membrane to have been in a state of acute inflammation, the blood-vessels highly turgid, and the large intestines filled with fluid fæces. The cæcum and colon were more particularly involved. The separated plumulæ and testæ were afterwards exhibited to a horse without any visible action on the bowels. The inference to be drawn is plain.

Dr. Pereira, speaking of the effects of croton seeds and oil on animals generally, says, "Croton seeds are powerful local irritants or acrids, causing inflammation in those living parts with which they are placed in contact. Orfila *(Toxicol. Gén.)* found that three drachms being introduced into the stomach of a dog, and the œsophagus tied to prevent vomiting, caused death in three hours; and, on examination of the body, the alimentary canal was found to be in a state of inflammation. In another experiment, a drachm caused death under the same circumstances. A drachm, also, applied to the cellular tissue of the thigh, was equally fatal. A dose of from twenty to thirty grains of the powder of the kernel given to the horse causes, in six or eight hours, profuse watery stools, and is recommended by some veterinarians as a purgative; but the uncertainty of its operation, and the griping and debility which it occasions, are objections to its use (Youatt, *the Horse*, in *Libr. of Useful Knowledge)*. Lansberg (Wibmer, *Arznein. u. Gifte*, Bd. ii. S. 222) found that twenty of the seeds killed a horse, by causing gastro-enteritis. The pulse was frequent, small, and soft."

"On vertebrated animals (horses, dogs, rabbits, and birds) the oil acts as a powerful local irritant or acrid. When taken internally, in moderate doses, it operates as a drastic purgative; in large doses, as an acrid poison, causing gastro-enteritis. Moiroud *(Pharm. Vétér.* p. 272) says, that from twenty to thirty drops of the oil are, for the horse, equal to two drops for man; and that twelve drops, injected into the veins, cause alvine evacuations in a few minutes. Thirty drops, administered in the

same manner, have caused, according to this veterinarian, violent intestinal inflammation and speedy death. A much less quantity (three or four drops) has, according to Hertwich (Wibmer, *Arsneim. u. Gifte*, Bd. ii. S. 218), terminated fatally when thrown into the veins. After death the large intestines have been found to be more inflamed than the small ones. Flies, which had eaten some sugar moistened with the oil of croton, died in three or four hours, the wings being paralyzed or immoveable before death."

It has been long thought that, in the upper provinces of India, croton seeds are given by the natives to horses for the purpose of poisoning them for the sake of their skins. Mr. Hughes, V. S. Calcutta, informed me that, with a view to ascertain if this really were the agent administered, he gave to a horse two drachms of the bruised seeds, allowing him afterwards as much water as he would drink, and for which a great desire was manifested. Most violent catharsis supervened, which continued for some time, but the animal ultimately recovered. Was not the allowance of the water the reason of this? By it the poison was quickly passed onwards for expulsion, and at the same time its acridity lessened. Mr. D. Foy, who has resided for some years in India, tells me that he is convinced the natives do not give croton for this purpose, but one of the Datura, several species of which are employed in the East, to excite intoxication, and for other purposes. While travelling between Allahabad and Cawnpore, he states the utmost caution was obliged to be exercised, so that no admixture of this deleterious plant was effected by the Syces who were temporarily employed by him to cut the grass for the horses. Cawnpore is celebrated for its saddlery, and the skins of the horses are sold to the native tanners for making leather. In the native hospital at Calcutta, Mr. Foy has frequently witnessed the poisonous effects of the datura on the human subject.

Dr. Burnett, in his Outlines of Botany, under the head *Datureæ*, remarks, "The *Thorn-apples* are different species of *Datura* (so called from the Arabic word datora or tâtôrâh), and some of them are natives of either hemisphere. *D. Stramonium*, the common thorn-apple, now naturalized in Britain, is a native of America, where it was so troublesome a weed on the newly cleared ground, and produced such extraordinary effects when eaten by the new settlers, that it obtained from the European colonists the name of

the Devil's apple, or the James-town weed. It is remarkable that a variety of this species, viz. *D. canescens*, is indigenous to Nepal. *D, ferox* is a native of China, *D. fastuosa* of Egypt and Arabia, *D. Metel* of Arabia and India, and *D. Tatula* of Peru. These different species have very similar properties, and have long been used both by the Americans and Asiatics as poisons. Strange tales, indeed, were once prevalent as to the consummate skill with which the savages prepared this drug, and the purposes to which, amongst them, it was said to be devoted. Milne, when treating on this subject, says, 'Of the intoxicating quality of their native species of stramonium, the women, in some of the Asiatic islands, we are informed by travellers, so dexterously avail themselves, as not only with impunity to use the most indecent freedoms, but even to enjoy their gallants in the company of their husbands; who, being presented with a proper quantity of this soporific and Lethean drug, are at first seized with a fatuity and pleasing delirium, soon followed by those very convenient symptoms, stupor and a total want of recollection;' and, as a proof of the general credence given to the above and similar reports, the Royal Society gravely proposed the following question to Sir Philberto Vernatti, 'whether the Indians can so prepare the stupifying herb datura, that they make it lie several days, months, or years, according as they will have it, in a man's body, and at the end kill him, without missing half an hour's time?'

"Beverly, in his History of Virginia, gives a very circumstantial account of the effects of stramonium. He says, 'the James-town weed, which resembles the thorny apple of Peru (and I take to be the plant so called), is supposed to be one of the greatest coolers in the world. This being an early plant, was gathered very young for a boiled salad by some of the soldiers sent thither to quell the rebellion of Bacon, and some of them ate plentifully of it; the effect of which was a very pleasant comedy, for they turned natural fools upon it for several days. One would blow up a feather into the air, another would dart straws at it with much fury; another, stark naked, was seen sitting up in a corner like a monkey, grinning and making mouths. A fourth would fondly kiss and paw his companions, and sneer in their faces with a countenance more antic than any in a Dutch droll. In this frantic condition they were confined, lest in their folly they should

destroy themselves. A thousand simple tricks they played, but, after eleven days, returned to themselves again, not remembering any thing that had passed.'

"That the stramonium is a powerful narcotic, and that the stupor it occasions is sometimes preceded by extraordinary symptoms of fatuity, there is evidence enough to prove; but great allowance must be made for the exaggerations which fear often unwittingly introduces into accounts given of things for the first time observed; yet several reports, published in the Transactions of the Philadelphian College of Physicians, and in other authentic journals, tend to confirm some of the above accounts."

To revert to croton. Of its poisonous influence under certain conditional circumstances I think there can be no doubt entertained, that is, when the quantity is inordinate, or the agent incautiously given, or the animal has been previously debilitated by disease or old age. This last was the case with the two horses on which I experimented, although their general health was apparently good. Nor must its toxicological action be referred to its local influence merely, as the following extracts from two communications I have received will shew: the names of persons and places are, for obvious reasons, withheld.

Letter I.

* * * * * * * * *

A horse had a ball administered to him consisting of aloes and croton farina (the quantity of the latter unknown). He was soon after taken out to exercise, and in less than half an hour was observed to be in a profuse perspiration: this was referred to the resistance he offered when the ball was given. In another half hour he purged violently, and which continued for about twenty minutes: the perspiration still rolled off him; the pulse was upwards of 80 beats in the minute, and full; the respiration hurried; the visible mucous membranes highly injected, great restlessness was evinced, the extremities were cold, and the countenance indicated much suffering. Blood-letting was had recourse to, and opium freely administered by the mouth, as well as in the form of enema; hot fomentations were applied to the legs, and heated rugs placed

around the body. No abatement of the symptoms appeared to take place, further than a cessation of the alvine evacuations (none having occurred since an hour and a half after the ball was given), but rather an increase in their urgency: the pulse had now become 100, the restlessness was much greater, and the countenance more anxious. These symptoms continued for a few hours, when the pulse became imperceptible, the body cold and clammy, rigors succeeded, and shortly afterwards death.

The prognosis which I ventured to make was, that we should find a rupture of the stomach, there being an absence of many of the signs which accompany intestinal derangement or lesion; and indications of either primary or secondary affection of the brain, and that of a most acute character. Death took place in ten hours from the administration of the ball. The autopsy, I regret, proves but little, it having been confined to the large cavities, the contents of which were comparatively healthy. A slight engorgement certainly did exist in the lungs, but nothing further: not a trace of inflammation could be detected on the peritoneal covering of the intestines, nor on the mucous lining of either the intestines or the stomach, and their contents were in a perfectly healthy state. The other viscera of this cavity were also healthy. If the croton in this instance proved a poison, a different view of its acting as such must be taken than that of its causing death by hypercatharsis. We must look to its remote influence; and I am sorry, therefore, the brain was not examined by me.

Your's, &c.

LETTER II.

* * * * * * * * *

A few days since I was asked by a friend to give his mare something in her provender that would act as a purgative, the animal being so vicious that it was impossible to administer any thing in the shape of ball or otherwise to her. I first tried her with some croton oil in a mash; but she would not touch it. I stood by her all the time and watched her, therefore I know this was the case. Failing in this, the thought came across my mind that, if I could get a sufficient quantity on the bit of her bridle, I perhaps might

accomplish my object; I therefore dropped thirty drops of croton oil on the bit, and requested the groom to put the bridle on, which he did directly. The bridle remained on for about half an hour. The next morning I went to see her. She had just been brought in from exercise, and seemed rather fatigued. I left her, thinking it was the exercise that had caused it, and in about half an hour I went to her again. I found the lips somewhat swollen from the oil; and she had perspired, and that somewhat freely, as if griped. At twelve o'clock I again saw her, when she appeared to be more tranquil; and the oil had operated two or three times, the evacuations being profuse and watery.

At half past two the pulse had become full and strong, but the respiration was not much affected. She was wiped over with a dry cloth, and her clothes put on again.

At nine P.M. she appeared to be much the same, except that her extremities were getting cold. The legs were immediately hand-rubbed and bandaged with flannel. The bowels appeared to be less disturbed than in the morning.

At ten o'clock I was sent for again: I found the animal standing with her head in the manger and pressed against the wall, forcing herself against it, as if she was drawing a heavy load. I had scarcely entered the box before she suddenly reared up, fell backwards, and died in an instant.

You having witnessed the effects of croton oil more than I have, do you think it would cause death so soon as this? It had operated only about three or four times, and then not at all too powerfully, nor was the dose a very strong one. The mare was well on the evening I gave her the croton oil, and died the next night at ten o'clock. Her owner would not allow me to make a post-mortem examination, so I can tell you nothing about the appearances after death.

To Mr. Morton. I am truly your's, &c.

Singular Case of Enlargement of the Tonsils in a Bull.

By Mr. W. Litt, *M.R.C.V.S.*

The subject of this interesting and, as far as my experience serves me, perfectly singular disease, was a four-year old bull of the improved Hereford breed: one of those animals which receive,

from the perfection of those developments of form and quality the propagation of which is so desirable to the scientific farmer, a value infinitely greater than the mere marketable price of the amount of flesh they may happen to have accumulated. This is, perhaps, fortunate for the veterinary surgeon, and on this account he, of all others, ought to consider himself particularly interested in the continued improvements in the breeding of cattle and sheep; for I need scarcely observe that it is so customary, indeed so natural, for our employers to calculate, in a case of disease, the simple pecuniary bearings of the matter, that, were it not that circumstances of this kind occasionally interfere, the butcher's knife would be much more frequently in requisition than the veterinarian's lancet. It is certainly to me a subject of gratification that I can enumerate amongst my employers many individuals—not speculative agriculturists, but practical tenant farmers—who are in the habit of purchasing, some indeed of *hiring* their bulls at prices ranging from sixty to a hundred pounds each. Can it, then, be a subject of surprise that many veterinary practitioners in England are beginning to find their cattle practice the most profitable division of their profession; or that a more humane and scientific system of treating the maladies of ruminants is fast supplanting the cruel and absurd practices of our forefathers? But to resume.

On the 6th of September, last year, I was requested to visit the subject of this paper, and was informed that he had been labouring under symptoms similar to those then manifested for at least a fortnight previous to that time. These were—a peculiar roaring noise during respiration, some discharge of a sanious character from the nose, a cough, denoting irritation of the larynx, and an occasional gasping for breath. Notwithstanding all this, however, there were no appearances of constitutional disturbance: the evacuations were natural; the pulse in no degree disturbed; and his appetite as good as usual. I expressed an opinion that the appearances were the result of some mechanical obstruction to respiration, though of what precise character I was unable to define; nor could I, on passing my hand—as well as the refractory nature of my patient would admit of—along the dorsum of the tongue to the back of the mouth, detect any abnormal structure. My treatment, in this uncertain state of the case, was confined to

the administration of mercurial alteratives, and the application of strong stimulating liniments to the throat, but without the slightest beneficial effect; for, though slowly, the symptoms gradually increased in intensity up to about the end of October. At this time a tumour made its appearance immediately behind the angle of the lower jaw on the left side, apparently deep seated, and very hard to the feel, which rapidly increased in size, until it became as large as a child's head. This was at first hailed as the probable cause of the malady, and, with a view of hastening the suppurative process rather than any thing else, I applied a strong blister over it. From this time, however, it was stationary, and I became convinced that it was merely an enlarged and indurated parotid gland, the effect of irritation produced by the original and more obscure source of all the evil. In this conviction I was justified by the appearances on dissection.

In this condition, or with very slight alteration for the worse, my patient continued until the middle of December, when I was first acquainted that his appetite had completely deserted him, and that he had for several days been entirely supported by small quantities of gruel frequently administered. These frequent and small administrations were rendered necessary by the difficulty he experienced in swallowing, and to avoid the danger of suffocation, with which the act of deglutition seemed always to be attended. The conclusion at which I arrived, after a careful examination of all the symptoms at this period, was, that the disease, whatever might be its nature that had previously confined its attack to the larynx, had now extended itself to the pharynx also: the case I pronounced utterly hopeless, and advised that the poor animal should be consigned to the shambles. Upon this counsel, however, my employer was very loathe to act, as the period when our patient's services would be needed was fast approaching, and, indeed, he still seemed to possess sufficient vigour for their performance. Could life be protracted but for one month, his services, in that short time, would far outweigh his intrinsic value to the butcher. No wonder, then, that a week or two's respite was allowed him; and, in the meantime, Mr. Simonds, of the Royal Veterinary College, was consulted by letter. Owing, doubtless, to the imperfect manner in which the case had been described to the Cattle Professor, he expressed an opinion that the affection might be " tubercular dis-

ease of the larynx, involving the parotid gland on the near side;" but although I had, for the moment, been inclined to entertain a similar notion, there did not seem to be sufficient reason to warrant the conclusion: and, therefore, I did not have to resort to the treatment recommended by Mr. Simonds—namely, the administration and external application of iodine. I am glad to have an opportunity of publicly acknowledging my obligations to Mr. Simonds on this as on other occasions. The opinions of one who has devoted so much time and talent to this department of our profession are always valuable; but it is seldom that a mere written description of an uncommon disease can enable any one to form so correct a diagnosis as would a personal inspection. I have found that horned cattle are much subject to tubercular disease, but the symptoms are so well marked—symptoms that were altogether wanting in this case—that the experienced practitioner can seldom make a mistake here; and, consequently, I did not think myself justified in the use of an exceedingly expensive and, to say the best of it, a very uncertain medicament. I contented myself, therefore, with performing the operation of tracheotomy; and, this failing to do more than relieve his breathing, he was destroyed five days afterwards, when I had an opportunity of examining the parts *post-mortem*.

Having satisfied myself by an inspection of the abdominal and thoracic viscera of the absence of any disease of these important organs, my attention was next directed to the region of the larynx, when I was at once enlightened as to the cause of the curious symptoms observed during life. Situated just above the velum palati was a tumour of considerable size, extending, in its passage forwards, into the chambers of the nose, and thus obstructing respiration, whilst, by its pressure inferiorly on the pharyngeal sac. the passage of aliment must have been rendered extremely difficult. For the satisfaction of Mr. Simonds, I had the affected parts removed, and forwarded to that gentleman, who took an opportunity to lay them before the members of the Veterinary Medical Association.

On cutting into it for inspection, the structure of this enormous growth presented no appearances of a malignant character. It seemed, indeed, to consist simply of an immense enlargement of the tonsil glands, according to the opinion of Mr. Simonds, who

also looked upon it as most probably the result of catarrh or subacute inflammation of the tonsils. The fact is, it is quite impossible to say what were the causes in operation to produce so extraordinary a tumour; but I cannot help remarking that the Professor's theory seems to me plausible enough, although the previous history of the case affords nothing in substantiation of his views. As an illustration of the difficulties that present themselves to the veterinarian, upon the correctness of whose prognosis so much is often dependent, and as a perfectly unique case in the pathology of cattle, I have considered its relation might not be without profit to such as take an interest in the cultivation of this comparatively sterile field of our professional labours.

Before concluding this paper, I shall be excused if I give the reader a hint that he will find of some utility, should he ever have occasion to perform the operation of tracheotomy on the bull:—Let him prepare himself, if possible, with a tube much longer in the neck than the one in common use for horses. The greater thickness of the skin of cattle, and the large quantity of loose intervening cellular membrane, render this imperatively necessary where it is desired to keep the trachea open more than twelve or twenty-four hours.

CASES OF POISONING

By Arsenious Acid, some of the Compounds of Lead, and the Colchicum Autumnale; with Remarks on the Symptoms induced, Mode of Action, and Treatment adopted.

By Mr. Evers Musgrave, *M.R.C.V.S.*

The following cases of poisoning with arsenic, lead, and meadow-saffron, occurred in the spring of 1844, and in quick succession, as the dates will shew. In giving publicity to them through the pages of The Veterinary Record, I have been actuated by a desire to save others some portion of the anxiety and trouble they occasioned me, should they ever meet with similar cases.

I have examined all the published reports of poisoning by these substances I could meet with, and have given careful reference

to such I have in any way commented upon. It only remains for me to present my sincere thanks to a medical gentleman who saw several of the cases with me, and who has kindly offered many suggestions which I have gladly availed myself of in the following pages.

I. Arsenious Acid.—*Poisoning of twenty-eight Cows, Yearlings, and Calves, from a single Application of an Arsenical Solution to destroy Lice.—Treatment by Purgatives, Diuretics, Opium, and the Hydrated Peroxide of Iron.—Death of one Cow on the sixth, and one Calf on the seventh Day after.—Post-mortem Appearances.—Remarks.*

On the 14th of March, 1844, I was requested to furnish some wash for the destruction of lice in cows, yearlings, and calves; I accordingly made up the following solution:—

Arsenious acid . .	six ounces
Carbonate of potash .	six ounces
Stavesacre . .	two pounds
Water . . .	two gallons

Boil till the arsenious acid be dissolved; then strain, and let a pint of the solution be rubbed all over the skin of each affected animal with a brush.

This solution was not used until Monday, April 1st, when half-a-pint only was applied over the neck, shoulders, and brisket of each animal, especially where the hair was rubbed off, and the whole were afterwards turned out to grass. They were seen daily, but nothing particular was noticed until the 5th, when several of them were observed to walk stiffly and painfully; and on a closer examination they were found to be swollen about the shoulders, breast, and dewlap, which parts were also very tender to the touch. I was sent for, and found that all the animals to which the solution had been applied (28 in number) were, more or less, affected in this way, but none of the other cattle that were grazing with them. Three were very bad: the respiration was hurried; the pulse small, quick, and irregular, about 120 in the minute; the eyes bright and staring, and the pupils dilated; the horns and extremities increased in heat; occasional rigors were present; the skin over the swollen parts was hot and dry, and so

tender, that the least touch made the animals shiver all over, and they seemed fearful of being approached. They had dunged and urinated recently, and did not appear to suffer from any griping pain of the bowels. I ordered the parts to which the solution had been applied to be gently and carefully, but effectually, washed with soap and warm water, and gave each of them a saline purgative combined with a carminative.

April 6th.—I was called up early this morning, and found all the animals much worse, and shortly after my arrival at the farm a two-year-old heifer died suddenly. All the cattle that had not been washed I ordered to be done so at once, and to have oil applied over the swollen parts; and afterwards I gave to each of them a draught, consisting of the sulphate of magnesia with nitrate of potash and opium, the quantity of opium being varied according to the age and severity of the symptoms present in each animal. They seemed to be considerably relieved by the opiate; the pulse and breathing became reduced in frequency, and even those most affected were enabled to eat a little, and to ruminate.

April 7th.—The cattle were worse this morning than when I left them yesterday. They moved more stiffly, and those severely affected would not lie down, although those that were suffering less did so. They ate a little, but refused to drink, and in some of them there was a copious discharge of saliva from the mouth, but none from the nostrils. Rumination was either tardily performed, or not at all. The pulse continued to be small, quick, and irregular; the horns and extremities in some were hot, but in others cold; the swollen parts were still hot, harsh to the feel, and very tender to the touch; the fæces were almost black and very fetid, and the urine highly coloured, and possessing a strong odour. Repeat the draught with the opium, as ordered yesterday, and give afterwards some oatmeal gruel.

In the evening a calf that had been allowed to continue sucking one of the affected cows was found dead. The other animals remained nearly the same as reported in the morning. The draught to be repeated.

April 8th.—This morning Mr. Butler, of Kington, met me in consultation. The cattle were somewhat better than yesterday; they walked more freely, and seemed inclined to eat. The same treat-

ment was directed to be continued, and the lead liniment, with tincture of opium, applied to the swollen parts.

April 9th.—The cattle are all improving, with the exception of one calf, which was observed to labour under diarrhœa and to have difficult respiration before the application of the solution. It was always lying down, breathing much accelerated, would not suck, and its extremities were cold.

The cattle were ordered to have given to them saline aperients combined with diuretics, and the liniment to be continued.

April 10th.—This morning, in answer to a description of the cases I had sent him, and my application for advice, I received a letter from Mr. Morton, from which I extract the following passages:—"Respecting the cases you have referred to, I think there can be little doubt as to the cause in operation. The symptoms would appear not to warrant the withdrawal of blood from the system. However, the poison must either be expelled, or means employed to enable the system to resist its influence. I should conjoin both. Diuretics, combined with the hydrated peroxide of iron, should be freely given, and the fæces kept in a soluble state by oleaginous purgatives. Opium may also be exhibited for the purpose of allaying the irritation. The kidneys being the organs by which arsenious acid is eliminated, these should be as quickly brought into increased action as possible. Nutritious diet should likewise be allowed; and I need not add that the beasts should all be housed."

The cattle were now improving; nevertheless the plan above recommended was adopted, with the continued application of the opium and lead liniment, until the 17th of April, when they were all so far recovered as not to require my further attendance. The skin over the parts which were swollen and inflamed was left rough, thickened, and excoriated.

The second calf died on the 15th, but evidently not from the effects of the poison, for the lungs were found to be extensively diseased, and general adhesion of the pleuræ to exist.

Post-mortem Appearances.—The three-year old heifer that died on the sixth day was examined directly after death. The whole of the viscera of the abdomen and the thorax were apparently healthy, though pale coloured. The mucous surfaces of the lungs, and of the whole of the intestinal canal, from the mouth to the anus, were laid open

and carefully examined, but they did not any where present the slightest ulceration or any signs of inflammation. On opening the head, the brain on its superior surface appeared rather pale, but it was otherwise healthy. The membranes were not injected, nor were there any signs of effusion of serum or lymph beneath them. On removing the brain, however, a large coagulum of blood, nearly as large as the palm of the hand and half an inch in thickness, was found at its base: this may be safely assigned as a sufficient cause for the sudden death of the animal. On examining the skin where the lice had principally lodged, and where the solution had been applied, the hair came off very easily indeed, leaving an abraded surface; but there was no injection, no inflammation, and no thickening of the skin itself, or the cellular tissue underneath it. The swellings about the neck, breast, dewlap, &c., appeared to result from a mere local effusion of yellow serum.

The *calf* which died on the seventh day was also examined. The whole of the intestinal canal presented a blush of inflammation, and in the fourth stomach were two spots of ulceration about the size of a shilling: the bloodvessels of the brain were much injected, but there was no effusion of blood under the meninges.

Remarks.—There can be no doubt but that the severity of the symptoms in the preceding cases resulted from the absorption of the arsenical solution through the medium of the skin, since all the cattle to whom it was applied, but none of the others that were with them, were more or less affected with considerable depression of the nervous and circulatory systems, acute local inflammation, and much constitutional excitement. They had never been observed to lick each other; and it is probable that they had not done so, since none of the indications that follow arsenic when taken into the stomach shewed themselves in any one instance*.

* For an excellent description of these symptoms, see the account of seven horses poisoned by arsenious acid being mixed with their food, recorded by Mr. Simonds in the "Proceedings of the Association" for 1836-7, p. 123; and also a similar occurrence by Mr. Tombs, in the "Transactions of the Veterinary Medical Association" for 1840-41, pp. 127 to 131. The post-mortem appearances are likewise well described by Mr. Rickards in his "Examination of two mares poisoned by arsenical fumes."—See THE TRANSACTIONS for 1843-4, p. 132.

In a few of those most affected the saliva became increased in quantity, and was freely discharged, but there was no preternatural heat about the mouth in any of them: there was also no injection of the visible mucous membranes; no thirst nor decided loathing of food; no diarrhœa; no griping pains, nor tenesmus, nor, indeed, any abdominal pain: in fact, there was an absence of all indications of inflammation of the mucous membranes of the throat, as well as any part of the intestinal canal; such being usually regarded as the specific effect of arsenic in whatever way it may have been introduced into the system. Indeed, if we except the case of the calf which died after continuing to suck one of the affected cows, from the commencement to the termination of the disorder the animals seemed only to suffer from the violent and extensive inflammation of the skin attended with great depression of the vital powers. I mention this fact particularly, because I believe it characteristic of the poison when absorbed in a small quantity into the system, and also because when my friend, Mr. Butler, first saw the cases, it occurred to him naturally enough that the cattle might be suffering simply from an inflammation of the skin of a peculiar nature—a sort of epidemic erysipelas,—and not from the effects of the arsenical solution. There can be little doubt, however, as I have already said, of the nature of the affection; and there are few practical men who have not known or heard of similar effects arising from the same cause, and therefore it is a matter of some importance to know how to prevent such results, if this be possible; and this every one who has met with half the abuse and discredit I did on the present occasion will readily admit.

I have given the exact receipt for the solution used, that its strength may be seen. It is one I had been previously in the habit of seeing extensively used and also using myself with perfect safety*; therefore I was the more surprised to find such action follow its application in this instance, and can only account for it by supposing that the parts where the hair was rubbed off (to which in these cases it was only applied) were excoriated or cracked, and therefore in a state highly favourable for absorption†.

* I see, in the volume of the "Transactions of the Association" for 1841-42, Mr. Relph recommends a similar one.

† If this opinion be correct, it might readily be guarded against by protect-

A part of this very lotion was used by another person to destroy lice on the skin of a horse, whose skin is much more susceptible of the action of irritants than that of cattle, but without producing any unpleasant effects whatever. I have also employed, and that with benefit, the arsenious acid to poll-evil and fistulous withers; but since it acts here as a powerful caustic, it certainly would not so readily allow of absorption taking place. I have lately heard of similar instances of poisoning. One instance occurred recently, within a few miles of the scene of my own misfortune, to the bailiff of an eminent agriculturist, who fatally poisoned several valuable cattle in the same way, and lost his situation through doing it. Although so frequent an occurrence in our practice, I can only find two reports of such cases published, and both are by authors who state that they had not met with similar ones before: both of them are extremely interesting. One report is in the volume of the Transactions of the Veterinary Medical Association for 1841-2, pp. 260-78, by Mr. Hutchinson, of East Retford, when fifteen bullocks were poisoned, and one died. The other report is in *The Veterinarian* for December 1843 and January 1844, by Mr. C. Lander, when thirty-two cattle were washed with arsenical sheep-wash, and eight of them died. In all the post-mortem examinations there was found to exist violent inflammation of the alimentary canal, shewing the specific action of the arsenic to have been more powerful than in those cases I have detailed above, in which scarcely a trace of inflammation existed.

Mr. Lander's cases are particularly valuable, both on account of their severity, and the admirable manner in which he has described them. One of his animals died within six hours from the application of the wash, the others at intervals during a week. In the first, death probably took place from the powerful depression of the nervous system, produced by the poisonous agent, whilst all the others seem to have died from the secondary cause of apoplexy, as did the cow which died first under my care: this is an affection, therefore, to which this poison, arsenious acid, seems to predispose the system. In Mr. Lander's cases the blood

ing the abraded surface by some ointment whilst the arsenical solution is being used; an ointment made with creosote, or the hydriodate of potash, which would at the same time be effectual in destroying the lice it came in contact with.

was poured into the ventricles; in that of mine it existed at the base of the brain. I regret very much that I did not examine the urine of the animals, when they were most affected, by Marsh's test, so as to ascertain, if possible, the presence of the poison; since Orfila has proved that, when once absorbed, it is principally eliminated by the kidneys*.

The notes of the post-mortem examination of the second calf have been mislaid by me, and therefore I shall merely remark upon the brief outline of it which I have given, from memory: 1st, That the signs of inflammation shewed a more decided action of the poison; and, 2d, this will easily be accounted for, if we suppose that the milk of the affected cow which it sucked was impregnated with arsenic in process of elimination.

But without dwelling longer upon the action of arsenic when absorbed into the system, I will proceed to give the treatment which I believe is best adapted to counteract its effects. Were I called again to attend similar cases, I would have all the parts to which the application had been made at once most carefully and gently washed with warm water, so as to remove every particle of the solution that might still remain on the skin. I would then house the cattle and apply the liniment, consisting of opium, di-acetate of lead, and oil, to the inflamed and swollen parts. If I suspected that the cattle had licked each other, or if the mouth and throat were inflamed, I should immediately give a large dose of the hydrated peroxide of iron in gruel or milk, and repeat it, if I saw occasion from the increasing irritation, in one, two, or three hours, so as to neutralize what poison the stomach might contain. If the cattle were young and in flesh, and the pulse strong enough to admit of it, I would bleed the moment I believed no more poison remained on the skin or in the stomach, and follow up the bleeding at once by a large dose of opium. In my cases, however, the depression

* See a description of Marsh's test, and the mode of applying it, in the *Transactions* for 1840-41, pp. 137 and 138, by Mr. Morton; and also pp. 139-41 of the same volume for a new and ingenious method of obviating some of its principal objections by the same gentleman.—See also a new method of detecting arsenic in solution, which may be called a modification of Marsh's test, in the *Transactions* for 1843-4, p. 135, where Reinsch's test is described; and also pp. 405-7 for an improvement on Reinsch's test, by Mr. R. Ellis, of London University College.

produced by the poison was too great to admit of bleeding, and I gave the opium at once, so as to lessen the irritation. I would then give repeated and copious drenches of thin gruel, milk, or infusion of linseed, with diuretics, repeating the opium at intervals; and if there were no signs of irritation in the intestinal canal, as in the cases described, I should exhibit saline purgatives combined with gentian and aromatics. But if there were symptoms of inflammation present, or any pain, I would change these latter for oleaginous purgatives, as recommended by Mr. Morton, since oil is more likely to act as a demulcent or sheather to the inflamed mucous surfaces. This plan I should persevere in until the convalescent stage set in, when I should again order the compounds of iron with gentian root and an aromatic, to give tone to the system; and the cattle should be turned into a dry pasture during the day, if the weather proved favourable, to aid the restorative powers of nature.

[The cases of poisoning by lead and colchicum will be given in succeeding numbers of THE RECORD.—*Editors.*]

CASE OF SCROTAL HERNIA IN A COLT.

By Mr. W. MEGINNIS, *M.R.C.V.S.*

ON the 25th of August of last year one of my employers wished me to see a colt three months old, affected with scrotal hernia. After examination, I told him the only chance of doing any permanent good was by the operation of castration being performed, which of itself might prove fatal. Yet as the colt, in its present state, was useless, and as the hernia would only get larger instead of smaller, and ultimately, in all probability, be the cause of strangulation of the intestines and death, the owner said we were at liberty to do what we thought best. Having cast the colt, and the near hind leg being held by an assistant so as to freely expose the parts, I commenced the operation by returning the intestine, and removed the off testicle, but I could not find the near one. I then extended the opening in the scrotum, and closed the external abdominal ring first by a suture of doubled thread, and then, to make it more secure, a stitch of the metallic wire, leaving the ends so long as to hang out of the wound, thus preventing its closing entirely until

the suture came away: the divided integument was then brought together by a continuous suture of metallic wire, and the wound dressed with the digestive ointment. The animal was now allowed to get up, and, when up, there was scarcely any thing to be seen of the swelling.

August 27*th*.—The colt apparently is doing well. He has sucked as usual, and eats a little hay. The parts are but very little swollen, and he moves about freely.

29*th*.—The parts are much more swollen, and there is a discharge of thin serum from the wound. Scarify the scrotum, and dress the wounds as before.

30*th*.—Mr. Chandler called to say the colt was doing very well, and seemed lively.

31*st*.—The patient is not quite so well this morning. The bowels are becoming constipated; he is occasionally in pain, and has lain down several times to-day. The discharge from the wound also is not so healthy, it being a little offensive. Give a dose of linseed oil, and dress the scrotum with sol. calcis. chlor.

Sept. 1*st*.—An alteration has taken place which is favourable. Dress the wound as before, and again scarify the sheath, which remains swollen, and give a febrifuge.

From this period to the 7th September the animal appeared to be gradually improving; his appetite returned, and the discharge from the wound had become healthy: indeed, there was every appearance of his soon recovering.

8*th*.—A return of the unfavourable symptoms has taken place. The colt seems to be in pain, and is often down; refuses food; looks around at his flanks, which are tucked up, and the respiration is increased; he also occasionally sighs. His nose, ears, and legs, are cold, but the body is warm, and the wound presents a healthy aspect. Give ol. lini. ℥vi, cum tinct. opii ℥ss in haustus, and throw up an enema of tepid water, which repeat every hour till the bowels respond.

9*th*.—Much worse to-day: he is in more pain; the countenance is very anxious, and the prostration of strength considerable. The surface of the body has become much colder; the mouth is clammy, and the scrotum looks very unhealthy indeed, being of a dark purple colour, and the discharge smells offensive. The bowels have not acted, except that a few small balls of dung have come

away with the return of the clysters; a difficulty is also experienced in voiding urine. He is every few minutes endeavouring to stale; a small quantity only is voided, and he stands stretched out for some time both previous to and after the act, which appears to cause much pain. The urine, however, is of a healthy character. Repeat the laxative, combining spt. nit. ʒss. Despite our endeavours, the animal died during the evening of this day.

Sectio cadaveris sixteen hours after death.—On laying open the abdomen, the stomach and intestines were found to be healthy as far down as the rectum; in close contact with which gut was a large circumscribed abscess, holding about a pint of very thick white pus; and from this part to the external abdominal ring was a mass of matter and disorganized membranes, which in some places were going on to a state of gangrene. The internal ring through which the suture had been passed was healthy, and had begun to be closed by granulations. On examining the bladder and urethra, the frequent and painful staling was easily accounted for, the urethra being inflamed throughout its course, and the urinary cyst contained only a few drops of urine, but a very large quantity of unhealthy pus: in fact, the bladder presented the appearance of a large abscess, yet the animal had never been observed to pass any pus with his urine.

Influenza in the Horse, in which Effusion having taken place into the Chambers of the Eye, it was followed by Loss of Sight.

By the same.

A peculiar form of influenza has been prevalent in this county (Sussex) lately, in which our attention has been especially directed to the singular state of the eyes, and in several instances loss of sight has supervened. The description of a case or two may be accepted as a type of the whole.

The symptoms generally, when the animals are first seen by us, and which does not often happen till the second or third day after the attack, are, a disinclination to move; loss of appetite; pulse

from 60 to 70 beats in the minute, very weak and languid; the extremities of the natural temperature; the ears hot and then cold; the forehead generally hot; respiration a little quicker than usual, but not much accelerated, except in the worst cases; coat staring; the head hanging down or resting on the manger; the eyes closed, or nearly so, and one always worse than the other: generally, the off eye is the worst. There is no increased lachrymal discharge, nor engorgement of the eyelids, as in ordinary influenza, but an inflammation of the whole of the anterior chamber of the eye: the aqueous humour, instead of being clear and transparent, becomes of an opaque brown, or dark yellow colour, and gravitates below the pupillary opening; there is an intolerance of light, so that when the horse is turned round to the stable door the pupil becomes so much contracted that there is scarcely any opening to be seen; the visible mucous membranes have a yellow hue, as in hepatitis; and the mouth an unpleasant sour smell. In the worst cases the legs are of no use except as a mere mechanical means of support, for if you attempt to move the animals they fall down, and are very difficult to be got up again; and in one case the patient could not get up by himself.

The *Treatment* found most successful has been to get the bowels into a soluble state by means of small doses of aloes in the first instance, as there is almost always constipation present, and then to keep them so with calomel and opium. Occasionally the calomel purges them freely; but I have no objection to see them purge for one or two days, if the appetite continues good. We immediately place under each eye a medicated seton, as the only means of saving the sight for a time; but, as I have said, many become blind, and I need hardly add that this result only takes place in those cases which have been very severe. In milder cases, fever medicines given twice a-day, with an occasional dose of aloes or calomel, keeping the setons frequently moved, have prevented this formidable termination.

I have stated that constipation of the bowels is a general concomitant; of the truth of this position the following case is illustrative:—

Oct. 23*d.*—Subject, a black mare, aged. On examining her I found the symptoms rather more developed than we usually meet with them: she had been ill for three days. I bled, and gave aloes

℥ij in ball, and left calomel ℥j to be given at night; blistered the throat, and ordered the diet to consist of mashes and a very little hay.

24*th*.—The mare is not so well this morning; the bowels have not been acted upon, and she refuses food; she is also frequently lying down. Pass a seton under each eye, and repeat the laxative medicine. In the evening, the animal being no better, I threw up an enema, which brought away three or four small and hard balls of dung. She now evinces pain, lying down frequently, and rising again immediately. Give sol. aloes ℥viii, tinct. opii ℥j in draught. Repeat enema, which returned as it was given, plainly shewing the constipated state of the bowels. I should like to bleed her again, but am afraid: the pulse tells me I must not.

25*th*.—The animal remains in the same state as reported yesterday. No dung has been passed, and she eats nothing. There is a rumbling of the bowels as if purging were coming on, and, an enema being thrown up, has brought away a few softer balls of dung. Give ol. lini Oss, spt. etheris nit. ℥ss in haustus.

In the evening no change in the symptoms, the rumbling noise is not to be heard in the intestines, and no fæces have been voided. Gave sol. aloes ℥viij, et ol. lini Oss, and continue enemas. Sol. aloes ℥iv were left by me, with orders for it to be given the first thing in the morning, if the bowels had not acted.

26*th*.—Still in the same state as yesterday. Sometimes the animal is in violent pain; her legs and ears are alternately hot and cold, but the eyes are not so much inflamed. The solution of aloes was given early this morning, no action of the bowels having then taken place, and the enemas coming away as they were given. Give croton oil gutt. xx, sol. aloes ℥vj, ol. lini Oss, and gruel frequently during the day. In the evening there appeared to be no hope of recovery unless the bowels were acted upon, which it seemed impossible to do. Repeat the same dose as in the morning, and give a wine glassful of brandy when any pain is evinced, and also apply hot cloths to the belly.

27*th*.—The prostration of strength is great, and the belly has become tympanitic, yet the animal is not in much pain this morning. The obstinate constipation of the bowels continues; the pulse has been gradually getting quicker and weaker, and is now 106 in the minute, and scarcely to be felt at the jaw: the breathing is also

oppressed; the mouth feels clammy and smells sour, and sometimes a disposition to vomit is shewn. It is now difficult to make her take medicine: she has become tired of it, and will not swallow it for a long time. Give ol. lini Oss, ol. croton gutt. xx, and throw up enemas of salt and water.

In the evening there being no alteration, except a more frequent disposition to vomit, the purgative was repeated, and early in the morning of the 28th the animal died.

Post-mortem examination ten hours after death.—On laying open the abdomen, a general but slight blush only of inflammation was seen to pervade the peritoneal lining, and here and there was a patch more highly inflamed. Within the intestines, from one end to the other, nothing was found to impede the passage of the faeces, which were in a fluid state. The inner surface of the stomach was inflamed, but the examination disclosed nothing to account for death.

The mare took, during the four days she was ill, the enormous quantity of aloes ʒviss, croton oil gutta lxx, calomel ʒij, and ol. lini Oijss, without the slighest visible action on the bowels.

Cases of Indigestion in the Horse, in which the Ingesta became impacted in the small Intestines.

Dear Sirs, *Ashbourn, Derbyshire, Dec.* 24, 1845.

If you think the following of sufficient interest, and worthy of a place in your Journal, it is much at your disposal.

I am your's respectfully,

Thomas M. Leech, *M.R.C.V.S.*

To the Editors of The Veterinary Record.

During last spring, in consequence of the scarcity and dearness of hay, the farmers in this part of the country resorted to straw as provender, and that in very large quantities. Their me-

thod of employing it was the following: it was chopped into pieces about half an inch in length, and then mixed with oats, beans, and bran, and given as food to the horses. The result of this was the origin of a disease which I have ventured to designate "Indigestion;" as it appears evident, from the post-mortem examinations instituted by me in those cases that have unfortunately terminated fatally, that the food was quite unchanged in its nature by the juices of the stomach, and found dry and firmly impacted in the small intestines. This singular circumstance has induced me to lay before you the following account. The horse being fed with the above mixture, he hastily bolts it without due mastication and insalivation, and then as a consequence ensues the following symptoms: being taken out after he has eaten his morning's feed, perhaps during his work he shews symptoms of uneasiness, or it may be not until he returns to the stable, by lying down and getting up again, this increasing as the disease progresses: the pulse and respiration become accelerated during the paroxysms, but the legs and ears continue warm.

This may be viewed as the first stage of the disease, and occasionally the animal recovers without the malady making any further progress than this; but should he not, then comes the second stage. The horse now is more violent; remains still scarcely a moment, being continually up and down, and when down rolls over on his back; the pulse becomes altered in its character, being quick and wiry; the respiration is considerably increased; the extremities are variable in their temperature; the visible mucous membranes highly injected; now and then he voids small quantities of dung in hard balls, and more or less covered with mucus; and the urine is high coloured. These indications, if relief be not obtained, gradually increase in urgency, and he then shews symptoms of cerebral derangement. The pulse is irregular in its beating, cold perspiration bedews the surface of the body, and delirium and convulsions quickly close the scene of misery. The treatment adopted has been as follows: If called in during the first stage, I give an aperient combined with some antispasmodic. If in the second stage, and the pulse is hard, I bleed until an impression is made on the heart. I then administer solution of aloes, in combination with spt. æther. nit. et tinct. opii; apply blisters to the abdomen, and throw up enemata of warm water. The legs should be stimulated

and bandaged. In some few cases I found great relief afforded by scalding the abdomen; and, after the bowels have responded, the exhibition of calomel and opium every three or four hours has been attended with considerable success. The length of time these cases require medical attendance varies. In some, two or three days only, while others call for a week or even ten days. The bowels are always very irregular in their action. In several instances I have given no less than sixteen drachms of aloes and a quart of linseed oil, with large quantities of calomel, and even after all the bowels have remained unacted upon for more than seventy hours. In the latter stages your only chance of cure is to bring about action by the aid of very powerful stimulants, but most commonly these cases terminate fatally. In one case I succeeded through the use of the oil of turpentine, giving it in ʒii doses every four hours, until three doses had been exhibited; also applying this agent externally to the abdomen.

The post-mortem appearances of this violent complaint are somewhat peculiar. On the cavity of the abdomen being laid open, we are struck with the discolouration which has taken place: the bowels in some places are highly congested, and of a dark purple colour, and this in some instances extends throughout the whole course of the intestines; but it is more generally marked about the small intestines, those being more especially the seat of the malady. Being laid open, we find the food in this part—the small intestines—so firmly impacted as if it had been driven in with a mallet, and the mucous lining membrane destroyed. The other viscera of the abdomen present much the same appearances as when death has resulted from pure enteritis. The lungs are gorged with blood.

Remarks.—This disease is unquestionably and alone the result of the food being partaken of too quickly without due mastication and salivation, the consequence of which is a stoppage in the alimentary canal of its onward passage, and that in the small intestines, just before they terminate in the large ones. The food being so closely impacted together causes spasm, which, if not relieved, goes on to inflammation of the bowels. There is nothing remarkable in these cases, except that the stoppage should take place in the lower part of the small intestines, which I think has not before been much noticed. The object we should have in view, when

called upon in such attacks as these, is to allay the pain by relieving the bowels of their contents; and you need not be afraid of giving purgative agents, for frequently I have administered one, two, and even three ounces of aloes, besides linseed oil and calomel, without superpurgation of any consequence whatever taking place. The most favourable indication is the abatement of the pain, and if this takes place, you need be in no fear of the bowels not responding in the course of time. But if the pain continue after your medicines have been given, you may then anticipate a fatal termination. A great many cases have occurred, and fortunately I have lost but few; and those few always shewed the post-mortem appearances I have endeavoured to describe.

Cases of Indigestion followed by Laminitis, and also of Diabetes in the Horse.

By Mr. B. Cartledge.

Dear Sirs, *Sheffield, Feb.* 13, 1846.

Should the following cases be deemed worthy of a place in The Veterinary Record, I shall feel pleased at seeing them inserted.

I am your's, &c.

To the Editors, &c.

I.—Indigestion.

Oct. 27th, 1845.—Early this morning I was requested to see an aged cart-horse, the property of a large firm in this town, supposed to be attacked with spasms of the bowels. As, from the report of the messenger, the symptoms appeared to be urgent, an antispasmodic, combined with a laxative, was sent by him to be given to the horse as soon as he returned.

On my arrival I found the case to be one of indigestion, accompanied with torpidity of the bowels. The animal had not lain down, nor manifested much pain, but was somewhat uneasy, frequently endeavouring to void fæcal matter without any being passed, and occasionally looking round at his flanks with great anxiety. The man stated that he left him, as he believed, in per-

fect health on the previous night, and found only a very small quantity of excrement behind him this morning. He had not eaten the whole of his hay, but had finished his corn; which, it is perhaps necessary to state, was, and had been for some time, of a very inferior quality. The pulse was accelerated, the respiration hurried, and the conjunctival membranes a little injected. By Mr. Taylor's direction six quarts of blood were immediately abstracted from the jugular vein, ol. ricini Oj given, and all food ordered to be withheld.

At four P.M. I again visited him, but no improvement was visible. A little exercise was given, thinking it might induce the bowels to act: administer ol. ricini ʒxij, cum ol. tiglii M. xx. In the evening of the day the animal was much the same, the bowels not having responded to the medicine, and the restlessness continuing, with a desire to evacuate the fæces: he had evinced no inclination for food, but had drunk pretty freely of tepid water, which was encouraged.

28*th*.—At six o'clock this morning the purgatives began to produce the desired action. The animal appeared relieved afterwards, but there was still a little heaving at the flanks, with dullness of the eyes, and the pulse ranged between 70 and 80. The purging continued the whole of the day. In the evening the horse seemed much better, from the bowels having been freely evacuated, and the cause of uneasiness removed. He ate a little hay and partook of water freely, as he had done previously. An occasional shifting of the near fore foot, with increased heat of the wall, now indicates a transfer of the disease, and we fear inflammation of the laminæ by metastasis will take place.

29*th*.—It was no very agreeable change to find our patient acutely lame in both fore feet this morning. The uneasiness evinced last night has terminated in violent inflammation of the laminæ of both feet, and the horse is enabled to stand with the greatest difficulty. The action of the bowels begins now to assume the character of superpurgation. The pulse is 84, and the respiration hurried, but not laborious. Let the shoes be removed from the fore feet, and the animal caused to stand in a pailful of hot water for an hour; bandages to be afterwards applied to the legs and feet, and kept constantly wet with water of the same temperature. Flour gruel to be substituted for water, and frequently offered, and small

quantities of bruised corn and hay to constitute his diet. Give tinct. opii ʒj, spts. æth. nit. ʒjss, catechu ext. ʒjss in haustus. In the evening the pulse was 80; he had eaten his corn and drunk a tolerably fair quantity of gruel. The purging not having ceased, the astringent draught was repeated, and the hot water to the feet and legs continued.

Oct. 30*th.*—The symptoms present are more favourable. The pulse is reduced in frequency; the horse would feed if allowed, and the inflammation of the feet is not so intense, while the fæcal matter is becoming consolidated. The use of tepid water to the feet to be continued.

Nov. 1*st.*—The horse was led out this morning, and although so lame as scarcely to be able to place one foot before the other, he is much improved. Continue bathing the feet, and apply to the coronets lin. sapon. tinct. opii et ol. origanum, of each equal parts.

4*th.*—A general improvement on the two preceding days may be reported to have taken place. The animal stands with less pain, and the pulse has decreased in its number of beats. An active blister was applied round the coronets, and the ordinary diet restored.

5*th.*—This morning, either from the excitement caused by the blister, or some occult cause, the animal was not so well: some pain in the bowels was indicated; as he laid down several times, and quickly got up again. Gave a mild opiate. The action of the bowels is natural, and the dung of a soft consistence.

6*th.*—The horse is considerably better this morning; he looks more lively, and evinces a greater desire for food. The pulse, however, remains quick, being 70 beats in the minute. Gave a draught, consisting of the spirit of nitric ether and tincture of digitalis, and applied ol. lini cum liq. plumb. of each equal parts to the coronets.

7*th.*—The symptoms are again aggravated. The horse was down when I first saw him this morning, groaning as if in pain, and shewed a great disinclination to rise. The man informed me that, when he entered the stable early, he perceived that the horse had perspired a great deal; he had also been up and down several times: the fore legs are enlarged, and the pulse still accelerated. Gave spts. æth. nit. ʒij, cum tinct. opii ʒss in haustus. This af-

forded relief in the course of a short time, and hopes were now entertained that the horse would do well.

17*th*.—It is altogether unnecessary further to particularize the symptoms that were evinced from day to day; they varied considerably, but were by no means urgent. Within these last few days the improvement has been most rapid. To-day the horse was put into the chains for an hour, which he bore very well. Let this be continued, and increased moderately.

21*st*.—He is now in work, which he performs with but little inconvenience, although the heels come in contact with the ground before any other part of the foot. The horse was worked daily, and the bar shoes were after a short time dispensed with.

[A case similar to the above, and occurring about the same time in another establishment, has been transmitted to us by Mr. Cartledge; but the symptoms are so much alike in both, that it is withheld.—*Editors*.]

II.—Diabetes.

January 1846.—A grey harness mare, seven years old, was affected with diabetes. The increased secretion of urine had existed for some days, and was excessive; the pulse 70; coat staring; visible mucous membranes injected; fæces hard and dark coloured; great desire for water evinced; extremities cold; and the animal very dull and off her feed. I gave a laxative, and after it had acted placed the animal on a liberal diet, and administered tonics daily, until to-day, January 14th, when I commenced giving creasote, in accordance with the treatment adopted and recommended by Professor Delwart in the October number of The Veterinary Record. I administered a fluid ounce of creasote in a pint of water, which appeared to act very powerfully, as it quickly drew tears from the animal's eyes after it was horned down, and caused much excitement of the system, which, however, gradually passed away.

15*th*.—The urine continues still to be voided in large quantities, but the action of the bowels is more natural. The pulse which was before weak is now strong, and numbers 76 beats in the minute. This is caused most likely by the creasote, which is to be omitted to-day.

16*th*.—The discharge of urine is still very great, and the fæces are voided frequently. The pulse continues strong and quick; the lips are excoriated by the creasote; the mare looks very dull, and is much reduced in flesh, but feeds a little better. Repeat the creasote, and begin giving water in which bars of heated iron have been cooled.

17*th*.—The pulse is undiminished in its number of beats, and remarkably full; the extremities are cold, and the mare again off her feed. Omit the creasote; for the pulse, which was a few days since extremely weak, is now so strong and altered in its character as to cause us to apprehend its action.

18*th*.—The flow of urine is much the same, and the fæcal matter is still voided in large quantities: the mare appears more lively and feeds better, although the prostration of strength is considerable. Pulse 66: she has lain down in the night for the first time since her attack; the thirst is not so great. Give ferri sulph. ʒij, antim. tart. ʒi, in ball.

20*th*.—The urine is lessened in quantity, but its appearance is the same. The mare also feeds tolerably well, and the fæces are diminished in quantity. Ball repeated as before ordered.

21*st*.—The appearance of the animal and the general symptoms are more favourable: the pulse is reduced to 54; the extremities are warmer, and the secretion of urine not so great. Ball to be repeated.

23*d*.—The mare is improving fast. The urine is materially decreased in quantity, and its character and that of the fæces is more natural. Pulse 48; appetite good; and the animal drinks less of the ferruginous water. Gentle walking exercise allowed in the middle of the day. Continue giving the ball until six doses have been administered.

30*th*.—To-day the mare begins to work lightly. She has very much improved: feeds and looks well, and, with the exception of a little acceleration in the pulse, she might be pronounced perfectly convalescent, as the symptoms generally denote the return of health, and the excretions, alvine and urinary, are natural.

It being a doubtful question if the horse be the subject of diabetes mellitus, I tested some of the urine for sugar by means of yeast, but could not perceive the slightest degree of fermentative action to be set up in it. I subsequently evaporated a quantity down

to the consistence of syrup, and set it aside in a moderately warm place for some days. On examination I found that several crystals had formed themselves. What they were I know not, and, being then much engaged, I reserved my investigation of them for another opportunity. Unfortunately an accident occurred, by which the vessel was broken, and thrown away before I was aware of it. This I regret exceedingly, and that the more, because the rapid recovery of my patient did not allow me to collect the urine in any quantity afterwards.

Proposal respecting Certificates for the Examination of Horses by Veterinary Surgeons.

To the Editors of "The Veterinary Record."

Gentlemen,

Allow me, through the medium of your columns, to call the attention of the Council of the Royal College of Veterinary Surgeons to a subject rife with interest, not only to the veterinary surgeon, but also to breeders and sellers of horses.

I have frequently witnessed an imposition practised upon sellers of horses by buyers from a distance, who state that "the horse bought (on such a day at this or that fair, &c.) has been examined by a veterinary surgeon, and found unsound," enclosing a certificate, which, in many instances, has been a forgery. In others, written by parties having no claim to the title of veterinary surgeon, and who do not practise even as one of the old school. The letter which accompanies the certificate further states, "that if the horse be not removed from the stables, the money returned, or some arrangement made, the horse will be sold to defray expenses, and an action at law commenced for the remainder." At the same time the horse has been sold for some weeks perfectly sound, never having been subject to any examination; this *ruse* being adopted to extract money from the seller, whom they well know is frightened at law, but who rarely thinks of ascertaining whether the horse is in reality unsound or not, either relying on the certificate of this self-dubbed Vet., or afraid of the expense of travelling and loss of time.

The suggestion I wish to offer to your notice will in two ways prove beneficial: first, to the veterinary surgeon, by shewing to the public those who are duly qualified as practitioners; and, secondly, to the seller, by putting it out of the power of the buyer to practise an imposition on him. Nor will it, in my humble opinion, require a complicated machinery to effect these benefits, nothing more being wanted than that all certificates emanating from veterinary surgeons be on sheets of paper stamped with the seal of the College, with the name of the veterinary surgeon to whom issued inscribed on them by the secretary, so as to prevent transfer; none being allowed to have these certificates but such as are members of the Royal College of Veterinary Surgeons, and by them only after paying a sum sufficient to defray the expense of printing, &c. If this suggestion should in any way lead to the remedy of this serious evil, it will amply reward,

Gentlemen, your's, &c.

SAM. FISHER.

Waltham, Melton Mowbray,
Jan. 20th, 1846.

[We extract the following from *The Lancet;* and while there may be much that is not strictly applicable to us in the present state of veterinary medicine in this country, yet we rejoice in the spirit that pervades the whole, believing that the alterations proposed, and likely to be carried out, cannot but prove of benefit. The junction of veterinary science with that of agriculture is both a natural and a profitable alliance, while it is also one that cannot fail to enhance our profession in the estimation of the public. There is a paragraph to which we would especially direct the attention of our readers, as it contains two points or principles on which rest the future advancement and respectability of the veterinary profession,—education, and a severance from the shoeing-smith. "The grade of Bachelor of Letters should be demanded of all pupils, and they should cease to be examined on horse-shoeing." We know not how far our brethren at home may go with us in this, but our feelings and wishes are in strict consonance with those of our continental brethren.—EDITORS.]

Report of the Veterinary Section of the Parisian Medical Congress.

In this country the various branches of the healing art are so inextricably mingled, there is such a want of efficient organization, and such a disregard of all considerations but those of personal or party interest, that any thing like the common effort for general good effected by the Parisian Medical Congress appears next to an impossibility. We cannot, indeed, but admit that the state of social organization which allows medical men, veterinary practitioners, and druggists, all to unite for the purpose of strengthening their social position, throwing into the scale of reform their united weight, must be superior to that which exists in Great Britain. Nothing connected with the Parisian Congress more clearly illustrates the estimable value of union between the different divisions of the healing art than what has occurred with reference to the veterinary section, respecting the labours of which we have not hitherto spoken. This important section of the Congress, after numerous discussions and deliberations, framed a Report embodying a number of resolutions. This Report was subsequently adopted by the entire Congress, and has been presented to the Minister of the Interior, under whose jurisdiction the veterinary corps is placed, as the expression of the wishes of the Parisian Medical Congress on this subject. We understand that the Report, thus representing the opinions of a medical senate composed of delegates from all parts of France, has been most graciously received. It is evident that, backed by the entire Congress, it has carried with it a weight which no document proceeding from the veterinary body alone could have enjoyed. The sentiments and wishes embodied in the Report being quite as applicable to this country as to France, we shall analyze a few of the most important.

"The veterinary surgeon," says the Report, "living generally in the midst of a rural population, is daily in contact with the peasantry, who apply to his science that he may save the animals which constitute a great part of their property. A science so directly applicable to their worldly interests must be appreciated and

respected by them, and must give authority to those who possess it. Were, therefore, veterinary practitioners thoroughly acquainted with the true doctrines of rural economy to inculcate them to the agriculturists of their district, to shew them how to rear cattle so as to preserve their health, and to make them as productive as possible, and to enlighten them as to the means of ameliorating stock, no doubt but they would be listened to and obeyed; they might thus become the benefactors of the locality in which they resided. If this beneficial influence were exercised, not in one spot only, but throughout the kingdom, with harmony and union, under the superintendence of a superior authority, a new era would be opened to agriculture.

"At present," continues the Report, "veterinary practitioners, as a body, are far from being able to render such services to their country, although all, no doubt, are anxious to do so. But in order to fulfil efficaciously the important functions of agents and promoters of agricultural ameliorations, they must be prepared by an appropriate education, which the existing schools are inadequate to give. The means of instruction presented by the three veterinary schools of Alfort, Lyons, and Toulouse, are so limited as to be nugatory in this respect. These establishments require completely remodelling. A sufficiently large extent of land should be added to them to admit of the rearing of cattle, and of illustrating the various improvements introduced into agriculture; they should, therefore, contain a model farm, a stud of horses, flocks of sheep and of other cattle. The duration of the studies should be at least five years. The pupils should follow theoretical and practical courses of agriculture and of rural economy, and particularly courses treating of the hygiène and rearing of animals. The grade of Bachelor of Letters should be demanded of all pupils, and they should cease to be examined on horse-shoeing.

"Thus, formed by five years of practical and theoretical studies, those who obtained the diploma of veterinary practitioners ought to be protected by public authority from the quacks who now prey on the rural populations, and the exercise of the veterinary art ought to be exclusively intrusted to them. In the army they should be placed on a footing of equality with the military surgeons, with whom their knowledge would entitle them to rank.

Their special information might be rendered useful to the country in various ways. Thus, in the chief town of each district there might be a veterinary surgeon appointed to examine into any epizootic that might appear, and to consult with the civil authorities. It is also to veterinary surgeons exclusively that should be intrusted the inspection of markets; and one or more should form a part of every local council of health or salubrity.

"Measures should likewise be taken to forward the progress of a science which has such influence over the health, riches, and power of the nation. Intelligent veterinary practitioners should be sent, occasionally, into foreign countries, to study the state of veterinary science, and to report on it, and a veterinary section should be established in the Academy of Sciences.

"Lastly, the due activity of all subaltern agents should be secured by the nomination of inspectors-general chosen from amongst the most distinguished practitioners, who would constitute a kind of superior Council or Board, attached to the Ministry of the Interior. By the means of this Board, the Government would be able to ascertain at any time the number of domestic animals, their value, and their sanitary state, even in the most remote districts of the country."

The above slight sketch of the "wishes" of the veterinary section of the Congress not only embodies many desirable improvements, but also gives us an insight into the present condition of veterinary medicine in France. As with us, it appears that the legitimate practitioner is hemmed in on every side by ignorant pretenders, who diminish his income, undermine his influence, and detract from the social position which his knowledge fairly entitles him to. We trust, however, that the manifestation made by the Congress in this direction will not be without a beneficial result, and that the veterinary practitioners of France will eventually obtain that protection which they would long since have enjoyed had the interests of the nation been consulted.

To those who practise veterinary medicine in our own country the declaration of the wishes of the French veterinary surgeons must be a matter of great interest. It shews them the path which they ought to follow to attain that scientific and social position to which they are aspiring. No honours would be too great for

men who conscientiously accomplished the task so nobly traced by the veterinary members of the French Congress.

Lancet, Jan. 10, 1846.

The French journals inform us that the requests of the veterinary section of the Parisian Medical Congress have been adopted by other influential public bodies, and that there is now nearly a certainty of the reforms which they demand being accepted and followed up by Government, if not entirely, at least in part.

In each department in France there is a Board (conseil general) elected by the inhabitants of the department, which sits for a certain time each year to discuss questions connected with agriculture and with the local interests of the department. These local committees are represented in Paris by a General Board, which has recently given its formal adhesion to the views promulgated by the veterinary section of the Congress, views which have been exhibited at length in a former article. The principal points to which the General Board of Agriculture has directed the attention of Government are the necessity of rendering veterinary studies more lengthened and more complete, and the duty of teaching veterinary students the subjects of agriculture and rural hygiéne, as also every thing pertaining to the breeding and training of stock.

Although the Minister of Agriculture, to whom the above communications have been addressed, has not as yet made any official answer, he has caused it to be understood that the wishes of the Congress, and of the Central Board of Agriculture, have been, and will be, seriously taken into consideration. He has even stated that the establishment of a large agricultural school has already been decided upon by Government for the improvement of veterinary students. This school is to be located in a central department, and to be carried on in such a manner that agriculture and veterinary science will progress together *pari passu*.

The attempt which is now making in France to connect agriculture with veterinary science is, evidently, one of the most important "movements" that has taken place in modern times. It may, indeed, be said to be the dawn of a new era for the veterinary art. If success follow the praiseworthy efforts which are

now being made in France—and success appears certain—veterinary science and its professors will very soon attain the high social position to which they are justly entitled. To the interests of society at large, the advantages that must accrue from having a numerous body of scientific agriculturists disseminated throughout the country would be incalculable. They who cultivate the land are proverbially slow in the adoption of improvements. Wedded to the habits and customs of their forefathers, it is difficult, often impossible, to induce them to make any change, however conducive to their own advantage. No one would be more likely to have influence with this numerous and important class than the veterinary surgeon, to whom they are continually obliged to intrust their fortunes—that is, the lives of their flocks. Nothing, on the other hand, will so much tend to increase the personal respect and consideration of the veterinary practitioner, as the acknowledgment on the part of his clients that he is really an authority in those pursuits which constitute their chief occupation.

From the knowledge thus acquired by veterinary practitioners we may again anticipate great benefit to accrue to agricultural science generally. The attention of a large body of well-educated men cannot be constantly directed to any branch of knowledge without improving it. We might, therefore, legitimately expect that great progress would be made through the instrumentality of thoroughly educated veterinary practitioners in every thing connected with the breeding and rearing of cattle. A mass of most important information would thus be gradually accumulated respecting the physiology, the nutrition, the diseases, and the therapeutics of each of the varieties of domestic animals which constitute a great part of the national riches.

Were those who exercise the veterinary profession to be thus qualified, and to take the social position which we should wish to see them occupy, the good sense of both rural and town populations would soon learn to discriminate between the uneducated and the educated practitioners. At the same time, the interests of society demand that the latter should be protected by the laws as well as the ordinary medical practitioner; and it is to be hoped that, eventually, such protection will be liberally afforded.

Lancet, Feb. 7, 1846.

Animal Charcoal an Antidote to Poisons.

On Monday, November 17th, 1845, Dr. A. B. Garrod read a paper before the Medical Society of London on animal charcoal as an antidote to various poisons, especially those derived from the animal and vegetable kingdoms. The following is an abstract of the paper, which will appear in the forthcoming volume of the Society's Transactions:

Dr. Garrod first noticed the experiments which had of late been made on the effects of animal charcoal in removing bitter principles from their solutions, and then detailed his own experiments, which led him to use it as an antidote. The results he had arrived at were,

1. That animal charcoal removed the active principles from vegetable and animal substances when added in proper quantities, even in a solution imitating the gastric juice, and at the temperature of the stomach (100° Fahr.)

2. That animal charcoal will also form compounds with arsenious acid and other mineral substances, removing these from their solutions, and that it is quite equal, if not superior, to the hydrated sesquioxide of iron, as an antidote to arsenious acid.

3. That the compounds of the animal charcoal with the poisonous principles have no injurious action on the animal body, and therefore, when the charcoal is given with the poison, or before it has become absorbed into the system, it will act as an antidote.

4. A certain amount of the antidote is required, depending on the quantity of active principle contained in the poison: half an ounce is more than sufficient for twenty grains of nux vomica, or one grain of strychnia; if less is given, the poison may act by its excess above the antidote.

5. The antidote is peculiarly adapted to poisonous substances whose activity depends on a small quantity of an active principle, as opium, nux vomica, the aconites, belladonna, stramonium, tobacco, hemlock, &c.

6. The antidote itself may be given to almost any amount, as it exerts no injurious action on the body.

7. That it is of great importance that good animal charcoal should be used, not the bone or ivory black, which contains about $\frac{88}{100}$ of earthy matter, but the *carbo animalis purificatus* of the Lon-

don Pharmacopœia. Common bone black was found to be very far inferior, certainly not possessing a fifth of the antidotal power. The vegetable charcoal was comparatively inert.

Dr. Garrod proposes, that in cases of poisoning we should remove as much of the poison as possible by means of the stomach-pump or emetics, and then give a large quantity of the animal charcoal diffused in warm water, or the antidote may be given with the emetic, but ipecacuanha must not be used, as the charcoal would destroy its emetic property. Sulphate of zinc, or some other mineral emetic, should be chosen. Dr. Garrod also suggests that perhaps animal charcoal would prevent the action of the poison of rabies, syphilis, serpents, &c., if applied in the form of a poultice to the part which has come into contact with the poisons, and that it may prove serviceable as a remedy in some diseases, from its great power of absorbing all principles.

Pharmaceutical Journal.

On the Precipitation of different Organic and Inorganic Substances by Animal Charcoal.

By F. Weppen.

From the fact that animal charcoal precipitates a number of very different colouring matters from their solutions, it was presumed that this effect was not limited to colouring matters, and the presumption has been substantiated by the following experiments, which shew that animal charcoal likewise precipitates bitter substances, resins, and substances containing tannin. The charcoal used for these experiments was obtained from bone-black by repeatedly boiling it with muriatic acid: afterwards well washing it, and then exposing it to moderate red heat.

I. organic substances.

1. *Bitter Substances.*—Ten grains of the substance were digested with two ounces of boiling water, and the filtered infusion shaken with the charcoal, until the bitter taste had entirely disappeared.

Names of the bitter substances.	Quantity of charcoal.
Wormwood	30 grains.
Colocynth	30 "
Gentian Root	20 "
Columbo Root	10 "
Quassia	30 "
Cascarilla Bark	30 "
Menyanthes trifoliata	30 "

A solution of two grains of *extract of aloes* in two ounces of water became quite tasteless with forty grains of charcoal.

2. *Resins.*—One drachm of the tincture of *guaiacum* and of the tincture of *jalap* were respectively diluted with as much alcohol; the first required thirteen grains, and the latter twenty-grains of charcoal to precipitate the resin contained therein to such a degree, that the solution became only very slightly clouded upon the addition of water.

3. *Astringent Substances.*—A solution of one grain of extract of *nutgalls* in half an ounce of water required twenty grains of charcoal; a solution of half a grain of *pure tannin* dissolved in half an ounce of water required ten grains of charcoal; an infusion of ten grains of *rhatany root* and the same quantity of *cinchona bark* in two ounces of water, required twenty grains of charcoal to deprive them of their power of reacting on the salts of iron.

II. INORGANIC SUBSTANCES.

That animal charcoal precipitates certain *metallic salts* from their solutions in water or spirit of wine, is a fact which has been long established. I find that, probably, all metallic solutions are similarly affected, though some require more charcoal than others. Moreover, this effect does not depend on the chemical constitution of the metallic oxide, whether its formula be M O or $M_2 O_3$.

The following salts were subjected to experiment:—

Sulphate of copper	Chloride of tin
" " zinc	Corrosive sublimate
" " protoxide of iron	Acetate of the oxide of iron
" " oxide of chromium	Nitrate of nickel
Nitrate of oxide of mercury	" " protoxide of cobalt
Acetate of lead	" " silver
Emetic tartar	" " protoxide of mercury

On an average, thirty grains of charcoal were required for every grain of these salts, dissolved in half an ounce of water; but, for reasons hereafter mentioned, it was difficult to precipitate them entirely, the addition of charcoal only rendering the reaction less distinct.

If caustic ammonia be added to those salts whose bases cannot be precipitated by ammonia, or which are redissolved by excess of the precipitant (copper, zinc, silver, lead in sugar of lead) much less charcoal is required; and the precipitation takes place much sooner. Not merely basic metallic oxides, but also certain metallic acids are precipitated by charcoal; oxide of lead dissolved in caustic potash was precipitated by charcoal; also the acids from antimoniate of potash and tungstate of ammonia. On the other hand, no effect was obtained on arseniate and arsenite of soda; and arsenious acid dissolved in water could not be entirely precipitated by animal charcoal. Bichromate of potash and chromic acid were reduced by the charcoal, in the cold slowly, but yet completely. The chromate of potash became converted into carbonate of potash. Furthermore, the charcoal precipitated iodide of mercury from the ammoniacal iodide of mercury; and sulphuret of antimony from the ammoniacal sulphuret of antimony.

A solution of iodine in water, or in iodide of potassium, is quickly decolourized by charcoal; but it is impossible to precipitate sulphur from its solutions in alcohol or oil of turpentine; for even after a large addition of charcoal, the filtered fluid heated over a silver plate still yielded traces of sulphuret of silver.

Salts having an alkaline base, as cream of tartar, ferrocyanide of potassium, gypsum, and alum, and also lime-water, appeared to be unaffected by charcoal; but a reaction takes place on chloride of barium, particularly if a few drops of caustic ammonia be added to the solution.

In the precipitation of metallic salts by charcoal, three circumstances may happen:—1. The salt may be absorbed without decomposition. 2. The oxide contained in the salt may be reduced; or, 3. The salts may be precipitated in a basic state. With some of the salts (sulphate of the protoxide of iron and corrosive sublimate) the latter takes place. As soon as the charcoal begins to act, the solution of the salt becomes distinctly acid, and by quantitative examination, the greatest part of the acid will be again

found in the fluid. This separation of the salts into acid and basic compounds is the reason why the last traces of the bases are so difficult to be removed by charcoal; for the acid which has become free prevents the perfect precipitation. Hence also, a salt to which some free acid has been added, is but little or not at all affected by charcoal. So also if we boil with acid the charcoal which has been used for precipitation, the precipitated oxides or basic salts contained therein, can almost entirely be extracted, though the last traces of the same resist the action of the acids.

Mulder mentions in his *Physiology*, that lead can be precipitated in the metallic state from sugar of lead by means of charcoal. If this were the case, no oxide of lead could be extracted by boiling the washed charcoal in acetic acid. Whether easily reducible metallic oxides, for example, oxide of silver, can be reduced to the metallic state by charcoal, I have not ascertained.

It has lately been asserted that the precipitation of the metallic salts by charcoal depends on the calcareous salt, which cannot perfectly be extracted by the application of acids. If this were the case, by the application of a salt whose acid forms a very easily soluble combination with lime, a calcareous salt would be found in the liquid standing over the charcoal.

In order to determine this I dissolved ten grains of corrosive sublimate in two ounces of water, and shook this with ten scruples of charcoal. The acid liquor was filtered, deprived of every trace of mercury by sulphuretted hydrogen, and evaporated. The last drops of the liquid certainly shewed distinct traces of lime. The charcoal used in this experiment was then boiled with muriatic acid, washed, and again mixed with ten grains of a solution of corrosive sublimate. In both the second and third trials traces of a calcareous salt were found in the liquid. When the charcoal, which had been used in all three experiments, was deflagrated with nitrate of potash, and the saline mass dissolved in water, a very small residue only was obtained, which, moreover, was only partially soluble in muriatic acid. It, therefore, appeared to me improbable, that a salt of lime should be extracted out of it by means of a solution of corrosive sublimate, rather than by means of muriatic acid. And, moreover, if this even had been the case, the contained calcareous salt would have been removed after I had three times treated the charcoal with corrosive sublimate. The

calcareous salt, therefore, must have originated either from the water, or from the vessels in which the fluid had been evaporated. In fact, after an equal quantity of water had been evaporated in a porcelain capsule, to a few drops, and only one drop of muriatic acid added, I obtained distinct evidence of the presence of lime on the addition of oxalate of ammonia. Moreover, as charcoal also precipitates substances where the precipitation cannot depend on the presence of calcareous salts, as in the case of iodine, it is very improbable that the effect on metallic salts depends on the calcareous salts.

An. der Chimie, Bd. lv., Heft 2.

CONTRIBUTIONS TO VETERINARY PATHOLOGY.

By Mr. J. Purves, *V.S. Hon. E.I.C. Service.*

No. 3.

Caries of Teeth giving rise to Symptoms simulating Glanders.

Aug. 24th, 1836.—For some time the animal has been affected with a muco-purulent discharge from the near nostril, and the lymphatic glands on the same side are enlarged. Place on a course of alteratives.

Sept. 5th.—No alteration perceptible. Give cup. sulph. ʒss daily, and allow liberal diet.

Oct. 5th.—The discharge from the nostril has ceased, but the glands remain swollen. Give the sulphate of copper as before ordered.

23*d.*—The discharge has again returned, and the glands remain undiminished. Pass a seton over the latter, and increase the dose of sulphate of copper to a drachm and a half daily.

Nov. 13*th.*—The discharge has increased, and otherwise the symptoms continue highly unfavourable. Treatment as before ordered.

19*th.*—The discharge has become copious of late, and it is now mixed with blood. Substitute sulphate of iron for that of copper.

Dec. 16*th.*—The discharge continues copious, and has been so ever since the last report. This day I discovered a carious tooth, the

fifth molar. I think this very likely to be the cause of the discharge from the nostril and enlargement of the glands.

19th. Attempted to extract the tooth with an instrument made after the form of that used for the human subject, but could not fix it on the tooth, it being split into two pieces and a portion bulging outwards, I therefore knocked one half of it out.

Jan. 3d, 1837.—No discharge from the nostril this morning, but during the week it has been much the same as before. Knocked out the other half of the broken tooth.

30th.—The discharge has returned, and become offensive.

Feb. 7th.—Animal destroyed as glandered by order of a special committee.

Appearance of the head after death.—The last molar tooth but one on each side of the superior maxilla affected with caries. That on the near side I had partly extracted; the off side one was split parallel with the jaw, and bulged out as that on the near side when I knocked off the broken pieces. A communication existed between the mouth and cavities of the head, through the diseased action set up, and a quantity of food was in one of the cavities. Immediately over the fang of the near tooth was a polypus about the size of a small hen's egg, extending into the nostril. The mucous membranes throughout the head were very much discoloured and injected but more particularly that covering the septum. There is no doubt but that the diseased tooth was the cause of the discharge from the nostrils, and also led to the formation of the polypus. The lungs were not much diseased.

A similar Case.

The horse arrived at Leypore 4th Dec. 1835.

Symptoms.—Discharge copious and offensive from the right nostril; the left nostril also discharges, but not near so much; the glands are swollen, and those on the right side very considerably. A committee assembled in the evening and condemned the animal to be shot: in their opinion it was a case of glanders.

Post-mortem appearance of the Head.—The Schneiderian membrane lining the septum on both sides was highly injected, and of a pale blue colour; the right maxillary sinus was full of fetid pus, and a mass of apparently ossific matter existed there, which was connected with a diseased or carious tooth.

BURSAUTTE ULCER UNDER THE JAW, AND ACUTE GASTRITIS.

THE animal has had the sore since August 13th, and has been treated while in the lines for it.

Oct. 4th.—Excised the ulcer with contiguous parts.

6th.—Symptoms of acute inflammation of the stomach have shewn themselves. Bleed to the amount of seven quarts; give a laxative, and throw up enemas.

10 P.M.—Animal worse; cold sweats bedew the body; the pulse is slightly irregular, but strong, and not much quickened; the conjunctiva healthy; the extremities warm. Scalded the belly. The clysters have brought away a quantity of liquid fæces. Repeat the blood-letting. The pulse was affected a little by the bleeding. At midnight I left him apparently not seriously ill, but still uneasy. Ordered that he be bled again if the symptoms continued urgent, which was done at 2 A.M. and the belly scalded more severely. At 3 A.M. the animal commenced vomiting by mouth and nostrils, and continued doing so until death took place. At 5 A.M. I found him still standing, the countenance dejected, extremities cold, pulse not to be felt at the jaw, breathing quick and laborious, and at 1 P.M. he died.

Post-mortem Appearances.—Inner coat of the stomach much inflamed, and quite black in some places; small intestines healthy; the colon and rectum inflamed, but not severely; the latter gut encoated with mucus: the contents of the colon were dry.

DISEASED TAIL (BUMNANNE).

THE horse has had this disease on him for the last thirteen years, but it never has broken out before in sores. Apply oil of turpentine to the ulcers to kill the maggots, and afterwards dress with sol. cup. sulph. Restrict diet to bran mashes.

Oct. 29th.—Fresh ulcers are breaking out in several places. Give a dose of physic.

Nov. 15th.—The first sores have healed, but others have shewn themselves, and the legs are become œdematous. Punctured eight lumps near the tip of the tail with a pointed iron.

28th.—The sloughs have come away. Seared more of the tumours.

Dec. 12th.—All the sores have dried up.

Case of Scrotal Hernia.

This horse has had a descent of the intestine into the scrotum, on the same side, four times since I have had charge of the corps, and twice before, but it has been always reduced by the taxis. I consequently attempted to reduce it by the same means again, after a copious bleeding, but failed: I therefore had recourse to herniotomy, which I had great difficulty in performing. After the operation I removed the testicle.

Aug. 12*th.*—Gave aloes ʒiv at noon, and bled in the evening.

Next day the animal was very ill: he stands listless; the breathing and pulse are much quickened, the latter being small and weak; conjunctiva injected. He has drank a little gruel to-day, and eaten a very small quantity of grass: dung somewhat hard.

15*th.*—Dressed the scrotum with blistering ointment, so as to bring on a purulent discharge. At noon, dung softer.

16*th.*—Symptoms to-day the same as yesterday, but the animal is feeding a little better: the fæces are frequently voided, and are soft.

17*th.*—Apparently much the same, with the exception of the action of the bowels, purging having commenced. Blister the belly.

18*th.*—Purging still. Gave rice water instead of suttoo water.

19*th.*—Animal appears better, and eats grass freely: dung of the consistence of paste; pulse regaining the natural standard, and the breathing becoming more regular.

25*th.*—Matter has broken out at the bottom of the opposite testicle.

Sept. 1*st.*—The horse is much better. Give a carminative daily, and allow liberal diet.

8*th.*—The wound has healed up, and the animal's health has returned.

Tetanus following Castration.

The operation of castration was performed on the 7th of March, and on the 17th of the same month symptoms of tetanus shewed themselves. The animal was extremely irritable, and on that account I feared the result of the removal of the testicles. He

was placed in a loose box, and bled with great difficulty. Clysters were frequently thrown up, but we could not administer any medicines: he even refused croton mixed with his water. He would occasionally lay down expressing much pain; cold perspirations covered the body, and the excitement became dreadful on the slightest noise being made.

On the 18th he was much worse, and about mid-day died.

REVIEWS.

The Horse's Foot, and How to Keep it Sound. With Illustrations. *By* WILLIAM MILES, *Esq.* London: Longman & Co.

THIS book, written by an amateur, and intended for general readers rather than veterinary surgeons, is neatly got up, having several well-executed lithographic engravings illustrative of the structure and form of the foot, and also different kinds of horse-shoes; and it is relative to the application of the latter that the author principally treats. On this subject Mr. Miles strongly advocates principles which have already been given publicity to by Mr. James Turner, in a valuable work on the foot of the horse, and has clearly proved that the services of many a noble animal are rendered totally unavailable from a want of proper attention to the feet. This work also contains many useful hints upon the treatment of the foot generally, both in health and disease, and will be found well worthy the attentive perusal of horse owners.

TRAITE COMPLET DE LA PARTURITION DES FEMELLES DOMESTIQUES. *By* J. RAINARD, *Director of the Veterinary School at Lyons, Professor of General Pathology, &c.*

WORKS on parturition in our domesticated animals are very scarce; and this being from the pen of one who through a long professional career has not only rendered himself eminent by his

professional skill, but also made parturition his particular study, as well as the especial subject of his lectures for more than twenty years at the Veterinary School of Lyons, will, we hope, be a sufficient excuse for the length of the extract we intend making from the above work, and which will at the same time constitute our Review of it.

Ovaria. Observations made on the cow, ewe, bitch, and rabbit, prove that the Graaffean vesicles are not the ovariæ destined to be fecundated, and consequently to become the rudiments of the new being, as De Graaf was led to believe, but are cysts, in which a liquid is found containing small granulated bodies, among which is one of a larger size: this is the ovum destined to be fecundated. After fecundation the vesiculæ of De Graaf swell, and by bursting allow this ovum to escape, which enters by the Fallopian tubes the uterus. Each vesicle thus becomes the seat of inflammation, when plastic lymph is thrown out, and a cicatrix is thus formed to which the appellation of corpus luteum has been given. However, these cicatrizations and formation of the corpora lutei are not always the result of fecundation, for Brugnone has observed them in the ovariæ of the mule, and Roederer and Haighton in ovariæ which had been tied before coïtion had taken place. The simple fact of the "rut" existing, without doubt tends to produce them, in the same way as menstruation in the human subject.

Vesicula Umbiliculæ is a small pouch which in the embryo is situated at the origin of the umbilical cord at its insertion in the abdomen. It is analogous to the membrane which surrounds the yolk of the egg in birds, with the exception that the latter does not undergo any change after its formation, while, on the contrary, the vesicula umbiliculæ is very small when the germ of the new being comes out of the ovarium, but increases in size afterwards, so as to become plainly perceptible to the unassisted sight.

This vesicle exists in all the mammalia. It is found at the origin of the umbilical cord, between the chorion and the amnion, loosely surrounded by a duplicature of the first membrane. This duplicature seems to be produced by the pelvic vessels which come out at the umbilicus and along the urachus, and spread over the chorion, some above and others below the umbilical vesicle, which seems to have no connexion with the allantoïd membrane, at least in the ovum of the dog. Carus found it in the mare at the ter-

mination of about half the period of gestation, very small and shrivelled, along with the umbilical cord, and adhering to the chorion by its two ends, nearly in the same manner as the yolk is maintained by the chalazes. In the cow it disappears at an earlier period of utero-gestation. Oken has studied it in the embryo of the sow. Bojanus, to whom we are indebted for the best observations on this organ, made most of his researches on the embryo of sheep. In this female, like all other ruminants, the umbilical vesicle, which has often been mistaken for a hydatid, M. Girard says is elongated, bifurcated, and narrow, and extended into the allantoïd.

In several carnivora, principally in the dog and the cat, it remains apparent during nearly the whole term of gestation. In the fœtus of the first-named animal, in which we have often studied it, it is remarkable for its red colour and many folds. By blowing into it it becomes oblong, and has a length, at least, equal to the fœtus, being always proportionally larger in the beginning of gestation than afterwards. In shape, it resembles the air-bladder in fishes; but, according to Flourens, it is of a triangular form in swine. In the larger animals, after two or three months' impregnation, it becomes converted into a vascular membrane. In the rabbit, Carus has found it in all well-developed fœtuses.

The vessels of the umbilical vesicule have received the name of omphalo-mesenteric. They are composed of both arteries and veins, and form two trunks: the arterial one communicates with the great mesenteric artery; the other, considered venous by M. Girard, goes to the vena portarum at the inferior surface of the liver.

Connexion of the Vesicula Umbilicalæ with the Intestines.—Up to the fifth week from the period of conception the vesicule communicates with the intestine by means of a small canal, and the liquid contained in it may be poured into the intestines. Dating from that time, the canal gradually becomes smaller, and at length impervious, the umbilical portion being lost in the cord. This seems to be the case in all the mammifera. Oken and Bojanus have confirmed the existence of this communication with the intestine in the ovum of the sheep. This canal becomes obliterated, the vesicule atrophied, and disappears entirely after the placenta is perfectly developed.

It is not yet well understood with what portion of the intestinal tube this communication takes place. Oken says it is with the cœcum. Carus asserts it to be with the small intestines, since, in birds, the small intestine proceeds directly from the membrane of the yolk, which is analogous to the vesicula of the mammifera. I agree with this opinion of Carus, my researches having demonstrated that the omphalo-mesenteric artery arises from that branch of the great mesenteric which supplies the small intestines.

Function of the Vesicula Umbiliculæ.—It is the first organ which elaborates and produces the blood, like the vitellum in the egg of birds. In fact, in the mammifera it contains a yellow liquid which is analogous to the yolk of eggs, and which, being absorbed by the omphalo-mesenteric vessels that ramify on its surface, supplies the first nutriment to the embryo. This vesicule. to which the name of Tunica Erythroïda (from erithros, red) has also been given, is the most essential part of the germ, as it descends from the ovum and contributes to the developing of the embryo, the smallest having generally the largest vesicule.

It would be impossible for any one to believe in the immediate passage of the blood from the mother into the vessels of the fœtus, since Prevost has shewn that the globules in the blood of the embryo are double the size of those in the blood of the mother.

FORMATION OF THE FŒTUS.

The science of veterinary medicine is as yet of too recent a date to have enabled its followers, however ardent, to devote themselves to the investigation of this important subject; we, therefore, possess little more than that which has been contributed by the authors on comparative anatomy. We can, then, only give a general outline of the different periods of fœtal life, the chief difficulty being the variable duration of the term of gestation in the different species of domestic animals.

The rudiment of the new being is in the form of a small egg (ovula), which bears the name of Baër, the anatomist who first discovered it. This ovula is formed by a membrane analogous to that which covers the yolk of the egg in birds (vitellus); which membrane, connected with the umbilical cord, constitutes the vesicula umbiliculæ in the mammifera.

The period when the embryo has been first seen in the mam-

mifera (the dog having been the most frequent subject of obervation) is on the eighth day after copulation. Prevost and Dumas have recorded, that a speck then appears on the ovula which has not then formed any adherence, and which is of an elliptic shape. This speck has been compared to the cicatricula of the egg in birds.

Some days after this the ovula adheres, becomes elongated, its two ends are obtuse and rounded, and it exhibits a villous appearance. The chorion also presents a villous surface, resembling cotton wool; and there is no doubt that it absorbs from the uterus the nutritious principle with as much activity as the vitellus in the egg does the albumen thereof.

Soon afterwards a white line a little elevated is to be seen; this is the rudiment of the spinal marrow. The embryo then takes on the shape of a worm, being nearly straight, and the trunk is divided by an indentation: it adheres to the extremities at one end only.

Later the embryo becomes curved, and has an ovoid shape. The head is of the same size as the trunk, the coccyx prominent, the outlines of the tail and legs marked, and the umbilical cord short, containing the intestines. Soon the eyes and eyelids are visible, the intestines enter the abdomen, the mouth opens, the articulations are defined, the meconium is formed in the stomach, and the umbilical cord becomes spiral.

Afterwards the sexes become distinct, the muscular system is developed, the muscles acquiring contractility; the meconium descends into the small intestines, the auricles of the heart become larger than the ventricles, the brain is seen lamellated, the hoofs and horns acquire consistence, the sternum shews points of ossification, the bones also possess some solidity, the hairs begin to appear, the large intestines to shew their folds, and the different viscera become distinct.

The formation of the nervous system is at first confined to the vertebral canal; it is here incomplete, and situated posteriorly, its formation being from behind forwards, contrary to what takes place in man.

The circulatory system consists at first of a few tubes developed in the thickness of the umbilical vesicule, and which, by uniting, constitute the omphalo-mesenteric vein, and which afterwards forms

a connexion with the vena portarum. This omphalo-mesenteric vein is the principal trunk of the body. The superior part of it is swelled out in such a manner so as to form a semicircle, which has a jerking motion (punctum saliens of physiologists, a point which beats); a second cavity is added, and the heart is thus formed, composed of two cavities, an auricle and a ventricle. At the side of the ventricle, which is the left, a second appears, which enlarges gradually. In proportion as the right ventricle is added to the left, the pulmonary artery, which at first was only a bifurcation of the aorta, is separated at its base, and the single auricle is divided into two by an incomplete partition, pierced by the foramen of Botal; and, finally, the valves and columnæ carneæ are formed.

FUNCTIONS OF THE FŒTUS.

Some of these are in every respect similar to those of the adult; others present nothing very special to our observation, such are the sense of feeling, the automatic motion, the exhalations, the intestinal secretion, &c. Again, there are others of which nothing but the mechanism is known, such is that of the thymus and the thyroid glands, and the renal capsules. Finally, some present a notable difference in the fœtus and in the adult animal, these being nutrition, circulation, and respiration.

Nutrition.—When yet in the state of embryo, the nutriment is obtained in the same manner as that of the embryo chick in the egg of birds,—namely, from the contents of the umbilical vesicule: afterwards from the fluid secreted by the mucous lining of the uterus, contained in the caduc membrane, it being absorbed by the villous coat of the chorion.

When the placenta and the umbilical cord are formed, a new mode of nutrition takes place. The fœtus either absorbs the blood of the mother in a direct manner, as is the case in the carnivora; or a lactescent humour is exhaled by the uterus, such as is found in the caduc membrane of the solipedes and the cotyledons of the ruminants. The liquor amnii is a third source of nutrition; it penetrates into the body by a true act of deglutition. Some authors have thought, but with little reason, that it was absorbed by the pores of the skin, forgetting that the fœtus is covered at this period with a thick sebaceous coat.

This source of alimentary matter is, however, not the most active; for fœtuses have arrived at their full term of gestation in perfect health with an imperforate mouth, or the opening has been closed with a membrane, and consequently no deglutition could have taken place.

Respiration.—The transformation of the black or venous blood into the scarlet or arterial is performed in the placenta of the fœtus, which is its organ of respiration or true lungs.

By what means is the hæmatosis perfected? Authors admit that the oxygen of the arterial blood of the mother is absorbed by the radicles of the umbilical veins, and that an elaboration identical to that which takes place in the lungs of the adult is established. Unquestionably this explanation can only be applied to the time at which the placenta is perfectly formed. Attempts have been made to discover in the fœtus something analogous to the gills in fishes, which would have the effect of absorbing the oxygen contained in the liquor amnii: unfortunately for this view no gills have been discovered, and, moreover, the liquor amnii contains no free oxygen. But notwithstanding the non-existence of organs to operate on the blood in the embryo, we can, nevertheless, understand the formation of this fluid by a peculiar chemical reaction taking place, examples of which we witness every day in the formation of false membranes, in the midst of which blood is formed without the intervention of oxygen.

Secretions.—The composition of the blood cannot be maintained in its purity without the exercise of different organs which separate from it certain principles incompatible with its normal state. The fœtus being unable to relieve itself by the organs of respiration of its excess of hydrogen and carbonic acid, must of necessity have certain secreting organs more active. Thus it is that the secretion of bile is very abundant in the fœtus, and hence the meconium which is found in the intestines; the liver being viewed as a supplementary organ to the lungs in the animal economy with respect to the elimination of the elements of fatty matter, namely, hydrogen and carbon. Moreover, bile has likewise been found in the borders of the placenta of the carnivora. Urine is also secreted, filling the bladder and the allantoïd. Finally, cutaneous perspiration is carried on by the pores which empty themselves into the amnion.

Function of the Liver.—The meconium is a product of secretion, and considered to be a mixture of bile and mucus. By the aid of chemistry we discover a green matter, soluble in alcohol, similar to the resinous part of the bile, and which imparts a yellow tinge to water. By the reaction of alkalies, a substance of a yellow-brown colour is obtained (Payer). Meconium has been found in fœtuses having no mouth, and even in those in which the liver was wanting (Tiedman). The liver in the mammifera is comparatively a voluminous organ; all the blood from the placenta, by the umbilical veins, circulating through it, where it mixes with that from the vena portarum, with which it afterwards becomes confounded. This blood enters the vena cava by the hepatic veins. If the product of the secretion from the liver does not at the first resemble bile—if it be found less consistent and not so high coloured—it is a stronger proof that the function of the liver at this period is more to deprive the blood of the excess of extraneous matter than for the secretion of a fluid necessary to the process of digestion. Only as the period of birth approaches it prepares a secretion which becomes essential to digestion.

Function of the Kidneys.—The secretion of these organs, namely, urine, is for the purpose of depriving the blood of its excess of nitrogen in the form of a proximate animal principle. The urine of the fœtus accumulates in the bladder and the allantoïd; but during the last stage of intra-uterine life in animals where this membranous sac disappears, it flows into the amnion. This mixture of urine with the liquor amnii has led physiologists to doubt the accuracy of the statement that the liquor amnii furnishes nutriment to the fœtus.

POSITION OF THE FŒTUS IN THE UTERUS.

Immersed in the liquor amnii, the relative quantity of which is considerable, the fœtus in the early period, or at the beginning of uterine life, takes a position which it preserves throughout till the time of parturition. The head, remarkable for its large size, lies in the direction of the vaginal opening of the uterus, and the posterior extremities extend backwards and upwards. According to Brugnone, if one lays open the uterus of the mare in a longitudinal direction at the ninth or tenth month of gestation, the

head will be found in the direction above stated, bended so that the posterior maxilla touches the neck, and the mouth touches the chest. It forms a semicircle, the poll being against the sacrum of the mother, the spine curved towards the inferior part of the abdomen, either to the left or the right, the anterior extremities bent in such a manner that the knees reach beyond the middle of the head, and the pasterns turned backwards so that the hoofs are on the umbilical region. The posterior extremities are doubled under the abdomen, often reaching as far as the last rib, close to the anterior extremities. The quarters and haunches are at the bottom of the uterus. Sometimes the hocks are bent, and extend with the thighs into either of the cornua of the uterus. Such, according to Brugnone, is the natural position of the fœtus at the approach of parturition, and all other positions are abnormal.

We pass over the hygiène of gestation, to which the author has devoted several pages, this being more the department of the breeder than of the veterinary surgeon, and proceed to notice the changes that take place in the gravid uterus.

1.—PROTRUSION OF THE VAGINA.

The protrusion of the vagina is of frequent occurrence in the cow. It very commonly occurs at the seventh month of gestation, but more frequently three weeks or a month before parturition. It is first perceived while the animal is down, and disappears when standing; afterwards it becomes permanent. Some breeds are more subject to it than others, especially those who have a voluminous abdomen with capacious and depending pelvis; and this more so if the flooring in the sheds be much inclined from the mangers backwards. M. Favre, of Geneva, is, in my opinion, the only veterinary surgeon who has accurately described this affection, and indicated the means to alleviate animals suffering from it. When the coats of the vagina appear only like a ball between the labia, the inconvenience is of little consequence; but, when the vagina protrudes considerably beyond the vulva, the action of atmospheric air, the dirt, and particles of the litter, irritate its mucous lining membrane, which becomes inflamed, and ulcerates, and parturition is then dangerous, as an eversion of the uterus may be feared; because

of the approach of this organ to the vicinity of the vagina the suspensory ligaments must become relaxed from the resistance offered by the parts. In general, however, the protrusion of the vagina disappears after calving, until the renewal of the cause again reproduces it. But if it continues, it becomes a serious malady. The law of the 20th of May 1838 has classed this affection, when continuing after calving, among the causes of unsoundness in cows. The means of prevention, when there is a tendency to it, are to restrict the diet, particularly at night; to feed the animals on provender which contains the greater quantity of nutrient matter in the smallest bulk, so as to avoid as much as possible over-distention of the abdomen; and to change the level of the pavement in the sheds by raising it behind, or to turn the animal loose in a stall on a level place. If the parts are much inflamed or ulcerated, astringent applications and fomentations should be used.

At the time of parturition the labia must be supported on each side by assistants, to prevent the parts from being further protruded by the contractions of the uterus and abdominal muscles; in which case there is danger of the uterus being reverted.

The method of cure consists in the reduction of the parts, and this is easy enough; but that which is not so easy is to maintain them in their place afterwards: and it would be dangerous to employ mechanical means when gestation is somewhat advanced, as they are apt to irritate the organs of generation.

The bitch, after copulation, is occasionally the subject of a retropulsion of the vagina, which occurs under two circumstances: first, when the male is a large animal, and she is accidentally dragged while they are united together; secondly, when a polypous vegetation occupies the mucous canal. The first is not followed by any serious consequences: the use of tepid water will remove it. The second will require an operation; but unless the vegetations be of large size, and the bleeding shews itself much externally, the operation should be delayed until after parturition.

2.—PROLAPSUS OF THE UTERUS.

The uterus, towards the end of gestation, is inclined backwards; and, through the same causes which produce retropulsion of the vagina, it may protrude externally. When the pelvic cavity has

too much amplitude, and is inclined backwards, the lateral ligaments become relaxed; or the animal being very heavy, and has to make great efforts to get up, it happens sometimes that the uterus and its contents descend to the vulva, and occasionally beyond it.

We remember seeing a goat, of large size, which was brought to the Veterinary School of Lyons a few years ago, and which was about a fortnight from her time of parturition, in whom the uterus extended seven to eight centimetres beyond the vulva: the weight of the fœtus had dilated the external opening to such an extent that the muzzle of the kid protruded, and it would lick the hand when presented to it. Galen, according to Richerand, has observed a still more curious fact, namely, that of a kid being contained in the uterus and eating the leaves of the cystis.

Prolapsus of the uterus is a bad omen for gestation; as, perhaps, we are without an example of a female having gone her full time when prolapsus has taken place. The least accidental circumstance resulting from it is, when the term is not far advanced, that abortion takes place. If near the term, it is generally followed by inversion of the organ; and, probably, this will re-occur at every subsequent gestation.

3.—RETROVERSION OF THE UTERUS.

This takes place when the position of the uterus becomes horizontal, the neck being turned towards the symphysis of the pubis, and the body touches the sacrum. Anteversion is when the neck is turned towards the sacrum and the body towards the pubis. This last, however, does not occur to domestic animals, on account of the horizontal position of their bodies.

HERNIA OF THE UTERUS THROUGH THE ABDOMINAL PARIETES.

The aponeurosis of the muscles giving way, the uterus penetrates through them, and lodges in the subcutaneous cellular tissue. The rent is always below, either on the left or right side; often at the side of the pubic region, and anterior to the crural arch: and the herniated viscus projects above the udder in the larger domestic animals.

The first instance of this kind was sent to me about fifteen years ago by M. Maurin, one of my pupils. The subject was a cow, ten years old, robust, and in good condition. About the eighth month of gestation a swelling was perceived above the left quarter, which gradually increased in size, advancing towards the leg on the same side. At the ninth month it had increased to such a size that the udder nearly touched the ground. There was neither tenderness nor heat in this tumour, and pressure from below would make it partly retrograde into the abdomen. The cow was in perfect health, and experienced no inconvenience in walking. The pains of parturition came on, but the head of the fœtus did not appear, and could not be found; but after a manœuvre, which I will hereafter describe, a fine calf was brought forth in perfect health. The cow was sent to the butcher, and M. Maurin made a post-mortem examination, and found a large opening in the abdominal parietes which contained the uterus.

Since this M. Favre, of Geneva, has described several cases of the same kind, which he observed in the cow and the mare. The first case is that of a cow at eight months' gestation: the gait was painful, and the hind legs placed wide apart; the udder of an enormous size, and tumefied all around. M. Favre discovered, by feeling, the two feet of the calf between the skin and the mammary gland. The second was also a cow on the point of calving. She suddenly acquired an enormous volume of the mammæ: the pains of parturition supervened, and, M. Favre being sent for, he recognized the head of the calf sunk in the enlargement. Foreseeing the insurmountable difficulty to safe parturition, he advised the cow to be destroyed, and then learned that the head, enclosed in the uterus, was located immediately under the skin.

The third instance observed by him was in a mare of the English breed, which, for two days before he was called in, had been suffering the pains of parturition. Labour had made but little progress, and the water-bag was not seen at the vulva; but his attention was attracted by an enormous œdematous swelling, in which the mammary glands had disappeared. He at once felt convinced that he had to contend with a similar case as that before described in the cow.

The strength of the animal quickly became exhausted, and she died during the act of parturition. The autopsia shewed the uterus

intact between the skin and the thigh; the peritoneum was lacerated; the opening in the abdominal parietes was situated anterior to the crural arch, and extended to the median line of the body; the sterno-pubean muscle was transversely torn, and the uterus itself was lodged in a sac which contained no blood, but the parietes of this bag were of a reddish brown colour. The fœtal membranes were perfect, and retained the whole of the liquor amnii; the fore feet of the fœtus were towards the opening of the uterus, and the back towards the abdomen of the mare.

TRANSACTIONS OF THE VETERINARY MEDICAL ASSOCIATION.

TUESDAY, NOVEMBER 18, 1845.

THE members of the Association met this evening in the Theatre of the College,

Mr. J. MANNINGTON in the Chair.

The Rules and Regulations of the Association having been read by the Secretary, the following officers were chosen for the session:—

President—Professor SPOONER.

Vice-Presidents.

Mr. J. TURNER	Mr. J. MANNINGTON
Mr. T. TURNER	Mr. E. T. BASS
Mr. W. ERNES	Mr. J. ROSE
Mr. E. BRABY	Mr. G. W. VARNELL
Mr. W. MAVOR, jun.	Mr. J. MITCHELL
Mr. E. MAYHEW	Mr. H. FISHWICK.

Treasurer—Mr. J. B. SIMONDS.

Secretary and Librarian—Mr. W. J. T. MORTON.

Many new members were elected.

TUESDAY, NOVEMBER 25, 1845.

The President, Professor SPOONER, on taking the Chair, acknowledged his re-election to office.

On the table were placed several presentations made during the vacation to the Association, consisting of books to the Library, new instruments, morbid specimens, and urinary calculi from India.

The books consisted of—

"Traité Complet de la Parturition des principales Femelles Domestiques." Par J. Rainard.

"Note sur le Typhus." Par M. A. Price.

"Des Annexes du Fœtus dans les principales Espèces d'Animaux Domestiques." Par F. Lecoq.

"Discours prononcé a la Distribution des Prix de l'Ecole Royale Vétérinaire de Lyon le 22 Août 1845." Par M. Prince, Professeur.

"On the Structure and Developement of the Echino-coccus Hominis." By Erasmus Wilson, Esq., F.R.S.

Also the continental periodicals in exchange for the "Transactions of the Association."

The following letter accompanied the specimens received from India:—

My dear Sir, *Bangalore, 4th July*, 1845.

I have packed in a large tin a few specimens for the College Museum.

The pastern bone belonged to a horse the property of Capt. Knox, of the 15th Hussars, and was fractured during a race.

The sessamoids are from a horse of Major Anstruther's, Madras Horse Artillery, and were fractured in training. The other bone is a patella, fractured by a kick. The horse was shot yesterday. By the negligence of my servant, a piece of this bone has been lost.

The two calculi are, the brown one from a horse of the 3d Native Cavalry; the lighter coloured one from a horse of the 4th Native Cavalry: they were both taken out after death, and were given me by Messrs. Vincent and Hooper, V.S.

One of the phials contains two worms taken by me from the eyes of two troop horses: they both recovered their sight afterwards. The other phial contains a small snake, which is said to have bitten a troop horse, and caused its death in a few hours.

If it had not been too large, I would have sent you a specimen of fracture of the dorsal vertebræ, the fourth, fifth, and sixth, caused by a fall. The horse ran away in the evening with one of our officers, and blundered into a nullah, or ditch, falling, I fancy, on his shoulder, thus causing the fracture; at the same time, nearly killing his rider, who was insensible for some days.

I have now a fractured lower jaw under treatment: it was done by a kick, dividing the symphysis transversely, at about four inches up. I think it will do well. I have just had two cases of very severe wounds. I have never seen any to equal them. They were caused by a coach-pole breaking. A grey horse had a wound extending from the anus down the perinæum about fourteen inches, and in depth about eight at the deepest part, luckily leaving the urethra untouched. Another horse a very large lacerated wound in the rump, tearing back the skin, and regularly dissecting out the muscles: they are both now quite well, and the loss of substance is scarcely perceptible.

I have just had, in a horse of my own, a case of concussion of the brain, caused by a fall: he is now all right.

Your's, faithfully,

To Mr. Morton. T. H. HURFORD, *V.S., King's Hussars.*

Mr. Morton.—I am informed that in India it is common to attribute the death of horses to the bite of a small snake; but, with reference to that forwarded by Mr. Hurford, it appears to be a harmless one. It is the crenulated silver snake, called by Shaw the punctulated slow worm; scientifically, *argyrophis bramicus* (also eryx bramicus, and tortrix Russellii). It is common in India: has a small mouth placed upon the under surface of the head; a round tail (although in the specimen this has been flattened); and is harmless. This information I have received from a friend to whom I sent the snake for examination. The filariæ oculi are interesting, from the fact of the removal of these parasites from their locality having been followed by the restora-

tion of sight in both instances. A case analogous is recorded in the first volume of THE RECORD, p. 73.

Much of the value that would otherwise be attached to the urinary and cystic calculi is lost by their having been taken from the bladders after death. One of them, however, is of more than ordinary interest: it weighs 7¾ ounces troy, and is covered with beautiful crystals of a pyramidal form, being parts of octohedra, among which are interspersed small amorphous and tuberculated masses. Its uncommon appearance has induced me to subject it to an analysis. Small portions of it being pulverised, and heated with pure potassa, yielded no ammonia. A fragment subjected to the influence of heat by the aid of the blow-pipe, became white, and the crystals resplendent; and in dilute hydrochloric acid it quickly dissolved with effervescence, giving off much carbonic acid gas. Slow solution of a portion also took place without the previous application of heat.

Another portion being pulverized, and boiled with carbonate of potash, and filtered, to the solution thus obtained excess of acetic acid was added, and then a solution of the sulphate of lime, as directed by Liebig, when an abundant precipitation took place. From this I infer that the composition of the calculus is carbonate of lime with the oxalate, constituting the mulberry calculus of the horse, which is very rare: indeed, I know not of a similar concretion existing in the museum of this Institution, if I except one that appears to be a renal calculus, and which, I believe, was also forwarded from India, but the history of this calculus is as meagre as the one under notice.

The production of these accumulations is a subject worthy of scientific inquiry and investigation. The more general ones met with in the horse consist of carbonate of lime and animal matter.

The formation of carbonate of line in the urine has been already traced to the metamorphosis the urea undergoes, by which it is converted into carbonate of ammonia, from which the ammonia being displaced by lime, a carbonate of lime is the result. Dr. Golding Bird refers the production of the oxalate of ammonia to a similar source. He says, in his work on Urinary Deposits, "The relation between urea and oxalic acid is readily shewn; for if we conceive urea to exist in the blood, and it be the duty of the kidney to separate it, we have only to suppose the organ to exert a slight

deoxidating or decomposing influence to insure the conversion of urea into oxalate of ammonia. We know that under a depressing influence exerted on the nervous system at large, or upon a portion of it connected with the functions of the kidney, as during typhus adynamic fever on the one hand, and blows over, or a fracture of the spine, on the other, such decomposing influence is unquestionable, and the urine becomes loaded with carbonate of ammonia from a re-arrangement of the component elements of the urea; one atom of urea and two of water being resolved into two atoms of carbonate of ammonia. If, then, a less energetic amount of this morbidly depressing influence be supposed to be exerted, we shall have one atom of urea and two of water lose an atom of oxygen to become converted into oxalic acid and ammonia.

	C	N	H	O
1 atom urea =	2	2	4	2
2 atoms water =			2	2
	2	2	6	4

=

	C	N	H	O	
	2			3	= 1 atom oxalic acid.
			2+6		= 2 atoms ammonia.
				1	= 1 atom oxygen.
	2	2	6	4	

Since the first publication of this formula, Prof. Liebig has suggested that oxalic acid is a derivative of uric acid and not of urea; thus,

	C	N	H	O
1 atom uric acid =	10	4	4	6
4 atoms water =			4	4
3 atoms oxygen =				3
	10	4	8	13

=

	C	N	H	O	
	4	4	8	4	= 2 atoms urea.
	6			9	= 3 atoms oxalic acid
	10	4	8	13	

It is, however, a matter of very secondary importance whether the oxalic acid be a derivative of uric acid or urea, considering the relation which exists between these two bodies. From whatever source it may arise, the presence of oxalic acid in the urine must necessarily lead to the formation of oxalate of lime, as this acid readily precipitates lime from all its combinations with acids."

Liebig says, "The disappearance of uric acid and the production of urea plainly stand in a very close relation to the amount of oxygen absorbed in respiration, and to the quantity of water consumed by different animals in a given time.

"When uric acid is subjected to the action of oxygen, it is first resolved, as is well known, into alloxan and urea. A new supply of oxygen acting on the alloxan causes it to resolve itself either into oxalic acid and urea, into oxaluric and parabanic acids, or into carbonic acid and urea.

"In the so-called mulberry calculi we find oxalate of lime, in other calculi urate of ammonia, and always in persons in whom, from want of exercise and labour, or from other causes, the supply of oxygen has been diminished. Calculi containing uric acid or oxalic acid are never found in phthisical patients; and it is a common occurrence in France, among patients suffering from calculous complaints, that when they go to the country, where they take more exercise, the compounds of uric acid, which were deposited in the bladder during their residence in town, are succeeded by oxalates (mulberry calculus), in consequence of the increased supply of oxygen. With a still greater supply of oxygen they would have yielded, in healthy subjects, only the last product of the oxidation of uric acid, namely, carbonic acid and urea."

From it being a fact that the existence of uric acid has not been recognized in the urine of the horse, nor the concretions derived therefrom, we, perhaps, are more inclined to concur with the view taken by Dr. Golding Bird. There is, however, yet another traceable origin of the oxalic acid, as suggested by Dr. Prout, namely, to the sugar taken in with the food. Now, it is true that the horse does not eat sugar, his food being farinaceous, or allied thereto, yet farina becomes partially converted into this principle (sugar) during digestion; and, whenever this all-important function is interfered with, the sugar, by the aid of oxydizing agents, may be changed into oxalic acid. But if the food should not undergo this change, fermentation may be set up in it, as indeed it often is, from the chemical forces overcoming vital action, and then we shall have carbonic acid evolved. Now the difference between this acid and oxalic acid is not great: the one is constituted of $C+O_2$, the other C_2+O_3. But if we are allowed to suppose that another *occasional* product of fermentation is present, namely, carbonic oxide, consisting of $C+O$, we have then at once the oxalic acid formed, which may be said to be constituted of carbonic acid and carbonic oxide united to water.

In whatever way the acid is generated, whether from the

change the food undergoes, or from the metamorphosis of urea or of uric acid, according to the high authorities already quoted, there can be no question but that it will be excreted by the kidneys; and as this acid separates lime from all its combinations, it will cause a precipitation of the oxalate of lime to take place from the urine, giving rise to the formation of a calculus either renal or cystic, as may be.

"Most of the fluids of the animal body," says Liebig, in his Lectures on Organic Chemistry, published in *The Lancet*, August 30, 1845, "but more especially those destined to be evacuated from the system, hold in solution certain compounds, which are kept dissolved only by very weak affinities, and therefore, as soon as the fluid has left the body, they become deposited in a solid form. When, therefore, these fluids are retained longer than is ordinarily the case, or when, in consequence of unhealthy conditions of the organism, these matters, which, in the normal state, exist only in minute quantities, are produced in larger proportions, they deposit themselves in a solid form; and, the process being frequently repeated, concretions are formed, and, as we are now contemplating especially the case of the urine, are deposited in the bladder. In this manner those calculi are generated which consist of uric acid and the urates.

"Calculi may, however, be formed, when neither the proportionate amount of solid matter in solution is increased, nor the fluid retained a longer time than natural in the bladder; because the urine may, from various causes, undergo such a change in its constitution, that those conditions essential to the solubility of certain compounds may be absent, and consequently these compounds necessarily become precipitated.

"Phosphate of lime is perfectly insoluble in pure water; its solubility in urine depends upon the existence of free acid in that fluid. If from any cause the urine becomes alkaline, as, for instance, when organic salts with alkaline bases are taken into the stomach, which, as is well known, are converted into carbonates during their passage through the organism, then the conditions essential to the solubility of phosphate of lime are removed, and this salt is precipitated. All calculi consisting of phosphate of lime are produced in this manner.

"The calculi containing ammonio-magnesian phosphate are also

produced in a manner precisely analogous to this. In many animal fluids, particularly the urine, phosphate of magnesia is found in solution. Normal urine contains no ammonia; but when, from any cause, ammonia is generated, the phosphate of magnesia no longer remains in solution, but is precipitated as ammonio-phosphate of magnesia.

"Beside the foregoing, there is another cause of the formation of urinary concretions. In diseased conditions of the system, peculiar compounds are not unfrequently formed which are never produced in the healthy organism, and, being perfectly insoluble in urine, are immediately deposited in a solid form from that fluid. In this manner oxalate of lime calculi are formed, and those concretions of organic matter termed cystic oxide and zanthic oxide.

"But beyond these chemical causes of calculi, certain mechanical conditions have almost always more or less influence upon their formation in the urinary bladder. When any of these states which I have enumerated exist, and, in consequence, deposits occur of uric acid, urates, insoluble phosphates, oxalate of lime, &c., in small quantities, it does not necessarily happen that calculi are formed, but, in most cases, the urine flowing off, carries with it through the urethra the sediments suspended in it, or already deposited. When, however, the bladder contains mucus, these sediments are apt to adhere to it, and become united into masses. Very often a foreign body, which has accidentally got into the bladder, forms the nucleus upon which these sediments are deposited, and to which they adhere: the irritation they occasion on the internal surface of the bladder induces the secretion of mucus, in which the urinary deposits accumulate, and they thus become the direct cause of the formation of calculi."

Mr. T. Wells, V.S., Norwich, forwarded a truss made use of by him for the purpose of giving pressure to bursal distentions about the hock-joint. The subjoined woodcut in the next page exhibits both the truss and its mode of application.

Mr. Simonds said that, being at Norwich during the vacation, he had an opportunity of witnessing the application of this truss to the hock of a horse; when Mr. Wells informed him that he had successfully made use of it in many cases of thorough-pin, and that he placed considerable confidence in the instrument, having found the pressure communicated by it very effectual in the reduc-

tion of bursal enlargements which had been of long standing, and where the ordinary means had recourse to had failed in producing absorption. He (Mr. S.) would recommend it to the notice of the members of the Association as an ingenious mechanical contrivance, simple but effectual. Of course, this apparatus is only to be used after all acute inflammatory action has been subdued by fomentations or the use of discutients.

A DOUBLE SLIDING HEEL-REST SHOE for Horses in whom a Rupture of the Flexor Tendons or Suspensory Ligament has taken place, invented by Mr. T. Rogerson, V.S., Bedford.—*(See woodcut.)*

Bedford, 20th Oct. 1845.

Dear Sir,—Accompanying this you will receive a model shoe, designated by me a "*double sliding heel rest shoe,*" which, in the subjoined case, was found of great service. I have thought the best passport I could give the invention to the profession would be through the Journal of the Veterinary Medical Association, and have therefore much pleasure in forwarding it to you.

I am,

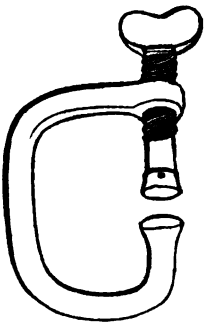
To Mr. Morton. Your's respectfully.

On September 26th I was requested to attend a thoroughbred horse, which broke down at Bedford Races the day before in the off hind leg, and was with great difficulty removed to Bedford, a distance of two miles from the course. I immediately put on the old patten shoe, and bandaged the leg in the ordinary way. I likewise adopted all the usual treatment had recourse to in such cases; but I found on the 27th that the heel, although raised, had no action upon the posterior part of the pastern, which descended as low as the foot, producing much constitutional irritation; I, therefore, thought that a shoe might be invented so as to raise the pastern joint, and thus by keeping the lacerated parts as near as possible in their former state, to effect something like a union. I consequently set to work, and measured the length the pastern protruded backwards, and had the shoe made of an equal length, namely, four inches longer than that he usually wore. A patten of four inches in height was placed under it for the foot to rest upon, and another on the top of two inches in height, for the posterior part of the pastern to rest upon, which was the extent required to place the tendons in their natural position. The effect was the most surprising I ever witnessed; the broken-down horse was at once in a state of comparative soundness, as far as his action was concerned, for he could walk free from lameness and pain; I therefore could not resist the gratification of sending you a pattern of the shoe, which I hope will be of use to the profession. You will find, by using the sliding rests, that as the patient recovers the foot may be let down by degrees, by merely unscrewing the thumb-screws; and by this means you will also avoid the frequent removal of the shoe by the smith, and the risk of a re-rupture of the tendons before

they are perfectly restored. I can with confidence speak to its usefulness, and I recommend it most strongly to all trainers to keep by them; for, it matters not how extensive the injury, I will venture to assert that a horse could walk any distance with one of these shoes on, first bandaging the leg with a flannel bandage from the foot to the hock or knee, as may be, and keeping it wet with cold water. I should have mentioned that the rest for the pastern must be wrapped round with list or wadding, and covered with wash-leather, to prevent excoriation of the heel.

A Bullock Holder.

By Mr. W. Cox, *V.S., Ashbourne.*



In the note which accompanied this instrument Mr. Cox says, "I think this holder is an improvement on the one in general use. I have found it most effectual, since it requires but little power to hold any beast on which it may be fixed. Although a mere trifle in the estimation of many, it may not be altogether undeserving of the notice of the junior members of "The Veterinary Medical Association."

Mr. Simonds remarked on the greater punishment this holder was capable of inflicting than the one he had been in the habit of recommending, the action of which depended on a spring rather than a screw, which was well known to be a great mechanical

power: still it became a question if it was desirable to give so much pressure to the septum nasi to effect the only object we have in view, namely, that of rendering the animal quiet for ordinary operations.

Mr. White observed that this holder was in common use throughout Staffordshire, and there was no doubt whatever of its efficiency.

The following communications were then read:—

1.—Case of Introsusception and Rupture of the Cœcum.

By Mr. W. C. Spooner, *M.R.C.V.S.*

My dear Sir, *Southampton, Aug.* 8, 1845.

I forward a morbid specimen, which, I think, may interest the members of the Association. It is one of introsusception of the cœcum of a horse which died yesterday afternoon, having endured great agony for about twenty-eight hours. The symptoms at first were those of colic. The animal was taken ill shortly after coming from a journey of twenty miles, performed without any apparent difficulty. The pain appeared to be relieved by the first antispasmodic draught given, but returned in the course of an hour, and then became nearly continuous. The treatment consisted of opiates, oleaginous purgatives, sedatives, enemas, with copious blood-lettings, &c. For the first six or eight hours the pulse, although full and distinct, was not increased more than 10 or 12 beats in a minute, thus giving hope that relief would be obtained. In about twelve or fourteen hours after the commencement there were two intervals of half an hour each of comparative ease. In the course of eighteen hours the pulse had risen to 80, and was feeble, and then, and not till then, I despaired of recovery. The horse voided no dung, and that which was returned with the enemas was hard and slimy; but about a quarter of an hour before death, after a sudden and somewhat violent effort, a quantity of soft fæces came away, and the horse sunk apparently from the effort, never getting up again.

On opening the abdomen, it was found that a large quantity of the liquid and a small portion of the solid contents of the cœcum

had escaped from two ruptures in it, near the strangulated portion. This was probably occasioned by the expiring effort before noticed. The animal was about seven years old, well bred, and apparently in perfect health, with the exception of occasional attacks of diarrhœa. The liver, as you will perceive from a small portion that is attached to the specimen, was of a clay colour, and its structure softened.

The specimen has been injured by the rough knife of the knacker. I would have prepared it better, but have really had no time to do so.

I am,

Your's, very truly.

To Professor Spooner.

Mr. Spooner.—The morbid parts, when received, presented an appearance similar to those of a case recorded in the Transactions of the Association for the past session, by Mr. W. Robinson; but the introsusception of the cœcum was not so perfect; its apex only was affected, being partially turned within itself. This inversion, however, had produced stricture, which was succeeded by inflammation, and in some parts of the gut gangrene had commenced.

From the indications which first shewed themselves, I should infer with Mr. Spooner, that the attack was primarily one of spasms, whence resulted violent peristaltic action of the bowels, leading to this inversion of the apex of the cœcum; and the displacement having taken place, strangulation followed with its train of formidable symptoms which quickly exhausted the vital powers. Indeed, in such cases as this all our efforts prove of no avail: it is only at the onset of the attack we can hope to be of any service, by administering active antispasmodics, and thus restoring the normal action of the intestines.

2.—Case of Hæmorrhagic Tumour within the single Colon.

By Mr. J. Woodger.

Market Street, Paddington, Oct. 24, 1845.

Dear Sir,—The subject from which the morbid specimen sent to you was taken was an aged bay cart-horse, the property of Messrs. Mowlem and Co., Paddington. My attention was directed

to him on the 7th of July last, when I found the symptoms to be those usually present in an ordinary case of gripes. I consequently administered our common antispasmodic draught, but, finding my patient not much relieved, I repeated the same in half an hour. This appeared to give relief for a few hours. I again visited him at about twelve o'clock in the day, when I found him very uneasy, exhibiting excessive abdominal pain, and the pulse quick and wiry. I bled him and adminstered tinct. opii ʒj, spt. æther nit. ʒij, sol. aloes ʒvi, and threw up enemas of warm water repeatedly.

8th.—Animal still in pain, shewn by his frequently sitting on his haunches, which I always consider a most unfavourable symptom, and I therefore apprised the owner of the probable result. The bowels not having responded, I gave ol. lini ʒx, et ol. croton. gt. xv, and threw up tobacco enemas; also applied mustard cataplasms to the abdomen. In the afternoon, as the symptoms remained nearly the same, I gave opii ʒij, rubbed down with warm water, and repeated the like dose in the evening.

9th.—The animal appears better. The bowels have responded moderately, but he still frequently sits upon his haunches. Gave no medicine.

10th.—Patient still improving, and feeds a little; the pulse, however, is very weak. From this to the 15th no material change took place, but he continued to sit on his haunches.

16th.—At five o'clock, A. M., when the horsekeeper went to the stable, the animal was feeding, and appeared nearly as he had been for some days previously; but in a few minutes after he suddenly broke loose, ran up into an empty stall, where he fell with his head under the manger, and instantly died with scarcely a struggle.

Post-mortem appearances.—On opening the abdomen and removing the intestines, nothing unnatural at first presented itself; but on laying open the colon I found attached to the inner coat of it a large tumour, which emitted a highly fœtid odour, and weighed upwards of 10 lbs. There was also effused into the abdominal cavity about two gallons of coagulated blood, some of which appeared to have gone on to a state of decomposition, while other portions seemed as if it had not long escaped from the vessels. Masses of coagulated blood were also found in different parts of the intestines,

from the colon to the rectum. On inquiry the horsekeeper said that he had observed something resembling coagulated blood voided with the faeces on the day previous, but my attention was not directed to it.

There can be but little doubt that the tumour, from its immense magnitude, had caused the colicky pains, and during the struggles of the animal it became ruptured, and, being very vascular, the animal consequently died from internal hæmorrhage. I had known the horse for more than two years, but he had never been the subject of an attack of gripes before.

I remain,

Your humble and obliged servant.

To Mr. Morton.

Mr. Spooner.—It is by no means common to find the symptom noticed by Mr. Woodger in this case, of an animal sitting on his haunches, to exist in affections of the larger intestines. At one time it was considered pathognomonic of rupture of the diaphragm. Experience, however, has shewn, that it is not a sign on which a practitioner is warranted in resting his diagnosis; for, although generally present in this lesion, yet there are also others in which it has been met with. I have most commonly found it in affections of the anterior portion of the alimentary canal, as the stomach and small intestines. I well remember a case in the Infirmary of this Institution, in which, for many days, the animal shewed this symptom, and he at length died of sphacelus of the small intestines, succeeding a stricture arising from chronic thickening and ulceration of the mucous coat.

The formation of a vascular tumour of this character within the large intestines is also not common. The present condition of the morbid specimen evidently shews it to have been of some size, and malignant in its nature. He was inclined to think that the ulcerative process had been set up in it, which had destroyed the integrity of the vessels; and hence the hæmorrhage which had led to the death of the animal, although the premonitory symptoms had been those of colic, induced by the presence of this tumour, which might well be considered a foreign body.

3.—Case of Abscess on the Brain.

By Mr. J. Dunsford.

June 1st.—A grey gelding was purchased by one dealer from another, and sold by the latter to a gentleman on the 2d. He was ridden on the 3d and 4th, and on the 5th he was returned, being ill with, as was stated, a cold and cough, or influenza. The horse was observed to be a little amiss at the time of sale. My attention was now directed to him, when I found the following symptoms to be present:—Pulse 48, and weak; breathing but little disturbed, if at all; mucous membranes of a brownish yellow colour; the mouth fœtid; the bowels constipated; the countenance dull, dejected, or heavy; the head drooping; and a rolling action in progression, the hind legs nearly crossing each other. A dose of laxative medicine was administered, and clysters thrown up.

On the 6th the pulse was 44, and still feeble. The horse shewed a disinclination to move; the bowels were less constipated, but, not being sufficiently acted upon, the laxative was repeated. In the afternoon there was more debility evinced, and, the bowels being now gently excited, a febrifuge draught was ordered, combined with a diffusible stimulant. It is necessary to state, that before this was given the horse was observed to be not quite so well, the breathing being disturbed. My attention was not, as it ought to have been, called to this change, and the draught was consequently given. The elevation of the head, for its administration, preventing a proper supply of blood to the brain, the animal became exceedingly distressed. I was soon called for, when, from appearances evinced, I feared that the existence of my patient would soon terminate. A small quantity of the draught was observed by me on the margin of the nostril, I therefore concluded that a portion of it had passed down the trachea; but it was stated that the animal took it well, and did not cough afterwards. The breathing continuing laboured, he was bled, when about six quarts of dark thick blood were with difficulty abstracted. The chest and sides were stimulated; but this not giving relief, after a few hours the sides were alternately cupped, and a seton inserted in the front of the chest. A few days passed over, and my patient

appeared to be convalescent. He laid down for some considerable time during the day, and fed sufficiently well.

On the 14th, however, he was observed to be running round his box two or three times, with his head elevated, and close to the sides of the box; the eyes were wild and staring: he then thrust his head into one corner of the box, poising his body by the head. This paroxysm produced, as might be expected, an increase of the circulation and respiration, which, however, passed off in a few hours, and the only apparent consequence resulting from this attack was a greater degree of debility: the pulse became weaker, the appetite not so good, and the countenance more dejected. It may be worthy of notice, that the wound made in the skin for bleeding did not heal by the first intention, but by new granulations. The off hind leg now became swollen, and an extensive sloughing took place between the hock and fetlock, leaving the flexor tendons bare. The wound, however, quickly took on a healthy action on proper applications being resorted to. The pulse continuing feeble, and the appetite indifferent, both mineral and vegetable tonics were given. These appeared to have a beneficial effect, as the appetite again returned. In this state the animal continued until the morning of the 22d, when he was found with his head elevated, the eyes looking wild, the vision imperfect, and considerable nervous irritation was evinced on any attempt being made to approach him, very similar to what takes place when a horse is affected with tetanus. On any one going near his head, he would run back close to the sides of the box, which at first he did so suddenly, that he fell backwards, broke open his box door, and lay for a time unable to rise. While down, setons were passed over the back of the neck, and the animal got up and returned to his box, and was ordered to be kept quiet. The bowels acting naturally, no attempt was made to give medicines of any kind; yet he kept struggling all the night, and on the next morning he was turned over. He shortly after got on his legs, but the symptoms were now highly unfavourable. The same agitated countenance was observed; a quick respiration, with a deep, low, hollow cough, which gave evidence that the lungs were seriously involved, and the nervous irritation was increased on the least attempt being made to approach him; indeed, every object was morbidly represented on the visual organs: he refused

all food, and drank only a small quantity of water. On the 26th I was requested to destroy him.

Post-mortem appearances.—The viscera of the abdomen were healthy, except the liver, which was a little softened. The heart was soft and flabby, the lungs tuberculated, the near lung having tubercles in a state of suppuration. The symptoms all throughout giving strong indication of some cerebral disease existing, the head was carefully examined by me. The dura mater being in parts removed with the bones of the cranium, gave exit to a small portion of pus, of a good colour, which was deposited on the posterior portion of the right lobe of the cerebrum: and the surrounding parts, even to the medullary portion of the cerebrum, defined, by their colour, the extent to which this alteration of structure had proceeded. The membranes covering this portion of the brain were only slightly congested. On removing the bones covering the cerebellum, a still greater amount of disease was observable than that which existed in the cerebrum. The whole of the superior superficial surface was softened, and covered with pus of a semi-sanguineous nature. I should also observe, that, when dividing the head from the trunk, a larger quantity of fluid escaped from the spinal canal than is usually found in a healthy subject.

4.—Case of Softening of the Brain.

By Mr. J. Mannington.

A six-year-old posting mare had nearly performed a journey of upwards of twenty miles, the day being excessively hot, when she suddenly fell, and was with difficulty got into a farmer's stable situated close by. I saw her within about two hours afterwards; she was then cool; the pulse 70, and soft; countenance dull and dejected, respiration stertorous, legs and ears of natural warmth, visible membranes slightly injected. She rested her head on the manger, as if for support, and when moved reeled about, nearly falling several times.

I had her body clothed and the legs bandaged, and then administered a diffusible stimulant, consisting of the spirit of nitric

æther. In about half an hour, the pulse became a little stronger, when I opened her jugular vein, but, the abstraction of half a pint of blood producing symptoms of syncope, I was obliged to close the orifice, and give another dose of nitric æther to rouse the vital powers. The pulse becoming again accelerated, I once more tried to bleed, but with the same results, namely, approaching syncope taking place on the abstraction of only a few ounces of blood. She now backed herself into a corner, where she remained sitting on her haunches for above an hour; during which time I repeated the diffusible stimulant, combining the sesqui-carbonate of ammonia, and applied cold lotions to the head almost incessantly.

At the expiration of an hour the animal fell. I continued the administration of stimulants, and, having removed the hair from over the parietal and frontal bones, applied an active blister, consisting of oleum cantharidis cum liq. ammon. fort. A degree of congestion existing about the vessels of the head, I opened both angular veins, from which the blood flowed freely. This depletion relieved the animal a little, and she seemed more conscious, raising herself on her sternum at times. The stimulants were still occasionally given, and after she had remained down about two hours her pulse rose to 80, became fuller and stronger, and convulsive twitchings were observed of the muscles of the left side of the face. I now bled her from the temporal artery to some extent, which lessened the urgency of the symptoms, for she attempted to rise, and which, with assistance, she at length accomplished, and remained standing leaning against the wall for half an hour, when she again fell. From this time she gradually became weaker, and died in about an hour and a half afterwards.

Post-mortem appearances.—The membranes of the brain presented a blanched appearance, as did the cerebrum itself on its superior surface; but its anterior half was in a semifluid state, being about the consistence of thick pus. The thalami and corpora quadrigemini were healthy; but all the commissures, excepting the pons varolii, were in this softened state. The pons varolii, the cerebellum, and medulla oblongata, were perfectly healthy, as were all the abdominal and thoracic viscera.

5.—Case of Diseased Kidney in a Horse, and Removal of a large Mammary Tumour from a Bitch.

By Mr. T. W. Nobbs, *M.R.C.V.S.*

My dear Sir, *Cerne, Nov.* 19, 1845.

The history of the case from which the accompanying kidney was taken is very meagre, and I regret it; but such as it is I send it you, hoping it may not prove uninteresting to the members of the Veterinary Medical Association. The mare was purchased seven years since, being at that time nearly eight years old. She had not lost scarcely a day's work up to the time of her death, and was very free in draught. For about twelve days previous to her death, however, she was observed to lose flesh very fast; but on the owner appealing to the carter, he was told that he (the carter) did not see any thing the matter with the animal, as she ate as well as the rest of the horses. On the 13th instant it was perceived that she became tired in her work, and voided her urine more frequently than natural, and in increased quantities. After this the symptoms became more urgent, yet nothing was done, and the animal was bedded up for the night. In the morning she was found down: they lifted her up, and as she ate pretty well they still thought little of it. After breakfast, however, I was sent for. I found her again down, and altogether unable to rise, and, after hearing the history of the case, and seeing her emaciated condition, coupled with her old age, I advised her being immediately shot, which was done. On opening her, the only particularly morbid parts I found were those I have sent you. The ureter, you will see, is very much enlarged, having more the appearance of one of the small intestines passing into the kidney. You will also observe a small opening between the ligature I have placed on the ureter and its end; this was made by the man who skinned the animal, he wanting to see what the kidney contained. There was, he says, about a pint of dark-coloured fluid within it, very thick. He had also cut into the bladder, or I should have sent it.

The tumour I have sent you is of very common occurrence with

us in old bitches, after breeding. This was removed by me in consequence of its dragging on the ground. I have only to add that the patient is doing well, and I have no doubt of her ultimate recovery.

I am, dear Sir,

Your's respectfully.

To Mr. Morton.

Mr. Spooner.—On laying open this diseased kidney, you perceive its pelvic portion is much enlarged, and the lining membrane thickened and inflamed throughout, extending to this highly distended ureter, the external conformation of which, at first sight, induced me to suppose the existence of a calculus; and even now I am inclined to suspect that a lodgment of a concretion of this kind, or of sabulous matter, has at some time taken place; but it has passed down into the bladder, which, unfortunately, has not been sent to us, or we could have spoken somewhat more positively. It is no uncommon thing for large quantities of sabulous matter to be voided by mares, without any inconvenience. It is evident, however, in this case, that some impediment to the free passage of the urine into the bladder has been present, by which this peculiar distended state of the ureter has been brought about. There is a preparation in the museum of the College of a bladder filled almost to repletion with carbonate of lime, and the ureters of it are enormously distended; the urine, having no space for retention, was passed onwards to the urethra, or became dammed up within these tubes when not voided.

Mr. Simonds.—In no class of animals that comes under the care of the veterinary surgeon do we meet with mammary tumours so frequently as in the canine species, and amongst the varieties of British dogs spaniels are most disposed to these formations. The tumour before me is certainly of a very large size, and on laying it open, its structure differs somewhat from that usually met with, it being encysted, and its walls cartilaginous. When the lactiferous gland is suddenly enlarged from active inflammation being set up in it, the result of a blow, or similar cause, lymph will occasionally be effused into its cellular texture, and this becoming organized, often gives rise to these formations; but

generally, the suppurative action is excited, and an abscess forms in the gland from these accidents. Scirrhus of the mammæ more frequently results, from the lactiferous ducts not being thoroughly emptied of their contents. The milk retained undergoes a change, and the lactic acid set free operates as an irritant, which is followed by morbid inflammatory action, ending in change of structure. But whatever may be the cause, these tumours frequently prove extremely annoying to the patient, and often unsightly, as was the case in the present instance; but rarely is it the case that they are met with of a malignant nature, or cancerous, as in the human subject, although now and then instances do occur. The reason of this, perhaps, is, that their removal is seldom attended with any very serious consequences to the dog, and an operation is therefore had recourse to before they proceed to ulceration. In performing the operation for their extirpation—and it is the only certain mode of cure—you should make a crescent-shaped incision through the integument on each side the teat, as near the apex of the tumour as the healthy skin will admit, and then unite these before and behind the enlargement; next dissect off the skin of the gland down to the base of the tumour, and detach it; by so doing you lose but little of the common integument, and this is important, for nature is very tardy in restoring lost skin. It is possible that two or three bloodvessels may require securing, and then a few twists with the torsion forceps will be effectual in preventing any hæmorrhage. The tumour being removed, sutures are to be introduced, so as to bring the edges of the divided skin in apposition, and the part subsequently dressed as a common wound.

There is a singular fact connected with the state of the mammary glands in high bred spaniels, which often lays the foundation of this disease, and that is, the appearance of milk in them at the expiration of sixty-three days after œstrum—in what would have been the time of parturition, supposing the bitch to have been impregnated. This lactation is a very troublesome affair, since, if there were puppies, the teats being drawn by them, no damming up of the milk would take place, and the animal would be spared much inconvenience, and frequent attacks of disease.

6.—A Case of Diseased Tongue in a Bullock.

By Mr. J. Bainbridge, *M.R.C.V.S.*

Saffron Walden, Nov. 5, 1845.

Dear Sir,—I have forwarded by rail the head of a bullock, thinking you would like to examine it. I have seen a great number of cattle having sore mouths, and attacked as this appeared to have been, but I never saw one terminate as this has. I first saw it on the 22d of September. The owner informed me that about a month before, this, with several others, was attacked with sore mouths. He gave to each a pound of salts, and washed their mouths with salt and water. All, except this, quickly recovered; but this became worse. I found the tongue much inflamed and thickened, more particularly at the back part and under surface, the tip not being so much affected. I gave a dose of physic, and ordered the mouth to be washed several times a day with a mild astringent lotion. I saw it again in a few days, but no improvement had taken place; I therefore freely lanced both sides of the tongue: from one side a quantity of glairy fluid escaped, nearly of the consistence of the white of an egg. The animal's general health continued good; but not being able to eat his food, and not the slightest improvement taking place, we had him killed yesterday.

Your's most respectfully.

To Mr. Simonds.

Mr. Simonds.—When I received the announcement of this diseased tongue being forwarded to the Association, I felt most anxious to possess it, for I anticipated it was a case of scirrhus or cancer of that organ. Such, however, is not the case; nevertheless, it is no ordinary specimen, although the morbid changes that have taken place are merely the result of acute inflammation, which has extended to the very substance of the tongue. The vesicular disease has evidently been the cause of this deep-seated inflammatory action, but its termination in this form is by no means a common one.

7.—Case of Hydatids in the Liver of a Sow.

By Mr. A. Walker, *M.R.C.V.S.*

Rugby, Oct. 10th, 1845.

Dear Sir,—Ere this I expect you have received by train a diseased liver taken from a sow, aged eighteen months old. Viewing it as one of an immense size considering the animal it was taken from, I have forwarded it for the inspection of the members of the Association. It weighed, when first removed, 49 lbs. About six months ago the animal was driven a distance of two miles to the boar, when she ran about a good deal, and became excessively hot. She remained with the boar a week. From that time her abdomen gradually enlarged, and the owner thought all was right, as she ate and drank as usual, and likewise kept up her flesh. Sixteen weeks having elapsed (the usual time these animals go with young), and no signs of parturition shewing themselves, further than her immense size, the owner began to think all was not as he at first expected. The sow continued to increase in size until the time of her death, and her appetite remained unimpaired to the last, neither did she lose flesh. In addition to the enormous diseased organ forwarded to you, her abdomen contained four or five quarts of straw-coloured fluid, and the peritoneum was extensively affected.

I am truly your's.

Mr. J. B. Simonds.

Mr. Simonds.—A case somewhat analogous to the one just read is recorded in the "Transactions of the Association" for 1842-3, p. 330. The size of the liver, however, in this instance, is greater, but the parasite so abundant in the organ is the same, namely, the acepholocyst. Respecting the generation of these hydatids but little appears to be really known. In the present day it would seem that, from an inability to trace their origin, we are reverting to the long-considered obsolete doctrine of fortuitous development; in other words, that vitality is the result of organic decomposition. Probably the enlargement of the liver itself was the sequela of

inflammatory action, and that of a subacute kind; or it may have arisen from increased action giving rise to functional derangement in the organ, and thus a mal-appropriation of the nutritive fluids took place.

8.—Case of Encysted and Osseous Tumour on the Fore Leg of a Horse.

By Mr. S. G. Holmans, *M.R.C.V.S.*

Mr. Mayhew.—When the specimen on the table reached the College, the tumour was about the size of a full-grown man's head, and situated at the posterior part of the cannon, extending from below the knee to the pastern joint. It was, as you may suppose, a most unsightly deformity. Before making any incision into its substance, I perceived, from the resistance it offered to pressure, and the sound it emitted on being struck, that it was in part osseous, though at other places, particularly in its central or most posterior part, it yielded and fluctuated beneath the fingers. Into this central part I thrust a knife, and about a gallon of sero-sanguineous fluid escaped through the orifice I had made. I then enlarged the opening, and found the growth was of a sacculated nature. The interior presented a large cavity, which, by intersecting membranes, was divided into several imperfect cells, all of which freely communicated with the central space. The lining membrane of the cells and cavity was smooth and glistening, and appeared to be of a serous character: it was transparent, and through it could be seen an immense number of vessels, some of considerable size, and all apparently congested. The removal of the vessels and the cellular substance with which they were associated left the capsule of the tumour entire, and to the capsule the osseous matter was confined. As you perceive, there were several disconnected points of ossification. The outer half of the capsule presents one large bony plate, but on the inner side there exist several thin pieces of bone, distinct from each other. All these pieces of bone are of the same character, rough and spicated on their outer sur-

faces, and smooth on their interiors; and where the vascular internal substance was in contact with the bone, I found large sacs resembling bursæ interposed, from which circumstance we may imagine the internal structure was subjected to motion, independent of its osseous covering. As the vascular structure was cellulated, so also were the interiors of the osseous plates, they being separated into compartments or strengthened by numerous strong bands. The various pieces of bone were outwardly enveloped in and connected by thick and dense white fibrous tissue. Some authors write as though they doubted if this structure were really ever produced, excepting as a natural growth; but in this instance the nature of tissue was too marked to admit of question: it was distinctly fibrous, glistening, and very resistant. Between the skin and the flexor tendons of the healthy leg is found only a very small quantity of extremely loose cellular tissue; and therefore no one, I imagine, can doubt that the large amount of ligamentous structure necessary to cover and complete the capsule was an abnormal product. I have, as you perceive, dissected away the greater portion of the fibrous covering; and I was led to do this from observing that the edges of the bony plates were sharp and perfectly defined, presenting no cartilaginous deposit beyond their margins. Many years ago Mr. Howship asserted that cartilage did not of necessity precede the formation of bone, but was to be regarded rather as a temporary substitute for bone than as an imperative antecedent to its formation. I cannot suppose that the growth of this tumour was perfected. Had the animal to which the leg belonged been allowed to live, I must conjecture the osseous capsule would have been completed, and that at the time of death the process of ossification was actively proceeding; yet, though carefully searching with that design, I was unable to detect any, even the slightest evidence of the existence of cartilage. I particularly mention this, because, as the value of the horse is so frequently deteriorated by abnormal osseous deposits, every circumstance connected with such formations is to us of interest; and though unwilling to speak positively—for subsequent investigations may change my opinion—I am inclined to think that, when bone is developed in connexion with ligamentous tissue, it is not preceded by temporary cartilage. The ossification of ligaments, especially those of the horse's knee, seems to me to proceed in a primary manner.

The larger osseous plate which formed a case for one side or half of the tumour takes its origin from a broad root near to the inferior extremity of the outer splint bone. Here the bony substance is thickish, and from this point the ossification seems to have commenced. We have no history as to the origin of the deformity, but it probably sprung from some neglected injury. Of its effect upon the action of the animal we have also no information, but, as the horse was destroyed, we may conjecture that it rendered him valueless in his owner's opinion, though even such a conjecture is far from satisfactory. Two circumstances only did the dissection of the part throw any light upon. First, that the gait must to a certain degree have been affected; and, secondly, that the growth was not, latterly at least, very sensitive. The flexor tendons were displaced—the perforatus laid upon the inner side of the perforans—and had evidently been forced to occupy that position, and retained there for a considerable period; as, when compelled to occupy its normal situation, it returned to the side of the perforans the moment the hand was removed. This displacement must have altered the action of the animal.

The pain could not have been very acute, for I found the metacarpal nerve on the outer side atrophied—so changed, that the nervous tissue would have been recognized only by one acquainted with the anatomy of the parts and specially looking for its presence. The plantar nerves on both sides were healthy, the external plantar being enabled to resist the influence of disease through the communicating branch which it receives from the inner metacarpal a little above the fetlock. The atrophy of the nerve most implicated is a proof that the greater part of the tumour was insensitive, though in the earlier stage it may have been acutely painful.

As to the treatment of a tumour of such dimensions, nothing can be said. To attempt its removal by operation would be madness. The vascularity of the interior must have necessitated the tying of the metacarpal artery close to the knee; and though both the plantar vessels had been taken up, and the animal recovered, there is no proof that the limb would have survived so large a portion of its substance being deprived of blood, especially after the violence which an operation of such a nature would have necessitated, and the part so affected by disease.

9.—Case of Ruptured Spleen in a Horse.

By Mr. W. Dyer, *M.R.C.V.S.*

Dear Sir, *Surrey-street, Croydon, Nov.* 24, 1845.

The morbid specimen which I have forwarded to the Association is an enlarged and ruptured spleen of a mare. It being a case of not very frequent occurrence, I have thought a brief history of it may not prove uninteresting to the members of the Association.

The owner of the mare, who has two farms, had occasion to remove her from one farm to the other on Monday the 3d instant. She was sent by a boy, who rode her, the distance being about five miles. Immediately on entering the farm-yard she was allowed to drink plentifully of cold pump water, having always been previously accustomed to pond water. As soon as she was taken into the stable she laid down and rolled for a few minutes, and then got up again, seemingly free from pain. The owner, of course, inferred that she had an attack of cholic from drinking cold water while she was hot. However, she continued off her feed, and did not lie down that night, and she remained in the same state during Tuesday. On Wednesday afternoon the owner sent for me, when the following symptoms were present:—A runing-down pulse—extremely pallid membranes—accelerated respiration—cold extremities—head resting on the manger—animal occasionally pawing—tongue very white and much furred—mouth hot and dry—rolling about of the eyes, and approaching syncope whenever the head was raised.

On elevating the head a second or a third time, she staggered and fell, and died soon after. On opening the abdominal cavity the blood rushed out in considerable quantities; and on removing the intestines I was surprised to find the enormous spleen now sent to you. You will perceive it is ruptured in three places at its border, and weighs about 14 lbs. It has been kept for some time in Goadby's Preserving Fluid, which has altered its colour, and also hardened it.

I remain,

Your's respectfully.

To Mr. Morton.

10.—Case of Ruptured Spleen.

By Mr. J. Mannington.

An aged bay horse, at the time my attention was directed to him, presented the following symptoms:—Slight indications of abdominal pain, such as pawing, lying down and rising again immediately. Pulse hard and full, about 55 in the minute—respiration a little increased—visible membranes somewhat injected. The horse had had a severe run with the hounds two days previously, since which he had been rather off his feed. The night before I saw him he had not eaten any thing, his corn and hay remaining as they were given to him. The state of the pulse was considered to indicate the necessity of blood-letting, and he bore the abstraction of two quarts, when his pulse suddenly sank, consequently no more was taken away. A dose of aloes and opium was administered, and he was ordered to be repeatedly clystered.

In about three hours an evident change for the worse had taken place: his pulse was imperceptible at the jaw, the mucous membranes were blanched, the respiration quickened, the legs and ears cold; he frequently sighed, and trembled all over; laid down, and was almost continually looking at his left side, the expression of his countenance being extremely anxious. It was evident from these symptoms that internal hæmorrhage was going on, and from his age this was suspected to be from the liver, although no yellowness of the membranes was seen. Styptic-astringents were immediately given, but the animal died within about six hours from the time I first saw him.

On opening the abdominal cavity, three or four pailsful of blood rushed out. The spleen was about as large again as natural, and on its concave surface a rupture of a semilunar shape, and about four inches in extent, existed: much coagulated blood was adherent to this part of the viscus. One end of the rupture was apparently closed by adhesion; indeed, it presented the appearance of having been ruptured for several days, the edges being partially united. These appearances, coupled with the animal's refusal of food, led us to suppose that the rupture had existed ever since his run with the hounds. All the other viscera, both of the chest and abdomen, were healthy.

TUESDAY, DECEMBER 2, 1845.

The PRESIDENT in the Chair.

The earlier part of the evening was occupied by the reading of Mr. Silvester's cases of the death of several lambs affected with parasites; also a paper on the anatomy of the tricocephalus affinis, by Mr. Erasmus Wilson, recorded in the last number of THE RECORD. To these succeeded the following Essay:—

ON THE DISTRIBUTION AND USE OF TENDINOUS STRUCTURE AS CONNECTED WITH MUSCULAR FIBRE.

By Mr. EDWARD MAYHEW, *M.R.C.V.S.*

I WISH to direct your attention to this subject, and to point out some circumstances connected with it which appear hitherto to have escaped observation. The structure of tendon, ligament, fascia, &c. is characterised by its slight elasticity and by its great power of resistance or its strength. The vitality with which it is endowed is so low, that, while it retains its moisture, death seems not to impair its properties, and it is primarily subjected to few diseases. Undue tension, however, excites in it extreme sensibility, and gives rise to sprain. Sprain is an affection which has too generally been applied to the ligaments only; but I hope to shew to your satisfaction that the tendinous structure connected with muscular fibre is exposed to this injury, and that the distinction drawn between a tendon as connecting *muscle* to bone, and a ligament as joining *bone* to bone, is one which cannot be absolutely maintained. Muscle is said in some joints to play the part of ligament, and this assertion is generally made when demonstrating the scapulo-humeral articulation. The smallest amount of physiological knowledge will prove such an opinion to be incorrect. Muscular fibre cannot endure the constant traction which tendinous structure is formed to sustain. Traction upon a muscle calls forth its contractility; and, if this contractility be long excited, exhaustion ensues. Did the shoulder-joint depend upon the muscular fibre for its integrity, the humerus and scapula would first be

firmly locked together, so as to prohibit motion, and then relaxed, so as to be incapable of resisting luxation. Muscular fibre has an active office, and other structures have been created for passive endurance.

Passing from the shoulder-joint, and proceeding to investigate the subject in its application to other parts, we find much stress laid upon the weight which the flexor pedis perforans and perforatus have to sustain. The horse, it is known, may exist for years, and yet during its existence never lie down. The animal can rest and sleep without of necessity assuming the recumbent posture. Did the flexor muscles during so lengthened a period endure continued strain, were they never to be rested while the animal was in a quiescent state, the whole frame would, from the continuous irritation, speedily become disorganised. There is, as the intelligence of my hearers must anticipate, a provision made to prevent the injurious effect, and to this provision I will shortly allude: but, before I do so, let me first direct your attention to another circumstance connected with the extensor muscles, confining my remarks, for the sake of brevity, to the fore leg.

During the recumbent posture, the leg being flexed, it at first sight seems imperative that the extensor muscles should be subjected to traction; as, by the bending of the metacarpal bone, the space measured from the head of the radius to the coronary process of the os pedis is considerably elongated. The limb, however, would not be rested did such traction exist; and I undertake to prove that nature has provided against its possibility; or, in other words, that, when the limb is passive, muscular force is not in action, or subjected to any stimulus calculated to excite its action.

Were no such provision made, the flexor muscles would be exhausted when the horse stood still; and the extensors would be enervated when the animal laid down: thus, renovation of the muscular energy of the limb would be a demonstrative impossibility.

Having briefly stated these facts or opinions of mine, let me now proceed to illustrate them by the result obtained from experiment. There is a foolish notion, too general among those who wish to be esteemed physiologists, that experiments should be performed upon the living body, in order to render them of value. Such a notion is ridiculous. The day of divination has gone by,

and it is sad to see misguided men attempting to force the secrets of nature from the agonies of her creatures, or endeavouring to read the mysteries of the Creator in the reeking entrails of the created. Medicine claims respect only as it alleviates suffering, and that any department of the science is unfortunately associated with cruelty, is a proof only of degradation. To the rightly constituted mind every pathological case is a physiological experiment; and conclusions drawn from the employment of force only shew the absence of a capability to observe, and are of no benefit to science, while they injure and disgrace the individual.

The experiments I shall adduce have all been performed upon the dead body, and, if any would therefore impugn their worth, let such remember that tendinous tissue is little affected by the absence of life.

If the fore extremity be allowed to undergo decomposition up to that stage when the muscular fibre easily ruptures, it will, nevertheless, be found that the intergrity of the shoulder-joint is but slightly injured. It will be found easier to break the bones in the attempt, than to tear the scapula from the humerus. Why is this? The capsular ligament is not so tense as to hold the bones closely together, nor so constructed as to offer very considerable resistance, while the muscular fibre gives way beneath the fingers. The scalpel will solve the mystery. The muscles of the shoulder are intersected by tendons, which, though expanded within the fleshy substance, can be distinctly traced from the scapula to the humerus in a direct and unbroken line. These tendons passing from bone to bone are the ligaments of the shoulder-joint. They bind the scapula and humerus together; they give security to the articulation; they admit of motion, and they limit it. While distributed as intersecting membranes through the bodies of the muscles, they render traction upon the fleshy fibre impossible, yet by their pliability are capable of being acted upon when the inherent contractility is excited.

Wherever muscles appear exposed to tension, there are they found intersected by membranous layers of white fibrous tissue; and the reason is obvious. Where the chance of tension is slight, the fleshy fibre is sufficiently protected by its sarcolemma or myolemma, and by its vaginal investment or fascia, both of which I am inclined to regard as not only bracing the contractile fibre,

and preventing its displacement, but as also resisting any force calculated to excite its vital reaction.

Applying these opinions pathologically, we come to the consideration of the much talked of "shoulder lameness;" and where this existed, I should be far more inclined to seek the cause in sprain of the parts, which are the ligaments of the joint, than expect to see the muscular substance deranged; for, if what I have asserted as to the use of the intersecting tendinous structure be established, then it is evident such structure must be injured before the muscular fibre could suffer lesion. My remark, however, should not be misunderstood. "Shoulder lameness" is generally a chronic affection, and, in the slowness with which it reaches a termination, indicates that some structure of low vitality, such as the white fibrous tissue, is the seat of disease. The pain, nevertheless, would throw the muscle out of use: thus the more vital tissue would be involved, which, from its tendency to undergo speedy change, might be so altered, that though only secondarily affected, it would, if the case had existed for any time, when examined after death, present the more marked signs of disease, and thus mislead the investigator. This matter, however, requires observation, and I here allude to it only to direct attention to the subject. I have nothing positive to advance.

Concerning the flexor tendons I shall be enabled to speak with more certainty. "Sprung tendon" is commonly said to be a sprain of those parts, or a sprain of the suspensory ligament, which last conjecture, I think, is the more generally received. It is, however, neither one nor the other, in any absolute sense. But, as I am anticipating my subject, permit me, first, to notice other matters connected with the flexor muscles. When the horse is standing, a very great portion of the weight of the body is through the navicular and sessamoid bones transferred to the flexor tendons: indeed, these tendons, or even one of them, the perforans, seems capable of preserving the natural obliquity of the pastern, which in the dead limb will be maintained, although the suspensory ligament and the perforatus tendon have been divided. The ligaments of the pastern joints offer considerable resistance, or co-operate in keeping the bones in their natural positions, as also do the suspensory and the sessamoideal ligaments; but, as I before said, a very considerable amount of that weight which the fore extremities sup-

port is imposed upon the flexor tendons. It is important to know whether the strain upon the tendon is communicated to the muscular substance; for, if such can be demonstrated to be the case, all my previous assertions fall to the ground.

To ascertain this fact, let the muscular belly proper to the flexor tendon be dissected off. I have done this frequently, and find the removal in no way affects the obliquity of the pastern; but when the foot is afterwards pressed upon the ground, the pastern remains in its normal position, and the back sinews become as firm and tense as in the living animal. If the dissection be now proceeded with, there will be discovered, intimately connected with the synovial membrane, two ligamentous bands, the *superior* of which arises from the inferior and posterior of the radius, and the *inferior* of which takes its origin from the lower row of the carpal bones and from the posterior surface of the superior extremity of the cannon. These two ligamentous bands proceed downwards, and are about six inches in length. Their structure more nearly resembles ligament than tendon: their fibres are less compact, and are mingled with a much larger amount of cellular tissue than can be discerned in tendon: they both blend with the flexor tendons, the superior behind the knee and the inferior at a point answering to the centre of the large metacarpal bone; but the superior is more obviously connected to the perforatus, to which the inferior sends but few fibres.

When the foot is pressed upon the ground, these ligamentous bands are rendered tense, while that portion of the flexor tendon located above the os trapezium is no way affected, however great the force employed. The use of these bands, then, is obvious; they are interposing agents, to prevent any strain being communicated to the flexor muscle when the limb is quiescent; and as ligamentous structure can endure—nay, for its health, requires continued tension—they explain the means which enable the horse to rest and sleep without seeking the recumbent posture.

When I first saw the use of these bands, it struck me that in strain of the tendons these must be the parts primarily involved; and though I had no actual experience to back my assertion, I declared the suspensory bands to be the seat of that injury denominated "sprung tendon." My opinion was by some, no doubt, thought unworthy of attention, for it was opposed to that

of various authors deservedly regarded as authorities. But shortly after I had hazarded the assertion, an animal which had the flexor tendons of both fore-legs affected was destroyed, and on investigating the parts my conviction was in the fullest manner confirmed. The ligamentous bands were found enlarged, much thickened, and intermixed with and surrounded by a dark-coloured highly organized substance. The inferior was found to enclose the perforans and perforatus, which were concealed within it as in a sheath. On opening one of these sheaths I found the enclosed perforans tendon softened to a great degree, and the texture so loose that with the fingers the fibres could be separated—a proof that it had sympathised in the inflammation by which the ligamentous band had been primarily and acutely attacked. Below the seat of disease the tendon was firm and healthy.

These ligamentous bands, by their position, admit of the upward motion of the tendons when the muscles contract, but they endure the entire strain when the foot is placed upon the ground. To them the shock sustained in leaping and during violent exertion is communicated; and though frequently injured, yet they aptly illustrate the power of resistance inherent in the fibre of which they are composed, when their comparative small size is contemplated in conjunction with the enormous bulk of the horse's body, increased by the weight of his rider, and the force they are capable of resisting when this mass is subjected to the impetus of motion. They are, I have said, frequently injured; and, regarding the uses they are ordained to fulfil, I cannot forbear asserting, more frequently injured than is generally imagined. In rupture of the tendons they must be involved; they cannot escape, for the strength of any part is the force which the weakest point of such a part is capable of resisting. The structure of the ligamentous bands does not allow us to conjecture that they are more coherent than tendon, but being less in bulk than the back sinews with which they unite, and subjected to injury when the tendon is strained, we must view them as the weakest point of that part of the organism with which they are connected. In all cases, therefore, where rupture of the tendon is caused by the weight of the body, these bands must suffer lesion, and only when the tendon is lacerated by the contraction of the muscle could they possibly escape. That they are principally concerned in that deformity known as "contraction of the tendons,"

I feel little hesitation in affirming. A colt suffering in this respect was slaughtered, and I inspected the member which had not been subjected to operation. The heel was greatly elevated, but I found the suspensory bands of the flexor tendons as tense as in a limb of healthy conformation; and because during such a state of parts the muscle does not lose its activity, I must regard contraction of the flexor tendons as resulting from chronic inflammation of the suspensory bands causing their fibrous structure to shorten or contract, and view the elevation of the heel as induced by this cause, and not as consequent upon the contractile energy of the muscular substance.

As the suspensory bands exercise so great and evident an influence on the obliquity of the fetlock, it is but fair to conclude the uprightness of the pasterns depends upon a shortening of these ligamentous supports, though, from the manner in which the animal thus afflicted performs its work, such diminution of length is unattended with pain.

To the same cause, namely, shortening of the ligamentous bands connected with the flexor tendons, but attended, in this instance, with sensation, I would likewise attribute the "knuckling" of old and hardly-worked horses; nor can I otherwise than imagine these parts are frequently the seat of lameness. When we have viewed their structures—fully comprehended their uses—and been made conscious of their importance, it will be felt that they are greatly exposed to injury—that no part of any organ in the body is more likely to suffer—and their position and their function enable us, through them, to explain many pathological and physiological facts which otherwise would want interpretation. Directing our attention to the extensor tendons, we shall find the provision made to render traction upon the muscular fibre impossible during the motion of the limb no less marked, and the various structures so distributed that both passive and active have their proper function.

The flexor brachii appears to be the muscle which most affects the obliquity of the shoulder, and the maintenance of the scapula in its proper position might be considered to be its constant office. This, however, is effected by tendinous tissue. The flexor brachii is commonly described as sending off a tendon to the extensor metacarpi magnus; but if that tendinous slip which connects the two muscles be traced in both directions, it will be found to be continuous from the coracoid process of the scapula to the head of the metacarpi magnus. It is a band proceeding from bone to

bone, though, in its course, it is connected with fleshy fibre and with the tendons of muscles. When the animal is erect it supports the scapula. When the horse lies down it, conjointly with the brachial fascia, prevents traction upon the contractile substance of the extensor magnus. To its use in associating the action of the two muscles I have no space to allude; but its importance in this respect is obvious and fully acknowledged.

I must be understood to assert, that there is a continuous band of ligamentous structure extending over the anterior of the limb from the point of the shoulder in a direct line to the inferior of the carpal joint. This substance, though destined for important service, is of comparative small size, and I cannot but think it is frequently subjected to injury. I have seen horses, said to be lame in the shoulder, drag the fore-leg upon the ground, refusing either to flex the radius upon the humerus or to advance the cannon. Such is exactly the action any one acquainted with the uses of the muscles I have referred to would anticipate, if the ligamentous band which connects them were sprained; and the seat of injury in these cases, I anticipate, will be found to exist not in the shoulder, but in the connecting tendon, or where the arm unites with the shoulder; for as, at other parts, the tendons blend with and strengthen the band, this becomes the weakest point.

The other extensors of the limb are similarly protected against the possibility of traction by the intervention of white fibrous tissue. The brachial fascia, of great density, takes its origin from the outer side of the humerus, below the external trochanter, and, passing over the superior part of the body of the extensor pedis, blends with the tendon of the muscle. Nor is this all: from the posterior of the trapezium a ligamentous slip of considerable size takes its origin, and, proceeding obliquely downwards and forwards to unite with the tendons of the pedis and suffraginis, resists any traction upon the muscles during the flexion of the pastern, while at the pastern itself further protection is afforded by union with the ligaments of the joints, and blending with the lateral continuations of the suspensory ligament.

The provisions to which I have alluded are designed to prevent the muscular contractility being excited by traction resulting from mechanical force, or from the flexion of the limb. When the knee is bent, the space measured from the head of the radius to the coronary process of the os pedis is increased about four inches. Were there no provision of a special kind made against such a possibility, the muscular substance would have been sub-

jected to a traction of this extent every time the limb was fully flexed. To prevent such an occurrence, the brachial fascia attached to the humerus and extensor pedis pulls down the bone, or causes the humerus to be flexed upon the radius whenever the knee is bent; and I have not been able to flex the metacarpal bone while another person held the humerus stationary. And by this arrangement, though the distance from the head of the radius to the foot is increased, yet, if the space be measured over the anterior of the muscles, there it will be found, in consequence of the compulsatory yielding of the humerus, to be the same during every position of the limb. The provisions made below the knee render traction on the contractile fibre impossible if the fetlock is flexed when the leg is extended—a circumstance of not unfrequent occurrence when a horse stumbles—all force being then resisted by the tendons and their accessory ligaments alone.

Nature has, however, provided similar means to protect the delicate serous membranes associated with tendon from being injured by the spasmodic energy of the muscles. The different uses of the bands found united to the tendons of the horse's leg are easily ascertained by the direction of the fibres, which, as in articular ligament, always run in the line of that force they are designed to restrain. From the posterior of the radius there will be found to arise tendinous cords, which are inserted into the flexor tendons. These, perfectly distinct from the bands to which I have before alluded, are obviously intended to limit and restrain the action of the muscles. Also, from the inner side of the head of the cannon bone a broad band takes its origin, which, passing obliquely upwards to the front of the knee, blends with the tendon of the extensor pedis, this likewise restraining or regulating the energy of the muscle.

Thus, gentlemen, I have endeavoured to point out to you structures which have, so far as I know, been hitherto unobserved, and I hope I have not overrated their importance. If I have done so, your experience will speedily correct my error; but, unfortunately, our anatomy needs practical application no less than assiduous investigation, for the field is as yet but rudely explored. I wished to prove that in the living body each structure has its use, and that the functions of white fibrous tissue and muscular fibre, though the two may be associated, yet in their offices remain distinct. Thus, while fibrous tissue is formed to resist and to sustain as a passive agent, muscular fibre, being active, is protected from all excitement, that it may obey the dictates of the will.

I may not conclude this Essay without making the most ample and grateful acknowledgment of the assistance I have received, while prosecuting my inquiries, from Messrs. Jeykell, Crowly, Jones, Crabbe, and especially from Mr. Varnell, to whose skill in dissection I am indebted for many of the facts which have enabled me to illustrate my opinions.

MISCELLANEOUS.

The Urine of the Cow advocated as a Solvent of Calculi.

In a paper of M. Bossingault is a fact which, he observes, will surprise chemists and physiologists. It is that "the urine of the herbivorous animals contains bi-carbonate of potass, and not, as generally believed, the sub-carbonate. With the urea and hippuric acid this urine curiously resembles an alkaline mineral water. It might, therefore, be employed to dissolve uric acid calculi. I speak more seriously than many will be disposed to believe, when I say that I should have more confidence in the urine of one of my cows than in an alkaline solution prepared by many celebrated chemists."—*Lancet*.

Microscopical Conversion of Vegetable Tissue into Starch.

The following microscopic experiment in the transformation of vegetable matter is pointed out by M. Payen. It is founded on the facts of iodine forming a deep blue compound with starch, and of sulphuric acid possessing the power of transforming vegetable cellular tissue into starch.

A portion of vegetable cellular tissue is placed beneath the microscope and moistened with an aqueous solution of iodine, a drop of concentrated sulphuric acid is then to be applied; the membranes of the cells expand, and assume a beautiful violet blue colour in passing to the condition of starch. This colour gradually disappears as the process of transformation progresses, and the vegetable substance is converted into dextrine, a step beyond starch towards the formation of sugar. This principle is not affected by iodine.

ERRATUM.

Page 78, *for* "are very creditable," *read* "is very creditable."

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LECTURE ON THE ORGANIZATION OF LIVING BEINGS.

By Mr. PEARSON B. FERGUSON, *Royal Veterinary College, London, (late of the Royal Veterinary College, Alfort, Paris.)*

To discover and comprehend the laws which control and regulate the universe is the aim of natural philosophy. But the vastness of the field of study, and the diversity of the phenomena in connection with it, are far above the capacity of a single human mind; a division of labour in their investigation has, therefore, been found not only convenient, but absolutely necessary. Thus, the various positions and movements of the planetary system have occupied astronomers; the surface of the earth, the composition and situation of its various strata, together with the treasures hidden within its womb, have employed geologists, chemists, and others interested in physical science; while the myriads of organized beings, whether animal or vegetable, that live in the air, dwell upon the land, or inhabit its rivers, lakes, seas, or vast oceans, are all so many objects for the investigation of the naturalist.

To the latter branch of science—namely, the organic—I now beg to solicit your attention, with the view of elucidating the phenomena of the development of living beings, their death, and procreation.

To every one, the general distribution of the objects presented by external nature into three kingdoms, namely, the animal, the vegetable, and the mineral, is familiar; and no less familiar is the general distinction between living organized bodies and dead inert matter. It is true, the line of demarcation which separates these distinct classes cannot always be easily assigned; and the naturalist

is frequently perplexed as to the exact boundary between the animal and vegetable kingdoms. Again, the distinction between organized structures and mineral masses, or aggregations of inert matter, is by no means so obvious in every instance as might be at first supposed. For example: a mass of coral, or a nullipore attached to a rock, if the growing portions be kept out of view, might be confounded, by the unscientific observer, with the mineral substances to which they bear so great a resemblance.

A well-marked distinction, however, does exist between the organized structures of plants and animals, and aggregations of mineral matters. Moreover, the *condition* of living beings, whether of the animal or vegetable kingdom, widely differs from that of dead inert bodies. Upon these distinguishing characters, which, in most cases, are sufficiently manifest, have been founded the sciences of anatomy and physiology, in the investigation of which we are more particularly interested. But even in those branches of science the objects of inquiry are distinct,—anatomy taking cognizance of structures which, owing to the combination of their component elements, are called *organized;* while physiology examines into the nature of the actions and phenomena appertaining to those structures, and which are distinguished by the term *vital.*

Having thus cursorily alluded to the nature and objects of the study of natural philosophy in its different branches, let us now turn our attention to the investigation of the phenomena of life, and the development of organized structures, as distinguished from inorganic matter.

In the first place, organized structures are distinguished and characterized by their form. Wherever mineral substances exhibit *definite figures,* they are bounded by straight lines and angles, owing to the arrangement of the ultimate particles of the mass, in obedience to the laws of a process called crystallization.

This phenomenon results from the tendency of the molecules to arrange themselves in a regular manner in respect to each other, and generally takes place with the utmost facility in most inorganic combinations, when placed in circumstances favourable to it. If, however, these circumstances are absent, another force, called simple adhesive attraction, comes into operation, and then the form of the mass is *indefinite* or shapeless.

In the organic kingdom, on the other hand, we find the condition totally opposite; for every living being, from the highest in the animal creation down to the lowest cryptogamic plant in the vegetable, presents a distinctive character for every species, with limited variations amongst individuals. Here the form, instead of being circumscribed within planes and angles, generally manifests rounded outlines and convex surfaces.

Moreover, we generally are able to conclude, from their form, that every living organized being is composed of a number of different parts, which, from having a special function to perform, are called organs; a number of these being combined together so as to give certain characteristics to the individuals of each race. Thus, in the higher classes of animals, the head is at once distinguished from the trunk, and the extremities, or active organs of locomotion or prehension, from both. But even in the lower grades—molusca, for example—the rounded character of the general form is sufficiently distinctive.

In the lowest tribes of the animal and vegetable world we do, however, find some departures from the general typical figure, and thus is manifested an approach, on the one hand, to the indefiniteness characteristic of uncrystallized mineral bodies, and, on the other, to that variety of crystalline forms, which the same minerals may exhibit, according to the circumstances influencing their crystallization.

Again, with respect to the size, it has been ascertained that the volume of inorganic masses entirely depends upon the number of particles constituting them. Not so with organized structures; their size, like their form, is limited within certain bounds; although here also, as in their figure, they manifest slight variations in individuals.

The limits, with respect to size or extent, are least obvious in the vegetable kingdom and the lowest animals. A tree may extend itself almost indefinitely; and some kinds of sea-weed attain the length of many hundred feet, and yet their growth receives no check. The same remarks have also been made of those immense masses of coral, of which are composed so many of the islands and reefs in the Polynesian Archipelago. The increase of volume in these cases, however, is produced, not so much by the development of the same individual as by that of continual gene-

rations of new individuals, which remain in connexion with the original. Thus, each bud of a tree might be looked upon as a distinct individual, because, if placed in circumstances suitable for its growth, it can maintain its own life and perform the actions proper to the species whence it sprung: therefore, the indefinite extension of trees, by the multiplication of their buds, is not the exception to the rule, relative to the extent of organized structures, that it at first appears to be. So, likewise, in the case of the coral; here the extension is accomplished by the multiplication of polypes by a kind of budding, these buds remaining adherent to the original.

The most remarkable differences, however, between organized structures and inorganic masses, are observed in their internal arrangement. Every particle (no matter how small) of a mineral body (in which there has been no mixture of constituents) exhibits the same properties as those manifested by the entire mass. The minutest particle of chalk, for example, possesses the same properties as a mass of this substance as large as a mountain; and it matters not, in experimenting upon it, or any other salt, except for the sake of convenience, whether the chemist operates upon a grain or a ton. Every atom, therefore, may be considered as possessing a distinct individuality, which is an epitome of the whole, and hence a mineral mass is to be regarded as made up of an indefinite number of constituent particles, similar to it and to each other, but holding no farther relation among themselves than that which they derive from their juxta-position.

Organized structure, on the other hand, receives its cognomen from being constituted of a number of distinct parts or organs, each having a texture, consistence, and form peculiar to itself, whence it derives its special character. Moreover, every organ is the instrument of a special function, which it performs in accordance with certain specific conditions. And the concurrence of all these actions is necessary for the maintenance of the structure in the healthy state, and for the prevention or reparation of those changes which result from the operation of chemical and physical forces. It will, therefore, be at once seen that, among all the different parts of an organized body, there is a *mutual dependence*, which is quite distinct from that of mere proximity. For example, in a perfect plant, furnished with roots, stem, and leaves, the relation of the different parts to the well-being or integrity of the

whole is strikingly obvious; since, if it be deprived of either set of them, the plant must perish; the organic structures becoming acted upon by chemical forces, and resolved into their ultimate elements, unless, indeed, it has within itself the power of replacing the lost parts.

In some of the lower animals, however, as also in vegetables, a tendency to the repetition of similar parts is manifested, thereby shewing an affinity to the mineral kingdom. And when such a repetition exists, some of those parts may be removed without very material or permanent injury to the structure. A common star fish, for example, may lose one, two, or even three of its five rays, and yet live. This is more extraordinary, as those rays are not only organs of locomotion or prehension, but even contain a portion of the stomach in each. But in higher animals there is not this frequent repetition of similar parts. Each organ has its special function, and the mutual dependence is there so great, that the loss of a single part is much more likely to endanger the existence of the whole. Such structures are said to be more highly organized, not on account of the greater number of component organs, but rather in consequence of their dissimilarity as respects function.

We are now led to the internal structure and consistence of organized structures; and here again we find marked distinctions from the mineral bodies, which latter can hardly be said to possess a structure; since, if there be no mixture of constituent parts, they are *homogeneous* throughout. Far different, however, are organized structures; for in them even the smallest part is *heterogeneous* in composition—is constituted of a number of different elements, combined together in such a manner as to give peculiarities of consistence and structure never met with in inorganic aggregations. An important question also, differentially considered, is the chemical composition of organized structures and inorganic masses. It might be supposed that animals and plants, being endowed with properties, to which there is nothing analogous in the mineral world, would have been made up of entirely different materials; reflection, however, will at once shew that the identity of the *ultimate* elements of organized bodies with those of the inorganic kingdom is a necessary consequence of the *modus operandi* by which the former are developed. For, what the parent com-

municates in giving origin to a new being, is not the absolute substantial structure itself, so much as the *power* to *appropriate* certain parts of the surrounding elements, by the peculiar combination of which the germ, as I shall presently shew, ultimately becomes the perfectly and fully formed being.

Organized structures, then, are formed from materials supplied by the mineral kingdom. This we learn by their ultimate analysis. But they differ chemically from aggregations of inert matter, in the manner in which the combinations of the constituents takes place. In fact, in the organized body, the component particles are, as it were, artfully arranged, so as to form peculiar textures, destined to serve special purposes in the living mechanism of the animal or plant to which they belong. Organized bodies are capable of being resolved by chemical analysis into ultimate elements, but the number of the simple elementary substances which may be obtained from these sources are only about seventeen; the remaining thirty-eight of the fifty-five found in the mineral world never becoming part of a living being.

Of the four widely spread elements—oxygen, hydrogen, nitrogen, and carbon, two, *at least*, will be found in every organic compound; hence, as Dr. Prout has suggested, these four may be considered as the *essential* elements of organic matter; while the other simple substances are much less extensively diffused, and are found in smaller quantities, and therefore may be termed its *incidental* elements. The latter are sulphur, phosphorus, chlorine, sodium, potassium, calcium, magnesium, silicon, aluminum, iron, manganese, iodine, and bromine.

Between these elementary substances and the perfect organized animal or vegetable texture, there intervenes a class of compounds, obtained in the early stages of the chemical analysis, which are called *proximate* principles. Such are gluten, starch, lignin, &c. from the vegetable kingdom; or proteine, gelatine, fibrine, and albumen from the animal. From these, again, a great variety of compounds have, by various processes, been obtained, owing to the tendency in their elements to enter into new combinations. Therefore it is not difficult to understand how it is that the perfect organized being may be developed from those proximate principles.

What I have hitherto said in the present lecture has related

more especially to the *differences* existing between organized structures and inorganic masses. I have also referred to the fact that organized beings (no matter how complex) are made up of elements derived from the inorganic kingdom. I shall now speak of the origin and development of beings; and in doing so, I think the best manner to proceed will be to commence with the general history of the series of phenomena manifested by the most simple in the scale of animated nature:—

With respect to origin, some believe in spontaneous generation, and have supposed that out of decaying vegetable or animal matter may arise animals or plants, of a species different from the originals. This idea I conceive to be most fallacious. Every plant, every animal, is the offspring of a parent, to which it bears a resemblance in all essential particulars. In fact, the maxim "*omne vivum ex ovo*," propounded by the illustrious Harvey, is the rule in the production of all organic beings. And it seems probable that, in those cases where a spontaneous generation was suspected, the seeds or the eggs, or, perhaps, the parents themselves, had been in a state called *dormant vitality*, concealed in the decaying matter, or floated to it by the surrounding atmosphere, and finding themselves in conditions favourable to their development, manifested *active life*.

Through the interesting researches of Schwann and Schleiden*, it has been discovered that the simplest and most elementary form of matter in a state of organization is a cell. Now, many plants consist merely of aggregations of cells, each of which may be considered as a distinct individual, since it is entirely independent of the rest, and performs *for* itself and *by* itself all the functions of growth and reproduction. And we shall find, therefore, in the operations of a single simple cell an epitome of those of the most complex plant: and further, that those of the higher plants bear a very close analogy with the operations immediately concerned in the nutrition and procreation of the animal body.

What is meant by the word cell, in anatomical language, is a minute closed vesicle, formed of an exceedingly delicate membrane, apparently homogeneous, not evincing any definite struc-

* Whose works, as also those of Henle, Liebig, Carpenter, Prout, Todd and Bowman, Gregory, Magendie, and Dutrochet, may be consulted with advantage on the subjects of my present remarks.

ture, and having a cavity, which may contain matters of variable consistence: such a cell constitutes the perfect organism of such plants as those called duck-weed, which you see on the surface of still water; or the red snow *(protococcus nivalis,)*, or the gory dew *(palmella cruenta)*; and although the patches of this kind of vegetation, which often attract notice, are made up of vast aggregations of those cells, there is no mutual dependence among them, and the phenomena of each are, in every way, an exact repetition of the others.

In such a cell every organized fabric, from the simplest to the most complex, originates. The feeling, intelligent, *thinking* man, the creeping insect, the lofty oak, almost a forest in itself, all spring from germs which differ in no obvious particular from that of the lowest cryptogamic plant. Whilst, however, the powers of the latter are limited to the generation and multiplication of new and distinct individuals of its own type, those of the former enable it to produce new cells, which remain in closer connexion with each other; and these, by further various transformations of their own, are gradually converted into the diversified organs and textures of a complex being. The most highly organized being, however, may be shewn to consist, in a great part, of cells that do not undergo this transformation, amongst which the various functions performed by the individual are distributed, so that each cell has a particular *role* to play in the general economy, necessary to the well-being of the whole: while the history of *its own* life is precisely the same as if it were maintaining an existence entirely separate from the organism of which it is a part.

And here let us examine the history of the single cell, forming the whole organism of some simple plant—the red snow, which I have before mentioned. Or, in other words, let us observe those *vital phenomena*, which are just as distinct from the properties of inorganic compound bodies, as its *structure* is from the mere aggregations of particles in an inert mass.

The cell, as I before remarked, takes its origin from a germ, which has been prepared by a parent. This germ, which is exceedingly minute, even when seen by the aid of a powerful microscope, in its earliest condition appears to be a homogeneous particle of a spheroidal form; gradually it enlarges, and then a distinction between its transparent parietes and the coloured fluid within

becomes apparent, thus demonstrating the existence of the *cell wall* with an internal *cavity*. As the growth proceeds, the distinction between those parts becomes more and more obvious: the cell wall is seen to be of extreme tenuity, colourless, and homogeneous in texture, while the contents of the cavity are recognized by their red colour, in the species I have taken as an example, but green in the generality of plants. They (the contents of the cavity) also seem homogeneous at first, but after a little time a fine granular appearance is perceptible; and, by degrees, still further changes take place, in which these minute granules become aggregated into more distinct molecules. These, which are the germs of new cells, seem to be at first attached to the parietes of the parent cell, but afterwards they separate from the wall, and move about in its cavity; and the parent cell, still increasing in size, at last becomes so distended, that its wall gives way: it bursts, and sets the germs free, and, in doing so, terminates its own life. The death of the parent, however, may be considered as the commencement of a new generation, since every one of these germs may, if placed in favourable circumstances, comport itself in a similar manner, become developed into a cell, and, in its turn, propagate its kind.

Reflecting upon this history of the cryptogamic plant, that I have just related, we are led to conclusions, which will be equally applicable to all living beings. I have shewn that the cell originates in a germ, which has been prepared by another cell that had previously existed. Now there is no good reason to believe that there is any exception to this rule. As was before stated, every plant—every animal—is the offspring of a parent, to which it bears a resemblance in all essential particulars. How sublimely beautiful is this power that organized bodies possess of generating others; thus providing for the perpetual succession of living beings all over the earth. The Divine command, "Increase and multiply," is thereby fulfilled. Every hour, nay, even every minute, ushers into life countless myriads of plants and animals, to supply in profusion the havoc which death is continually making.

In addition to the power of propagating their species, organized beings also enjoy one of preservation and reproduction of parts. Thus, solutions of continuity, the loss of particular textures, whether resulting from disease or mechanical injury, can be repaired; and

parts that have been removed may frequently be restored by a process of growth; while it is well known that among some plants and animals, if the individual be divided, each segment will become a perfect being. This power of reproduction, however, is proportionate to the simplicity of the structures, and the repetition of similar parts composing the complete organism. For the more complex the entire being, the greater is the mutual dependence of parts; and consequently the loss of a part will be more likely to endanger the well-being of the whole, and cannot therefore be renewed with the same facility. An example of the power of reproduction, with which every one is familiar, is the healing of wounds and the adhesion of divided surfaces.

But to return to the phenomena of the cell. It may be asked, how is it that the apparently homogeneous molecule, of which the germ consists, becomes a cell, and ultimately a fully developed being? To answer this, we can only refer to the peculiar property, which it derived *hereditarily* from the parent, of withdrawing materials from the surrounding elements; of appropriating these to its own use, and incorporating them with its own substance. This is a vital process, and belongs only to organic beings. Through it plants derive from the inorganic kingdom and decaying organic structures elements by which they are nourished. Thus the vegetable cell may grow wherever it can obtain a supply of water and carbonic acid; for these compounds supply it with oxygen, hydrogen, and carbon, in states best adapted for the exercise of the vital combining power, by which those elementary substances become incorporated into the different structures which make up the perfect whole.

Here, there are two distinct sets of operations or changes,—namely, the combination of the oxygen, hydrogen, and carbon, to form what I shall call the *pabulum* of the vegetable tissues, and then the incorporation of that with the substance of the germ itself. The first of these changes appears to be of a purely chemical nature, and may be considered as analogous to the action, which, in inorganic chemistry, is called catalysis. A closer resemblance, however, is presented in the process of fermentation, in which a new arrangement of particles takes place in a certain compound, when another body is introduced, and which is itself undergoing change, without, however, communicating any of its elements to the new pro-

ducts. The second stage in the nutritive process consists in the appropriation of the new product, which may be called the *proximate principle*, for the enlargement of the living cell itself. This phenomenon should be distinguished from the former, as it is, *par excellence*, the act of the organization. The latter may also be observed, in the higher orders of plants and animals, to consist of two stages, the first of which is the further preparation of the fluid pabulum, so as to render it fit to undergo organization; the second being organization itself, or its conversion into the solid structure, and the development in it of those properties which characterise the particular part or organ to which it is appropriated. Thus, in the vegetable kingdom, we observe that a solution of the proximate principle dextrine, is not at once converted directly into the tissues, although it is identical in chemical composition with cellulose: it must first pass through a stage in which it manifests a peculiar glutinous character, and exhibits a tendency to spontaneous coagulation, that seems to approach the actual organic or structural form. In animals, in like manner, the principle called albumen is not capable of being applied to the nutrition of the solid fabric until it is first converted into fibrine, which also is distinguished by the peculiarities of a tenacious character, its spontaneous coagulability, and the fibrous structure of the clot.

In both these cases there may be some very slight modification in the proportions of their ultimate elements; but it seems clear that the principal alterations are effected by the *re-arrangement* of the component particles among themselves, thus giving rise to a combination, characterised by totally different properties. Of the possibility, at least, of such changes, abundant proofs are to be found in the class of bodies which, in inorganic chemistry, are termed isomeric; and which, although identical in ultimate composition, yet manifest phenomena of quite a distinct character. The production of fibrine from albumen cannot, however, be attributed to the simple operation of those agencies which induce the production of different isomeric bodies, the properties of fibrine being vitally distinct from those of albumen; since in the one we find incipient manifestations of life, which are not manifest in the other. The spontaneous coagulation of fibrine, after having been withdrawn from the bloodvessels, exhibits phenomena to which there is nothing analogous. It is not occasioned by any

chemical change in its constitution, but happens in a way that indicates that a new arrangement of its component particles has taken place in it, preparatory to its being converted into a living solid. For its coagulation is not the mere "setting" which takes place in a solution of gelatine when cooling; neither is it the mere aggregation of particles, which takes place in the coagulation of albumen; but it is, in fact, the production of a kind of *fibrous tissue* by the union of the cells, or particles of fibrine, in a determinate and regular manner with respect to each other, and which closely resembles the formation of structure *within* the living body. Therefore the coagulation of fibrine, and the production of a fibrous tissue, are to be looked upon as resulting from its *vital* properties, rather than upon chemical or physical forces.

Now, this production of an organizable or vitalized substance from an unorganized and consequently *inert* one, may, in the living being, be called assimilation; and may be conceived to consist, as I have before stated, in a new arrangement of the particles in the substance so changed, and therefore analogous to, but not identical with, the isomeric bodies of the inorganic kingdom.

For instance, we have seen that from the dextrine of plants is generated, during the process of cell development, the proximate principle called *cellulose*, which forms the cell wall. Now, chemically speaking, there seems to be no essential distinction between these two substances; yet between the living, growing, reproducing cell and the inert starch, how great is the difference! Again, in the animal body, the composition of the fibrine of muscle scarcely differs in the proportion of its elements from the fibrine or albumen floating in the blood; and yet what a transition must take place in the arrangement of the particles of either, before a tissue so complex in structure and so peculiar in properties can be generated!

In the history of cell development, it must be remembered that every kind has its own specific endowments; and that, both in the vegetable and animal kingdom, tissues are found manifesting the most striking differences in structures and properties, but which, nevertheless, take their origin or are formed from the same pabulum or organizable materials. Indeed, the nutrition of tissues by the organization of elements contained in the pabulum or nutrient fluid might be compared to the phenomena of crystallization, when taking place in a mixed solution of several

distinct salts. For if, in such a solution, small crystals of each of the salts it contains be placed, these will become increased and enlarged by their attraction for the particles of their own kind, and which were previously held in solution; yet each exerts no influence whatever over the other salts; in fact, each is working for itself independently of the rest. It must be remembered, however, that this resemblance of the growth of complex organisms to inert aggregations goes no further than the surface, for the increase of a crystal cannot be considered as analogous to the development of a cell. The crystal becomes enlarged by the deposition of particles on its exterior, while the cell, on the contrary, is developed from the original germ by *interstitial* deposit.

It has been shewn, in the course of my preceding observations, that a complete living being is generally made up of a number of cells, each having peculiar properties, and generating in its interior a compound peculiar to itself. The nature of this compound, however, is much less dependent upon the nutrient materials than upon the special powers with which the cell germ has been endowed by its parent. Thus the red snow, and the palmella cruenta, invariably form a red secretion within their cell cavities, and they will only grow when they can obtain from the atmosphere and moisture the elements of that secretion. On the other hand, the yeast plant invariably forms a secretion strongly analogous to animal protein, and it will only grow in a fluid which supplies it with the materials of that substance. Hence the red snow would not live in a saccharine fermentable fluid, neither would the yeast plant vegetate on cold damp surfaces; and yet there is no appreciable difference in the chemical composition in their cell walls by which the different secretions are appropriated from the surrounding media. In the animal body, also, it will be found that one set of cells during their growth will appropriate the elements of bile, another those of milk, a third the elements of fat; and so on throughout the whole economy; the special properties of each being derived from their several germs which manifest an attractive affinity for the elements of their special secretions or substances, and which, although different respectively, are all drawn from one general nutrient fluid,—the blood.

To these operations the term *secretion* has been applied, in order to distinguish it from nutrition or growth; but, from what

has been stated, I think it must be sufficiently obvious that the act of secretion is, in point of fact, the increase or growth of the cell-contents, just as the process of enlargement is the increase or growth of the cell wall; and that, therefore, the two together make up the whole process of nutrition or development in the most highly organized being.

It must be remarked, however, that the contents of the cell are not always destined to undergo organization. In many cases, the use of certain cells is to separate from the circulating fluid such materials as are unfit to be organized, and which must consequently be removed from the body, and this process is called *excretion*. In other instances, the cell-contents are destined to become organized, either within the parent cell, or after they have been set free from it; and in such cases a distinct *vitalizing* agency, as exerted by the cell upon its contents, is manifested. In other cases again, as in the formation of muscular fibre, the elements, before being fitted to form this peculiar structure, have to pass through several distinct stages of *cell development*. They are obtained, first, from the inorganic world by vegetables, then from the latter by the animal in the process of digestion; after which, albumen is formed within the blood, and from this, simple fibrine is elaborated; and, ultimately, through the still further intervention of cell growth, which was the mode of action in all those changes I have alluded to, the muscular fibre itself at last is organized, and becomes endowed with its own peculiar and truly wonderful properties.

Now, what I have stated respecting the origin and development of simple plants is equally applicable to the most complex and highly endowed member of the animal kingdom, and is, in fact, with some slight variations, the history of the development of every being in creation. Thus, in the lower tribes of animals, an hydatid, for example, we find that a single cell constitutes the whole organism, and that this cell comports itself, in every respect, similar to that of a simple cryptogamic plant: it is formed by a parent, appropriates certain elements from the surrounding matters, and incorporates them with its own structure; and also, by its hereditary power, germs become formed within its cavity, which, when set free, and placed in favourable conditions, do likewise, and thus continue the species.

In the higher and more complex animals, development takes place in a similar way from a cell, but with certain modifications. It is true that, in an animal composed of many parts or organs, which possess different characters and properties, it appears almost inconceivable that all those organs can be formed from a single solitary cell. Nevertheless it is so, and may be understood by considering the phenomena of the germ cell. Now, the germ derives from the parent a *special power*, by which, when placed in favourable conditions, and subjected to the influence of its proper stimuli, whether within the womb of the parent mammal, or in the egg, as in the case of birds, it is enabled to appropriate elements from the surrounding matter, and, by the elaboration of these elements within its cavity, a number of other germs are formed, having certain properties peculiar to each. These, again, are then set free; and, by the continuation of the process of cell-development, each germ gives origin to a number of cells, which arrange themselves in different situations, according to their properties and the function they have to perform; and, by the aggregation of these in sets, various tissues and special organs, with distinct properties, are formed; and, lastly, by the union of the latter in a certain manner, the perfect whole is developed, the animal is complete, and fitted in every way to play its part in the living world.

In comparing, however, the development of animals with that of plants, it must not be forgotten that, although both are composed of elements belonging to the mineral world, the members of the vegetable kingdom are formed by the appropriation of materials directly from the inorganic kingdom, while animals, for their nourishment, are dependent upon the vegetable kingdom. To resume, then, and sum up:—We have seen, from all that has been adduced, that every living being on the face of the earth, whether animal or plant, takes its origin from a parent in the form of a germ, and becomes developed through the agency of cells, that either enter directly into the composition of the body, or prepare within their cavities a certain pabulum, which, when set free by the rupture or liquefaction of the cell-wall, may be at once converted into an organized structure; or, being appropriated by another kind of cell, it at last becomes sufficiently prepared, and ultimately assists in the formation of one of the organs or tissues by whose union the being becomes a perfect whole: and, finally,

in the contemplation of this perfect whole, derived from dead inert matter, and yet so organized as to manifest the various phenomena of living, even thinking, beings, the mind must be filled with admiration, and the infinite power of the Creator at once acknowledged.

COMMUNICATIONS AND EXTRACTS.

CASES OF POISONING

BY ARSENIOUS ACID, SOME OF THE COMPOUNDS OF LEAD, AND THE COLCHICUM AUTUMNALE; WITH REMARKS ON THE SYMPTOMS INDUCED, MODE OF ACTION, AND TREATMENT ADOPTED.

By Mr. EVERS MUSGRAVE, *M.R.C.V.S.*

[Continued from page 121.]

II. LEAD.—*Poisoning of eleven Bullocks by Masses of dried Paint and Pieces of Window Lead, picked up in a Meadow.—Three Deaths.—Morbid Appearances.—Treatment by Sulphate of Magnesia, Dilute Sulphuric Acid, and Opium.—Remarks.*

ON Saturday, April 27th, 1844, I was requested by Mr. Taylor, of Tarrington, to send some medicine for a bullock, which, to use the messenger's own expression, "had been found in a ditch in the meadow that morning, shaking all over, and appeared to have lost the use of his legs." He, with ten other bullocks, I ascertained had been turned into some latter grass two or three days previously.

A carminative purgative was sent, with directions to clothe the animal well, have the extremities hand-rubbed, and, if he did not get any better, to let me know the following morning. This was about noon: at three o'clock another messenger arrived in a state of great excitement, and said that I was to go to Tarrington immediately, for "all the bullocks were dying." I did so, and, on my arrival, found that two of them were already dead, and being skinned for my inspection. The remaining nine were removed, by my orders, from the meadow into a straw-fold, where I examined them very carefully. Some remained standing, others

quickly laid down, but all looked very dull and sleepy. The eyes when opened shewed the pupils to be widely dilated; frothy saliva flowed from their mouths in great quantities, but there was no offensive odour emitted, and the tongues of several of them were protruded. The ears drooped, and the extremities were cold; the breathing was not much accelerated unless they were approached or handled; the pulse ranged between 60 to 70, and was indistinct. They all shewed great disinclination to move, and arched the back if the hand was slightly passed along it. Most of them had dunged, but the fæces of all were dark-coloured: of some the bowels were very costive, and of others quite loose and fœtid. With the exception of one, they had all of them ceased to ruminate; and this one, I ascertained, in consequence of his being lame, had been turned into the meadow a shorter time than the others. I then proceeded to the meadow, but was unable to detect the presence of yew, colchicum, or any other poisonous plant capable of producing so much mischief; and, in common with every one else, I was at a loss, for a time, to what to attribute the symptoms.

The examination of both the dead bullocks, however, gave the following results:—The abdomen was much distended, and, on taking off the abdominal muscles, the intestines shewed here and there some patches of inflammation, but not to any great extent. The rumen contained a considerable quantity of food and fluid, which was removed for more careful examination. Portions of its lining cuticular membrane were seen floating among the contents, and that still adhering to the rumen was easily stripped off with the fingers. The muscular coat underneath was much blanched. In the manifolds, the food, for the most part, was about as firm and compact as cheese, though some was harder, and all of it very fœtid. The cuticular coats of the folds adhered to the food when separated; the muscular coat was quite red, and especially the papillæ, which were large and prominent. The fourth stomach was of a dark cherry-red colour, and contained only a little mucus. The liver was darker in colour than natural. The other abdominal viscera were apparently normal. The lungs of one animal were slightly inflamed, but those of the other were healthy. The head was not opened by me.

On examining the contents of the rumen, I first remarked that

a yellow oily fluid had arisen to the surface; and among the ordinary ingesta *I found some small pieces of window lead*, some bits of leather, and *several masses, more or less hard, varying in size from a marble to a hen's egg, and which, upon washing them with water, proved to be paint of various colours*, principally red and slate coloured. Upon making particular inquiry, I ascertained that the meadow had been recently dressed with ashes from a hole into which the refuse of a painter's shop close by had been thrown. It was by this time late in the evening, and, being at the distance of eight miles from home, without waiting until medicines could be procured, I ordered them at once to drench each of the remaining bullocks with two or three quarts of milk and half a pound of melted hogs-lard, these being the only available agents to be had on the spot. Immediately on my arrival home, I sent off, by the messenger who accompanied me, a large quantity of sulphate of magnesia, to be given liberally, with a little powdered ginger, in linseed tea, to each of the bullocks, allowing them tepid water, and a bran-mash if they would eat it.

April 28th.—I was prevented from going over to the farm until this afternoon, when I found another bullock dead. He died, they told me, almost mad. He would bellow out loudly, foam at the mouth, throw his head up and down, gasp for breath, fall down suddenly, lay still for a moment or two, and then, as suddenly jumping up, begin the same course again. This bullock had not voided any fæces since he was attacked. Two of the other bullocks were also foaming at the mouth; their extremities as cold as a stone; the pulse small, quick, and weak; the pupillary opening of the eyes much dilated, and the sight nearly lost. They constantly grated their teeth, and would neither eat nor drink any thing. To both of these I ordered another dose of the sulphate of magnesia, adding, for each bullock, half a drachm of powdered opium. The remaining five seemed much better; they neither foamed at the mouth nor grated their teeth; their bowels had been acted on, and they fed a little. To these a small dose of salts in linseed tea was given.

29th.—Six of the bullocks were observed to eat some hay this morning, but refused the bran-mashes: the other bullock, one of the worst the day before, still continued grating his teeth and

bellowing loudly, but he had passed some hardened fæces. To the six give half an ounce of diluted sulphuric acid in linseed tea or gruel, and to the others repeat the saline purgative, with half a drachm of opium, and, during the day, to them also give the diluted acid.

30*th*.—The six bullocks were much better, and grazing in the orchard; they were merely ordered gruel at night with the diluted acid. The other bullock remained much the same. He continued grinding his teeth, bellowing, and walking round the shed in which he was placed. His extremities still continued deathy cold, and he would neither eat nor drink. Repeat the saline draught with the opiate, increasing the diluted sulphuric acid to an ounce.

May 2*d*.—Two of the convalescent bullocks were this morning taken worse; indicated by accelerated breathing, foaming at the mouth, protruded tongue, general restlessness, loss of appetite, and torpid bowels. Repeat purgative draught with dilute sulphuric acid and opium. The bullock that has been so ill is rather better this morning, and eats a little green vetches and grass. Continue to give the draught to him.

3*d*.—Four of the bullocks appeared quite well this morning, they will therefore not be mentioned again in this report. Of the three remaining ill that had suffered a relapse, one was much worse. Besides the foaming mouth and protruded tongue, he bellowed loudly, and continued walking round and round like a horse in a cider-mill, until he dropped from exhaustion, or was stopped by holding his horns. His pulse was almost imperceptible, being too quick and weak to be counted. He seemed to be unconscious of what he was doing, and was quite blind, the eyes being amaurotic. When down, he remained so a few minutes, then would get up, and recommence turning round and round as before. Being exactly in the same state as the others were immediately before death, the owner wished to have him killed; but at my solicitation I was permitted, as an experiment, to give a large dose of opium, and four drachms of powdered opium, with an ounce of dilute sulphuric acid, were administered. In less than half an hour he fell down asleep, and lay in that state for more than three hours. He then got up, was much more quiet, and seemed in every respect

better. To the three others, I gave small doses of the sulphate of magnesia, nitrate of potash, and gentian and ginger, with plenty of gruel.

5th.—The bullock which has been the worst throughout, although better, has not yet been seen to ruminate, and his bowels are still constipated. The bullock to which the half ounce of opium was given was still inclined to turn round and round, but nevertheless ate a little vetches and drank some gruel. Repeat to both the saline purges with sulphuric acid, and rub behind the horns of the last-named bullock a sufficient quantity of blister ointment.

From this time they all improved daily, and, on the 10th, I left them nearly well.

Remarks.—Some very interesting cases of poisoning by the compounds of lead are recorded by Mr. W. C. Bland [see Transactions of the Association for 1842-3, pp. 181-4], in which the kind of poison and the mode in which it was partaken of are precisely similar to those I have just given. In both instances, the refuse of a painter's shop was scattered with manure on the land, and picked up by the bullocks, they being deceived, no doubt, by the smell of the oil with which the lead was mixed. Mr. Bland's cases were more fatal than my own, since, of all that shewed any unfavourable symptoms, *seven* out of *fifteen* died; but the general symptoms and morbid appearances agree well enough to enable us to draw from them an inference as to the mode in which this poison, when taken in large quantities, acts on the animal system of the ruminant, and therefore to decide upon the treatment best adapted to counteract it.

The preparation of lead commonly used by the painters for drying their oils and paints is litharge, or the protoxide; and this is so freely used, that from its weight it must necessarily be found in great quantities in the scrapings of the pots and other refuse. The first action of the poison in the cases before us seems to have been upon the nervous system, *depressing it in a peculiar manner, and producing a tendency to paralysis;* while the heart with the other circulatory powers was only secondarily affected, and then not to so serious an extent as to endanger the life of the animal in any degree. But in every case which soon terminated

fatal, symptoms of *violent irritation*, acting both *locally* and *generally*, supervened. The poor animal was in great agonies, foaming at the mouth, grinding his teeth, tossing his head about as if unconscious, bellowing loudly, and then became restless and delirious, until he died, as the attendants said, "raving mad." The brain from the first would seem to have been acted upon; but it is difficult to decide how far the general affection of the nervous system, the disinclination to move in the first instance, and afterwards the inability to stand, may have been owing to this, or to the poison acting on the system generally. In the case of the fifth bullock, as given by Mr. Bland, it evidently acted specifically on the brain, as was proved by the post mortem-examination; as it was also undoubtedly the case in that of the bullock which kept turning round and round, and to which I gave the large dose of opium. I am inclined to think, that, in all the cases which shewed this general debility, it must have been owing to this cause also (the effect of the poison on the brain), because it evidently began with an affection of the brain, and ceased as soon as the irritation was lessened and the brain relieved; and, moreover, in no instance did the animals continue palsied.

That death was produced by the violent irritation of the poison, was also clearly shewn by the marked appearances, especially in the cases which terminated the most speedily. Signs of inflammation more or less violent were present in every instance, especially about the manifolds and the fourth stomach, as shewn by the softening and separation of the lining membrane and the thickening and injected state of the muscular coats of all the viscera which did not actually contain the poison. All the coats of the stomach in my cases, and in the fifth case named by Mr. Bland, were remarkably blanched; an effect Orfila has stated to be owing to the direct action of the poison upon them, which statement these cases seem to confirm, though it certainly does not always occur.

In taking this view of the action of a poisonous dose of lead on the animal system, I am aware that it is not in accordance with the authorities (Christison, and the authors he quotes), who state that its first action is that of a direct irritant; but I am unable otherwise to account for the affection of the brain and nervous system so long before the powers of the circulation shewed any

signs of the existence of an irritant poison in the stomach. I may be wrong in my opinion, but I prefer to follow facts of my own observing to the theories of those who differ from each other, and which are apparently irreconcilable. The action of the preparations of lead, when slowly introduced into the system, is said to be essentially different to this; but I have not seen any instances of poisoning from this cause, and we have nothing to do with it now.

The *Treatment* need occupy but little space. Our first object will be at once to give an antidote. For this purpose an alkaline sulphate (magnesia, or soda, or potash) with a little dilute sulphuric acid is the one best adapted, as it will form an insoluble sulphate with any compound of lead which the stomach may contain. Secondly, having decomposed the poison, we should endeavour, as quickly as possible, to allay the pain and irritation which have been already produced. This may be done by a full dose of opium given in linseed tea or some other emollient fluid; uniting with it, for the purpose of fulfilling the *third object* of our treatment, namely, the removal of the insoluble compound of lead from the alimentary canal, a saline or oleaginous purgative of greater or less strength, according to the circumstances of the case (such as the amount of irritation existing and the state of the bowels). The muscular coats of the stomach and bowels are often rendered very torpid and weak in their action when all symptoms of irritation are gone, and consequently require large and repeated doses of warm purgative medicine to be given for some time; and in such cases, one of the alkaline sulphates is to be preferred, either given alone or in combination, lest a portion of the poison should still remain unacted upon. Diluent drenches should also be continued, and opium given at intervals, if it be required, which will be known by the pain or restlessness of the animal. It seems to me that bleeding would be rarely admissible in these cases, except where the irritation remains excessive after the antidote has been repeatedly given; but, if much delirium and affection of the brain be present, I would blister well the back part of the head, and trust to opium to allay the excitement, which it did so singularly in one of the cases above related.

III. Colchicum.—*Eight yearling heifer Calves poisoned by the Leaves and Seed-vessels of the Colchicum Autumnale.—Violent purging.—Death of two.—Discontinued my attendance.—Death of three others.—Slow recovery of the remaining three.—Morbid appearances.—Three Cases in* 1842.—*Two deaths.—Two other Cases that recovered.—Remarks.*

On the 22d of May 1844, I was requested to see eight yearling heifer calves which had just been brought from Gloucestershire, and, two days previously, turned into a pasture where the meadow saffron grew in considerable abundance. It was at that time in full leaf, and beginning to seed. I found all the calves more or less affected, and presenting the following symptoms:—Violent purgation, the dejections being liquid, of the colour of muddy water, and extremely fœtid. Two were lying down, and unable to rise; the rest stood with their backs arched, their coats staring, the abdomen of some of them swollen, and they all seemed afraid to move. Their ears and heads were drooping; the eyes were glassy, and the pupils dilated; the nose dry and cold, as were the ears and other extremities; the pulse was irregular, and too quick and weak to be counted. On the two lying down, perspiration stood in drops on the hair like dew. The urine was small in quantity and dark in colour. I ordered the following mixture to be given twice a-day to each of them:—

℞ Pulv. opii	.	.	.	ʒss
Tinct. opii	.	.	.	℥ss
Ol. lini	.	.	.	ʒviij

And all of them to be freely drenched at intervals with linseed tea or gruel.

May 23*d*.—One of those unable to rise the day before died in the evening, and the other seemed as if he could not live long; the remainder appeared much about the same. I ordered the same mixture as the day before to be continued, increasing the dose of opium to a drachm, and directed a strong stimulating embrocation to be rubbed over their abdomens.

May 24*th*.—The second heifer is dead, and all the others look very ill. During my absence, the owner, a small farmer, and who could ill afford the loss of his heifers, had become dissatisfied

with me. Listening to the wisdom of the place, my practice had been denounced, and it was insisted that powerful purgative medicines should have been given so as to carry off the poison. The owner was both too anxious and too angry to listen to any explanation on my part; and, finding that they had already been giving the animals wood ashes boiled in water with linseed oil, I quietly wished my employer good morning, and left him and the quacks to treat the cases, and abuse me in whatever way it might please them best.

I inquired shortly afterwards what became of the remaining calves, and I learned that three others died, and the rest were a very long time in recovering.

Post-mortem examination.—On opening the abdomen, the peritoneal coat of the intestines was perceived to be inflamed in patches. On slitting open the bowels, the mucous membrane was also found much inflamed, looking like a piece of deep red velvet, and easily stripped off by the slightest traction. The food in the rumen was semifluid, and contained numbers of the seed-pods and leaves of the colchicum autumnale (the loose seeds adhering to the mucous membrane), with some few oak buds and leaves, long grass straws, &c. The mucous coat peeled off easily, and left the muscular coat of the rumen much reddened and inflamed, as was also that of the manifolds and the fourth stomach. The food contained in the manifolds was quite hard and dry, and the gall-bladder enlarged and filled with bile: the other viscera seemed healthy. The head and chest were not examined by me.

The following post-mortem examination of a three-year-old heifer, that died from eating colchicum after being turned into a meadow containing it, may not be unacceptable. This animal died as the messenger was coming for me, and thirty-six hours afterwards I made the examination:—

The abdomen was distended with gaseous matters. On reflecting back the abdominal muscles, the small intestines were perceived to be much inflated, and of a leaden hue, with, here and there, patches of inflammation, these varying in size from one to three and four inches in diameter. In some of the convolutions of these intestines was found a little fluid of a dirty colour and fœtid odour, also some colchicum seeds. The rumen was much distended both with gas and food, amongst which were

many pods of the colchicum, with great quantities of the loose seeds of this plant. The food in the rumen was not so moist as I have seen it after partaking of this poison, but that in the manifolds was extremely hard and dry, and the mucous membrane peeled off on its removal, leaving the papillæ red and enlarged. The fourth stomach contained only a few seeds, but was greatly inflamed throughout; the liver was softer in its texture and lighter in colour than natural: the gall-bladder was normal. This heifer was in calf, but there appeared nothing unusual about the womb or the fœtus. The lungs shewed signs of very slight inflammation only, and all the other viscera were healthy.

In 1842, I first observed the poisonous effects of the meadow saffron. Three bullocks had been eating the leaves and seed-vessels of this plant, which had been separated from the new hay to prevent its heating too much, when they became quickly purged. A full dose of Epsom salts was immediately given to each of them. One died that night, another got pretty well in a day or two, and the third had lived nine days after partaking of the colchicum when I was first called to see it. It had not eaten any thing for some days, nor had any thing but some drenches of gruel, which the farmer had given it. It was lying down in a state of extreme depression, evincing a great disinclination to move; the extremities were cold, and the pulse scarcely perceptible. I gave a dose of camphor and opium, with linseed oil; but it died that night.

Since the cases detailed above, I have also met with two other instances of poisoning by colchicum, in which the symptoms were so precisely similar that I do not think it necessary to detail them at length. One was a three-year old heifer, brought eighteen miles from a fair; the other, an aged Hereford cow, turned into a fresh meadow. Both presented the same symptoms, and in both I immediately suspected the cause to be colchicum, and which was afterwards proved to be correct by the animals' voiding the seeds of this plant with their dung. They were treated with full doses of opium and oleaginous and saline aperients, afterwards giving tonics, and both recovered in three or four days.

Remarks.—Colchicum autumnale grows abundantly in the meadows of this county, and, in the spring, it is by no means uncommon to see herds of cattle grazing amidst its deep green tufts. It is very seldom touched, however, by the cattle accustomed to

its presence; but those coming from a distance, or from a different pasture, do not seem to recognize its nature at once, and partake of it freely, until its poisonous effects, characterized by profuse liquid, muddy, and fœtid stools, are produced.

The leaves and seed-vessels of the plant are frequently cut with the grass for hay, and are only picked out and separated when they are so numerous that they would cause the stack to heat too much. A farmer, who has a fifty-acre meadow covered with it, told me that this was the only ill effect he ever knew it produce. Other farmers, however, are aware of its injurious action on their cattle, having had them attacked with purging from it; but, by taking it in time, they say, "a good dose of salts will usually work it off." In dry hay its leaves and pods are frequently to be found, and are taken no notice of; but I have always observed that cattle refuse and leave them in the manger. They may, perhaps, also do the same when colchicum is cut up into chaff with straw, as it constantly is, since I have never seen or heard of any ill effects being produced from animals eating it in this dry state.

I have been unable to find any published account of any similar cases of poisoning from this plant, although most of the authorities I have consulted seem to be aware of it having frequently occurred. In the seventh edition of Beck's Medical Jurisprudence, however, the following note has been communicated to me:—"In the Edinburgh Annual Register, vol. vii, p. 114, it is mentioned that a farmer near Tetbury lost *seven* yearling beasts out of *eighteen*, by putting them in a pasture where this plant grew in abundance. On opening their bodies, the food was found clogged together in a crude and undigested mass, incapable of passing through the proper ducts." In the same work I am told is a statement made by Mr. Want in the Annals of Philosophy, vol. iv, p. 281, from information communicated to him by Sir Joseph Banks, and Mr. Andrew Knight (a Herefordshire man, by the by, *the* Knight of Downton Castle,) to the effect that "the seed, if swallowed, adheres to the coats of the stomach, and produces, at the several points of adhesion, spots of inflammation, which occasion the death of the beast." I have not seen either of these books, and can only therefore give the references as I find them. The cases I have now recorded will, I trust, supply this deficiency; and, with the interesting results obtained from the experimental use of

this drug, as given by Mr. Morton in the VETERINARY RECORD for April, 1845, pp. 137 and 140, furnish a full and satisfactory account of its physiological effects on the animal economy. These experiments by Mr. Morton shew that the first action of the fresh root of the meadow saffron given to horses, apparently healthy, was that of a sedative, it lowering the pulse (in three-ounce doses) from 40 to 28 beats in the minute, and that without diminishing its power, at the same time causing the animal rather to increase than to lose its appetite. Soon afterwards the kidneys were called into increased action, and, by repetition, it began to act on the bowels. In medicinal doses, then, from Mr. Morton's experiments, colchicum may be said to be sedative, diuretic (by the aid of external warmth, doubtless a diaphoretic), and laxative. In larger doses, as in the cases I have related, its action is widely different. In such doses we find the first effects to be purging of liquid fæces, which are muddy and very offensive; extreme depression of the general system, and especially of the circulatory, the pulse being irregular and scarcely perceptible, and the exhalents on the surface of the body called into augmented action from apparent debility. The animal shortly afterwards dies, and a post-mortem examination shews violent inflammation of all the mucous membranes, and more or less that of the peritoneum, to have taken place. In large and poisonous doses, then, colchicum acts as a powerful irritant and sedative, and therefore belongs to that class of poisons which have been termed narcotico-acrid*. It must be remembered that Mr. Morton's experiments were performed with the fresh root, whilst it was the fresh seed-vessels and the seeds themselves (and these are probably more active) which produced death in the above cases.

The *treatment* of cases of this kind must always depend on the

* An experiment of Sir E. Home, quoted in Pereira's Materia Medica, vol. ii, p. 942, clears up the apparent inconsistency between the effect on the circulation produced in Mr. Morton's experiments and in these cases. He (Sir E. Home) "injected 160 drops of a vinous infusion of colchicum into the jugular vein of a dog: all power of motion was instantly lost. The breathing became slow, the pulse hardly to be felt. *In ten minutes it was* 84; *in twenty minutes*, 60; *and in an hour*, 115; with the respiration so quick as hardly to be counted. *In two hours the pulse was* 150, *and very weak*," &c. &c. Thus shewing the primary and secondary effect in lowering and increasing the rapidity of the pulse.

severity of the symptoms when the animal is first seen. Under all circumstances, the beast should be at once housed or clothed; then, if the poisoning be only in the first stage, that is, before the circulation is much depressed, or very violent purging has been set in, it would be as well, perhaps, to give a strong oleaginous purgative at once, with the twofold view of overcoming the action of the poison and forcing it onwards, a practice which seems to be very successful with the farmers I have alluded to. But if, on the contrary, it should have arrived at a more advanced stage (and it is rare that it will not be so when the practitioner is called upon to attend); when the general system shews considerable depression, and violent purgation with liquid fœtid stools have commenced, the first object must undoubtedly be to allay the pain and irritation set up, by giving a full dose of opium and camphor, combined with linseed oil; also apply some strong stimulating embrocation to the belly and extremities. If the symptoms still continue severe, throw up emollient injections with opium; drench freely with linseed tea and gruel, repeating the opium if found necessary, and even adding æther, according to the state of depression, until the unfavourable symptoms begin to subside. Should any signs of debility remain, a dose or two of a carminative tonic and astringent will seldom fail to effect all that is required to perfect the cure. But if these measures prove of no avail, nothing that I am aware of will save the animal. One circumstance connected with these cases is worthy of especial remark, namely, that, in every post-mortem examination I have made, oak buds and leaves have been found with the colchicum among the ingesta. They looked fresh, as if just eaten, and were scarcely discoloured. It struck me that the animals might have been instinctively led to eat these astringent substances as a remedy for their sufferings; and this view was strongly confirmed on turning out some affected animals, when they began immediately to browse on the oak boughs within their reach, and would touch nothing else. Animals, after their recovery, may be safely turned again into the colchicum meadows, as they will ever after refuse the plant.

During these observations I have adverted to an occurrence which often annoys, and sometimes seriously affects, the professional man in his practice, namely, the interference of the uneducated pretender, under the form of the village blacksmith, a

wise waggoner, or an octagenarian herdsman. By such men as these I have often been interfered with, and although they only merit contempt, yet they frequently vex and disappoint one. I need hardly advert to the agents such persons employ. I have seen a Good-Friday's hot-cross bun (kept for the purpose) given in beer for gripes; and, for the same disease, the entrails of a newly-killed fowl administered to a horse, to supply the place of an antispasmodic. I have known blue-stone and Armenian bole, dissolved in some of the urine of the animal, set aside to *charm away* the red or blackwater in cattle; also cabbage and bacon given, to the exclusion of rational medical treatment. Instead of caustics being used, I have known a sod dug up from beneath the animal's foot to be hung on a hedge to *charm away* foot-rot, the disease disappearing, they say, as the moisture evaporated. Secret charms without number I have seen resorted to for the cure of dislocated patella, stifle-joint lameness, and lamenesses of all kinds, with many other equally obstinate affections. Many persons must have known them to be used for hæmorrhage; but all may not be aware that cobwebs and pigs' dung are declared to be wonderfully effective in many diseases. I could go on; but in all the instances in which I have seen these sages apply their absurd remedies, my want of faith in them, as well as respect for their employers, has been too great to enable me to perceive any thing but evil to follow from this disgusting system. But I am digressing beyond what I ought, after so long a communication. It is only by the knowledge we possess of the nature of the diseases we are called upon to treat, and the power and confidence this knowledge gives us, that we can ever hope to overcome prejudice; and then, and then only, shall we demonstrate to along abused public the favourable results that follow a practice based on scientific principles, and be able to break down the bulwarks of ignorant quackery and gross imposture.

Note from Mr. T. D. Broad, on the Use of Mr. Wells' Truss for Bursal Enlargements.

Dear Sir, *Trowbridge, May 8th*, 1846.

I am much obliged by your kindness in forwarding the truss. I have had one made from it, and applied it to the hock, and it has caused nearly the entire removal of the distended sac; but, I

shall still allow it to remain on a short time longer, so as to ensure its perfect obliteration. I consider it an excellent method of treating distended bursal sacs, and that much credit is due to Mr. Wells for its introduction to the profession.

I remain, your's respectfully.

To Mr. Simonds.

On Thorns in the Legs of Hunters.

By Mr. C. Dickens, *M.R.C.V.S.*

My dear Sir, *Kimbolton*, May 21, 1846.

Should you, and your esteemed co-editors, think the few following scattered fragments, which have been stumbled against in the bustle of country practice, worth a corner of the Veterinary Record, or the notice of the junior members of our profession, they are your's, as a slight return for much pleasure received from the perusal of your excellent Journal.

I am, your's very truly.

To Mr. Morton.

On Thorns in the Legs, &c. of the Hunter.

What can be more annoying to the sportsman than to find his otherwise tip-top conditioned nag unable to come out in consequence of being thorned? And in no case is the most accomplished vet. more perplexed, or less likely to give his client satisfaction, for the very reason that he cannot do impossibilities, or see farther than others, and, moreover, is not generally called in until it has become protracted. Moreover, no case is more likely to present itself to the new plumed vet. fresh from college, and none more likely to do him infinite harm. My object, therefore, is, to induce, or rather to recommend, a more energetic mode of treatment than the one usually adopted; and in furtherance of my object, I will give a case or two in illustration, where the enemy had lurked in ambush for some time, on account of its not giving pain to the animal, and causing the loss of the animal's service to the owner.

I need not say that the first act of a diligent hunting groom is to look with a prying eye over his returned horse for thorns; but be he ever so careful, they will occasionally escape, or be beyond his notice. On some future day, when the horse is being dressed over, he is seen to flinch, rests a limb, or is off his feed, and feverish.

The panacea of the hunting stable, fomentations, are now had recourse to, and persevered in with great diligence, day after day, week after week, not only without success, but all the time our enemy is travelling in a contrary direction, and all our persuasive and palliative means will not bring it back. It is now that the practitioner is called in, and not unfrequently he is expressly sent for to get the thorn out, when, in fact, it is impossible to say, by this time, where it is lodged. By the groom he is told that it went *in* at such a place, and he waits expecting to see him "out with it;" but the prudent vet. knows better than attempt it, being convinced that he would be doing mischief by groping in the dark. I feel assured that we often lose much time by all this bathing: our treatment should be somewhat more *coercive*. The more successful mode appears to me to be something like the following:—If our patient be the subject of certain or suspected thorn, but out of reach, clip the hair off the part; bleed copiously from the neighbouring vein, near to the seat of the pain; poultice or foment for a couple of days, and give a cathartic; but if now it does not make its exit, apply over the suspected part an *active* but not an *extensive* blister. If this should not have the desired effect, *repeat* it. Such means as these I have generally found successful; but many cases have I seen where permanent mischief has ensued from the treatment not being sufficiently energetic in the first instance.

Illustrative Cases.

Case 1.—An aged bay hunting mare, the property of H. Onslow, Esq., of Haughton House, has laboured under navicular lameness for some years past; but she has been very lame occasionally during this season in the near fore leg, but not subjected to any treatment, as it was supposed to be the onward progress of her old lameness. In the summer I was requested to see her feet pared out, &c., and on rasping the inner quarter of the near

foot, about an inch and a-half from the sole, something shewed itself, which, upon extraction, proved to be a thorn about an inch long. It must have entered at the coronet, and, being retained, caused the extreme lameness.

Case 2.—At the end of the season of 1845, the whole of the Oakley hunt horses were sent to Tattersall's, except an aged, nine-years old, grey horse, which was so lame and out of condition that he was not thought worth the expences to town. In this state, from a humane feeling, and knowing his former goodness, he was purchased by a gentleman for £5. Having extreme contraction in both fore feet, I was requested to neurotomize him: he had been fired the season before for stale legs. His new owner, a scientific man, kindly assisted me during the operation, which was performed "high up." I was greatly puzzled with one leg, in which, instead of the nerve presenting itself, there was a large dark-coloured jelly-like mass, upon removing which, the head of a thorn pointing inwards was perceived, and which there is no doubt had been the source of great pain for two past years, by constantly irritating the nerve, and, in fact, causing the contiguous parts to slough. I afterwards had the pleasure of seeing the horse go quite sound; and his owner was offered £20 for him a month after the operation. Although he threw out a large bone spavin, he has carried his owner, a very hard rider, through the late trying season most gallantly, taking more than ordinary work; and he told me the other day he never rode a horse over a fence with more confidence, being relieved both by the operation and getting rid of the thorn. He now keeps up his flesh admirably.

Case 3.—On the 14th of February 1846, my opinion was requested respecting a fine hunting mare, the property of a gentleman who had thorned her six weeks before in the knee. It had been constantly fomented, but still remained much inflamed and indurated, and was six times its original size. Being a gross animal, I bled her from the arm until her pulse faltered, exhibited aloetic mass ʒx, and directed the parts to be kept constantly wet with cold lotions. The animal being twenty miles from me, I did not see her again for ten days, when I was much delighted at the great improvement made; but still some heat and swelling remained, and she was not free from lameness. I therefore repeated both the blood-letting and the purgative. In ten days after, on

my again visiting her, I found her to be quite sound. I would have blistered her, but, her owner being anxious to try her again, I consented, and she carried him through some brilliant runs. The season over, she was blistered twice. Subsequently a small abscess formed at the original seat of injury, but the leg is now quite fine. Had the Cases 1 and 2 been well blistered, I doubt not but much pain would have been prevented.

Case 4.—This is perhaps more amusing than instructive; but the case shews, first, under what varied forms our patients are injured; and, secondly, what they sometimes suffer from being placed under the treatment of empirics.

On the 7th of May 1838, at 9 P.M., I was sent for seven miles off to attend a cart mare, the property of Mr. R. B——. She was supposed to have been kicked on the 1st of the month, as the lameness was then first seen. She was dressed by the attendant vulcan, who, like most of his brethren, possesses a grand recipe for all green wounds, and which generally is boasted of as having been in the possession of the family for generations past. He saw the case daily, and thought it was doing well, but to-night he is frightened at the symptoms present. I found her suffering most acutely from irritative fever, and, it being late, I directed my immediate attention to the system generally. I detracted blood freely, and gave a dose of cathartic medicine, preferring the aid of daylight to examine the wound, which was situated at the posterior part of the large pastern joint, and from which was issuing synovia mixed with pus.

May 8th, 7 A.M.—I was pleased to find my patient much relieved; in fact, she does not appear like the suffering animal I saw last night. A slough has been thrown off from the wound, on examining which, the probe struck against something which I supposed to be a piece of exfoliated bone, but, on introducing my finger, I pulled out the prong of a stable fork! The horsekeeper, being threatened with magisterial punishment, at once owned that, on the day the animal was first seen to be lame, he had thrown the fork at her, but supposed the missing part was lost in the straw. The counterpart was now produced. You will perceive the prong I forward with this has been mended at the part where it is broken off. Had I not ocular demonstration

of the fact of the piece of iron being thus imbedded, I could hardly have thought it possible. Suffice it, in conclusion, to say that my patient soon recovered under ordinary treatment.

Observing a most excellent case of amputation of the uterus recorded by Mr. Baldwin in your last volume, I am induced to state that, like him, I have been annoyed in former days, both with metallic and all other sutures in cases of inversion of the womb, but never was with the inclosed instrument, which always answers well. I have kept it in for months, only cleansing it now and then. I have no doubt but that it is familiar to many of your readers; but should it not, although it presents not the most polished exterior, it is much at your service.

[We thank Mr. Dickens for his useful communication. Well might he have been surprised at the prong of a stable-fork existing as a foreign body in a wound. His strictures on the treatment adopted in this and similar cases are just. An instrument resembling the one he has kindly forwarded to us for preventing the return of the uterus after replacement, is described in the "Transactions of the Veterinary Medical Association," vol. 8, page 109, by Mr. R. Taylor, V.S., Bury St. Edmunds. The principle in both is precisely the same, or we would have illustrated by a woodcut.—*Editors.*]

Case of Inversion of the Cœcum, and Rupture—Case of Phrenic Hernia with Strangulation of the Jejunum and Ileum—Neurotomy for Ossification of the Sessamoid Joint—On the Use of Croton.

By Mr. W. Stanley, *M.R.C.V.S.*

Leamington Veterinary Infirmary, April 15, 1846.

Dear Sirs,

I observe, in the last number of The Veterinary Record, a case of inversion of the cœcum, and rupture. A singular case of the same kind came under my notice two years ago.

A horse, the property of Sir James Baird, was attacked

with colicky pains, for which the usual remedies were resorted to, but without any benefit resulting. He was constantly pawing with his fore feet, and that with such violence at times as nearly to tear up the floor; and this he continued doing till his death. Notwithstanding this he would lie down quietly, and seldom rolled. He lived for six days, and until within about thirty-six hours before his death his pulse was natural, and never exceeded at any time 44 or 48. Medicine having been administered at the outset of the attack, it operated freely, and his bowels resumed their healthy function, the fæces being voided as usual after his physic had produced its effect. A second dose was given, which also operated as well as could be desired; but there was no indication of the removal of the malady, for the pawing and pain continued. During the first four days, to an ordinary observer, there appeared nothing amiss with the animal. He ate his mashes, and all the food that was allowed him, and was occasionally exercised; and he walked, I ought to remark, with even a more resolute step than was natural; this was on the second and third day, when his physic was operating, and now and then he neighed: he did this generally when first approached in his box. After the third day, the medicine not having had the effect of removing the pain, I began to think unfavourably of the case, and I feared that some disarrangement had taken place of the intestines, but at what part I was altogether at a loss to assign, since I felt satisfied there could be no obstruction existing in the alimentary canal. However, the horse died on the sixth day from the attack, and on examination, post-mortem, the cœcum was found to be completely inverted to the extent of nearly two feet, and gangrenous. There was no sign of disease or spasm in any other part of the intestinal canal, therefore I can hardly think this inversion was the result of spasm. I attribute it rather to the horse being in the habit of rolling in his box, as he began to paw violently early in the morning only, and there was no appearance of the animal having been in pain during the night.

Last week another, not an every-day, case presented itself, phrenic hernia, with strangulation of the jejunum and ileum. The horse lived thirty-six hours after the attack. He had been out with the

hounds, and immediately on his return was taken ill with symptoms of colick, for which his owner administered some medicine. The animal not being relieved, I was summoned to attend. The attack was not accompanied with that violent pain usually met with in cases of strangulation; the chief symptom being constantly lying down on the near side, and the casting of a doleful look to the off one. His pulse for the first eight hours was very little altered, but afterwards became quick and thready. The usual treatment was had recourse to as in enteritis, but without avail, nor did the bowels ever become acted upon. On examination, I found about two yards of the jejunum and ileum within the cavity of the chest, having passed through a very small aperture on the right side of the diaphragm, and which did not appear larger than to admit two fingers. The rupture in the diaphragm was in its muscular structure, which had contracted so as to strangulate the intestines named. It seemed almost an impossibility for them to have been drawn into the chest, but so it was; they had also become gangrenous. The other abdominal viscera appeared healthy. The horse was a very impetuous animal when with the hounds, and was much so the day of the attack: I therefore attribute the rupture of the diaphragm to his plunging about, a part of the intestine having escaped through the opening at the time. There was no symptom of injury to the diaphragm during life. The animal was quiet in his breathing, and no beating was to be heard, which is generally the case when the diaphragm is affected. I have seen many cases of a very large rupture of the diaphragm taking place, and the large intestines have after death been found drawn into the chest: but this case was altogether different.

I think these two cases cannot but be ascribed to accidental causes, and I have long been of opinion that many of the fatal cases of bowel affections are referrible to the freaks and temper of the animal. At the same time I do not mean to deny but that these lesions will sometimes be produced by spasm, &c. There is one circumstance as regards enteritic disorders worthy of note, and that is, if there be found a peculiarly marked symptom of an expression of pain confined to a particular part, and no relief be obtained in six or eight hours, it generally terminates fatally. I know the majority of your readers are perfectly aware of this; but it is so common for

junior members of the profession to slight cases of spasms, and confidently assure their employer that all will shortly be well (an opinion I always avoid giving in cases of that description), that I have thought it as well to name it.

Has neurotomy been tried at the College for ossification of the ligaments of the sessamoid joint, which generally occurs on the outside? Such cases are very common in hunting countries, and, I may add, very troublesome. Sometimes repeated firing over the bony deposit, long rest, blisters and caustics, have all failed, and at others the cautery has succeeded in restoring the horse to soundness, but not to remain so. The first day or so he is hunted, the lameness returns; then another long rest is given, and the same result takes place. In two cases, where there was considerable lameness, I have divided and excised a portion of the metacarpal nerve on the outside of the leg, and the animal immediately afterwards trotted quite free from lameness, and has remained so ever since. I have only done it in two cases, but it has been with such success, that I should like to hear, if possible, of its having been done by others. In many cases firing and subsequently blistering succeeds; in others, and I have seen several, this does not, owing, no doubt, to the ossific deposit causing disease of the synovial membrane, or from the pain continuing during the ossific process. You know I have always been an advocate for neurotomy, and I am of opinion it can be had recourse to with benefit in very many cases of diseased joints.

I really feel ashamed to send you this scribble. Perhaps at some future time I may be able to forward something more interesting. I read with increased pleasure your RECORD, and I see you have lately adverted to the drug croton. My paper will not allow me to state my opinion in full respecting this agent. Suffice it to say, that I think in many cases its good effects are not known or appreciated by us, arising from improper administration.

I remain, dear Sirs,

Your obedient servant.

On Examination of Horses, with proposed Form of Certificate.

By Mr. J. V. Gibson, *M.R.C.V.S.*

My dear Sirs, *Manchester, 7th April,* 1846.

By way of a veterinary *bijou*, I forward you a proof impression of the form of certificate I have found very useful, in this deceitful and wily world, to prevent any forgery or mistake in granting a written word of your opinion of the soundness of a horse. Similar sheets to the amount of about 500 form a book, like a bank check-book; and when the blanks have been filled up, the leaf is divided at the ornamental scroll part, and thus your client and yourself possess a copy of your opinion. The book or volume is labelled on the back, "Certificates of Examination," Book I, and so on to Book II, Vol. &c., as the volumes become used up. By this means you have a ready proof respecting an opinion, and sufficient details to identify any horse in dispute, as well as a clear statement of the owner and purchaser. It may be said that disputes generally arise over unsound horses: though that is in a great measure true, still I condemn the imprudent and offensive method of giving a *printed* form of certificate for unsoundness, as I have seen some veterinary surgeons do. In my opinion, it is quite enough for a man to know, by a temperate and considerate note, that his property is damaged; and what may frequently be remedied in a few weeks ought not to be submitted to permanent print. If you think my plan worth noticing to the profession, I shall feel happy to follow up the correspondence by forwarding to you a few other hints of practical utility, as also some of the fruits of my veterinary experience.

I am your's truly.

To the Editors, &c.

No._____

Date_____

Description_____

_____

Peculiarity_____

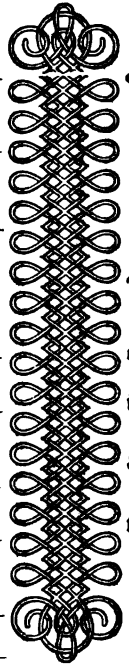
_____

Property of _____

_____

At the request of_____

_____



No. [redacted] Manchester,

I, Joseph Vincent Gibson, Member of the Royal College of Veterinary Surgeons, Depone that I have this day carefully and strictly examined, to the best of my ability, a_____ hands in height and_____ years of age, the property of_____ at the request of_____ And I hereby Certify that___ is Sound.

As witness my hand this_____ day of_____ 18___

Case of Urethral Calculus in a Steer.

By Mr. W. Meginnis, *M.R.C.V.S.*

A twelve months' old steer was observed by his owner to be unwell, being in great pain, and shewing some symptoms of being affected with what is called "gut-tie." He would frequently lie down and kick about, and, when up, walk backwards until he fell, or propped himself against the wall. The pulse was not much increased either in number of beats or force; the animal refused food, and no dung had been lately passed, neither had he been seen to stale, although he was watched. When standing, he would frequently shift his hind legs, as may be observed in cystisis, or retention of urine from any cause. A saline purgative was immediately administered, and plenty of tepid water horned down.

The following morning the animal appeared to be in less pain, but had not eaten any thing. On examination per rectum, the bladder was found to be very much distended, and on passing the fingers along the penis a small calculus could be felt about five inches from the perineum. We at once determined to operate immediately and take it out, there being no time to lose; however, this was easier said than done, as we had neither probe nor catheter with us. An incision, therefore, of five or six inches in length was made in the perineum, and the penis taken out, but the calculus had disappeared, and could not be found; we at once closed the wound by sutures, dressed it, and gave some fever medicine with an enema, and left orders for the whole course of the penis to be well fomented several times during the day, and the enemas to be occasionally repeated.

On the third day the patient seemed much better; he ate a little hay, looked quite lively, and rumination had returned. We hoped, from appearances and the state of the penis, that he had passed the calculus through the natural opening. The bowels not having responded to the medicine, a pint of linseed oil was given, and the fomentations and enemas ordered to be continued.

Fourth day:—The animal is not so well this morning; he is in more pain; still he looks lively, and chews his cud, but is more restless. The owner wished to have him killed, but, as he was

being driven to the butcher's, he seemed to revive again, and ate the grass as he went along, apparently free from pain; he therefore got a respite till next day. Treatment as before ordered.

Fifth day:—The patient is much worse to-day: his eyes are sunk in their orbits, the coat stares, all food is refused, and the constitutional excitement is very great. I have no doubt the bladder has burst, and the urine that has escaped is the cause of all this. He was at once killed, and I wished to have examined him myself, but could not. A small calculus, however, was found by the butcher firmly impacted in the urethra, about four inches from the end of the penis.

Extensive Disease of the Mesenteric and Absorbent Glands of the Abdomen of an aged bay Pony.

By the same.

I had known this pony for four years, during which time he was apparently in good health and spirits. About the beginning of February last he began to lose flesh a little, and did not feed as usual, but still kept at work until the 20th March: from this time he "went back" very fast. His belly had been gradually enlarging for a month or more, and had become as large as a mare's with foal: the loss of flesh off his back and hind quarters was particularly marked, his condition previously having been uncommonly good. He is now off his appetite, and will not eat any thing except a little hay, and not much of that. When first called to see him, he had been taking fever medicines combined with the vegetable tonics and diuretics for a fortnight.

After carefully examining him, I told his owner, a surgeon, that I thought it was a case of ascites, and that the heart was also affected. With this opinion he concurred, and we agreed that but little hope of ultimate cure existed. It was, however, determined to try a bolder course of treatment for a few days; I therefore gave a ball containing ferri sulph. ʒiv, potass. nitras ʒiv, canthar. gr. vi, with gentian and ginger, q. s., and made up with tereb. com. three times a-day. After he had taken six of those balls, he seemed

better, fed a little more, and appeared more lively. An œdematous swelling, which had been gradually forming under his belly for a week past, was now scarified, and a large quantity of serum escaped from the incisions. The balls were given daily till the 2d April, when no marked relief being afforded, the animal was destroyed by giving him an ounce of Scheele's strength hydrocyanic acid. In one minute after he began to breathe somewhat quicker, and in three minutes he reeled and fell, and died in fourteen minutes and a half from the exhibition of the acid.

Sectio Cadaveris.

On laying open the abdomen we perceived about five gallons of serum effused into the cavity, and many of the absorbent glands containing pus. After taking out the stomach and intestines, such a sight presented itself as I should think was never equalled. Almost all the abdominal side of the diaphragm was covered with what appeared to be fungous growths containing pus, and only about half of the liver was to be seen, the other part being hid by the same morbid growths, and all in a state of suppuration. From the mesenteric plexus of glands there was an accumulation of enlarged glands and cysts, which, when taken out and freed from every thing extraneous, weighed nearly half a hundred weight. One very large cyst was pointing in three places, and would have burst in a few days: from this, when opened, two quarts of thick grumous pus escaped. The absorbents throughout the body had become implicated, and the wonder was that the animal had been able to work so long in such a diseased state.

Four Cows poisoned by eating the Refuse of Paint.

By Mr. G. Varnell, *M.R.C.V.S.*

The following cases occurred in the practice of a professional friend, Mr. Copman; and, being convinced that every addition to this division of science is of importance and worth, I have obtained his consent to give publicity to them.

As the symptoms were very similar in all the four cases, the following description of one may be taken as a fair type of the whole.—June 10th, 1845, at 8 o'clock, A.M., the cow was seen

standing in a comatose state, the pupil of the eye dilated, the pulse quick and wiry, the nose and mouth hot and dry, and the prostration of strength extreme, with a tendency to partial paralysis of the extremities. Pressure over the rumen evidently caused acute pain, and frequent but ineffectual attempts to evacuate the contents of the bowels were made: great thirst was also present, but drinking produced much abdominal pain. These symptoms continued gradually to increase in urgency: the animal would totter upon her legs when moved, forcibly thrust her head against the manger or stall; her breathing became stertorous, and in the evening she fell, and was unable to rise. Furious delirium supervened, accompanied with loud bellowing, and followed by convulsions and death.

The treatment adopted consisted in the administration of large doses of sulphate of magnesia acidulated with sulphuric acid, and the application of hot baths to the abdomen by means of rugs. Phosphate of soda was also given; but not the slightest impression could be made on the stomachs or intestines.

Autopsy four hours after death.—The peritoneum covering the stomachs and intestines healthy. On opening the rumen, which was distended with food, its inner coat peeled off as soon as touched, and shewed the muscular coat beneath it intensely inflamed. The mucous tunic of the fourth stomach and intestines exhibited here and there patches of intense inflammation, and the lungs were very much congested. These appearances, combined with the symptoms, led me to infer that the animal had been poisoned; and, on closely examining the contents of the rumen, I observed a number of irregularly shaped black masses intimately commixed with the ingesta, and on breaking several of them I found they consisted of paint, putty, &c. By washing the contents of the rumen in buckets of water, I collected nearly half a pound of these masses. Each mass had a deep brown polished surface, and several pieces of bone which were found in the first stomach had a tint of the same colour.

I should have stated that all the cows partook of the poison at least forty-eight hours before any urgent symptoms were observed. I should also state that I attended the last two only. The others had been treated by "three wise men of the East," who all agreed that the cows were raving mad; and I have no doubt, had I not detected the cause, several more of the cattle on

the farm would have been poisoned, as we found nearly half a cwt. of refuse paint on the bank of the meadow in which they had been pastured. It consisted of the general refuse matter of the shop of an extensive agricultural implement-maker. Two-thirds of the colour were made up of the red oxide of lead.

Thus far the account by Mr. Copman. I may be permitted to add, that some cases of a similar nature came under my own notice some years since, while living in America. Several cows were poisoned by eating stable manure that had been used in the manufacture of white lead. In this process the manure had become impregnated with the vaporous carbonate of lead, which seems to prove fatal much sooner than the preparation of lead in the cases mentioned by Mr. Copman. One case in particular that I was called upon to attend I remember. It was a cow belonging to a gentleman of the name of Wilkinson, at that time the Ambassador to Russia. She was turned out in the morning for a little exercise on some waste land outside the town, contiguous to which was this white lead manufactory. The cow found access to this manure, and ate ravenously of it, as was observed by some of the men. At noon of the same day she was taken ill, and continued to get worse. In the evening I was sent for, and on my arrival I found the cow lying on her side, foaming at the mouth, and her tongue protruded. She was bellowing, delirious, and affected with partial paralysis. At ten o'clock the same evening she died. The *post-mortem* appearances were precisely similar to those described by Mr. Copman, with the exception that the inflammation of the intestines was more diffused.

Case of Softening of the Heart of a Mare, with Dilatation of its Walls, Rupture of the Right Ventricle, and Adhesion of the Pericardial Sac.

By Mr. William H. Kent.

On the ——— I was desired by Mr. ——— to look at his bay mare. She was at the time under the care of a practitioner who was not a member of the profession. I found her standing with her fore legs wide apart; the pulse full, but very slow, and

her breathing short and laboured. The visible mucous membranes were blanched, the eye was dull and sunken, and the extremities œdematous and very cold. My predecessor had blistered her sides and chest, inserted a seton in the throat, and bandaged the legs with calico bandages as tight as possible, to prevent, as he told the groom, the water getting into the feet. Whatever his blistering compound may have been I know not, but it certainly had exceeded its duty, the sides being, literally speaking, raw. From his mode of bandaging I took a lesson, since, had all four legs been fractured, they could not have been tighter bandaged. Poor beast! it was as if it had been in the stocks, it being altogether impossible for her to lie down, had she felt inclined. I at first imagined that I had a case of pneumonitis in the latter stage; but the pulse being very full, I felt myself warranted in the abstraction of a little blood, and this evidently relieved my patient. Strange to say, this had not been had recourse to before. I ordered friction and loose flannel bandages to the legs; also applied a little lead liniment to the sides. Upon auscultating the chest, I heard a most peculiar noise in the vicinity of the heart: it resembled that emitted from a bladder if shaken when not quite full of water. The respiratory murmur was increased, and gave a kind of crackling sound. On the following day, upon visiting my patient, I found the pulse not more than four-and-twenty in the minute, and intermittent, and the respiration quicker and more laborious. I again auscultated the chest, and still heard the same noise. From this I inferred that we had effusion into the cavity of the chest, and under this impression performed the operation of paracentesis-thoracis. However, to my great surprise and disappointment, no fluid followed the withdrawal of the trochar. I now had the animal gently walked out, when, on applying my ear to the side, I found the heart's action only a very little increased, but the respiration quickly became stertorous. I confess, taking all the symptoms into consideration, I was puzzled what to make of the case. The gurgling noise I now thought might arise from hydrops-pericardii. The fæces being at this time rather harder than desirable, I gave magnes. sulp. ʒv. in haustus, and left her until the following day. Being occupied, I did not arrive until the evening of the next day, when the groom told me that in the morning the animal

seemed very restless, and he gave her about half a pailful of water: in about ten minutes after she laid down, then jumped up again suddenly, and when up constantly tossed her head up and down violently. He thought it was an attack of colic, and immediately ran to his friend, the farrier, for a "drink." However, when he returned to the stable the mare was dead.

The owner being surprised at this sudden termination, was naturally anxious to know the cause of death. Being pressed to give an opinion, I ventured to say that I thought the lungs would be found involved, but that the heart, or its covering membrane, would be the principal seat of the disease. That I was not much in error the following autopsy will shew.

Autopsy.—The right ventricle was to an amazing degree dilated, and the wall scarcely more than three-eighths of an inch thick. In fact, so much was this ventricle enlarged, that it quite altered the form of the heart. The whole structure of the heart was softened, and the lungs congested, but presenting no appearance of inflammation. However, on cutting into them, in places I found clots of coagulated blood, which, upon section, presented a beautiful scarlet appearance. The auricles were both peculiarly fatty in their structure, and the musculi-pectinati of the right auricle in parts seemed to be wholly converted into adipose matter. The tricuspid valves were much thickened. The pericardium was adherent to the heart. This led me to infer that the disease had existed for some time; since pericarditis often terminates in adhesion of the pericardium to the heart, and, for months, the animal may shew no alarming symptoms. I therefore inquired of her owner if she had been attacked with any serious illness since he had her. Upon which he informed me that last year he rode her one day a regular burster after the hounds, and that the following day she was very unwell. The farrier was sent for, who said it was a case of diseased lungs, and, as such, apparently successfully treated her. Since that time she had done only very slow road work, and the only illness she has subsequently evinced was one day while he was riding her to Blackheath, when she suddenly stopped, and fell as if shot. In a few minutes, however, she arose, and was ridden gently home again. This, the farrier said, was megrims, and he bled her for it, and she again got well.

This statement at once convinced me that the over-exertion of that day's hunting had brought on inflammation of the general structure of the heart. At the apex of the right ventricle, which had become quite rounded, I found a triangular ragged opening, or rupture, extending of course through the pericardial sac, for, as I have before stated, this membrane was in close approximation with the organ; and this, doubtlesaly, was the immediate cause of death.

On some of the Operations performed on Horses in America.

By Mr. Henry Williams.

(Extract from a Letter addressed to Professor Sewell.)

London, Canada West, Feb. 17, 1846.

* * * * * *

I wish to communicate to you a little of my American practice. They have an operation in the United States, termed pricking, which is a substitute for nicking, and which, I think, is far preferable. Never having seen it practised in England, I will explain it. The horse to be operated on is placed in a trevis or stocks, and the hair of the tail is plaited back. You use a strong penknife, about two inches long, rather concave in shape, with a part filed out between the blade and the handle in the shape of an arch, so as not to cut. The tail being held well up by an assistant, you very carefully insert the knife, till you come to the arch in it, between the depressor muscle and the coccygeal bones; then divide the muscle, but be careful not to cut the skin. You next serve the opposite side in the same manner. If I want to make a horse carry his tail very arched, I make four incisions; if not, two are sufficient. I have operated on a great number, and they have all carried splendid tails. I usually send them to exercise on the second day. You pully the horse as in nicking. The advantage it has over nicking is, that, the skin not being cut, the air is prevented from getting to the wound, and the animals are well and fit for service in a fortnight: in fact, many men here will not give them more than three or four days' rest, and then work

them, putting them in pullies when they come in. The first incision ought to be made two or three inches from the body.

The common mode they adopt for castrating horses here is the French method of Hurtrel d'Arboval, with the wooden clams, and I believe it is the best that can be practised. I find less inflammation to ensue than from any other plan, and the horses are generally well in a week. Indeed, many of the farmers castrate their horses themselves in this way: the only bad result I have seen is when the operation has been performed by ignorant men, owing to their not putting the clams well above the epididymis, but allowed them to press on it, when a cartilaginous growth has ensued. I have had three cases of this kind brought to me; two old horses and one yearling. Two did well, one of the old horses and the young one, and the other died under the operation for its removal from hæmorrhage. From one horse I took a cartilaginous mass weighing 5 lbs.; from the young one it weighed 3 lbs. 10 oz., and from that which died it weighed 9 lbs., being supplied with blood from the spermatic vein and artery.

Horses attacked with inflammatory diseases, if not promptly treated, die in a much shorter time than in England. I have known them die from inflammation of the lungs in four hours, and from inflammation of the bowels in one. When in practice in New York I had a successful case of paracentesis thoracis. I took two bucketsful of serum from one side of the chest, and one from the other, and, by afterwards giving gentian and the sulphate of iron three times a-day, saved my patient. She perfectly recovered, and got quite fat. It was said to be the first case of the kind known in the States.

I remain,

Your humble servant.

Singular Case of a Horse refusing to eat Oats.

By Mr. James King.

Sir, *Havant, Hants, 17th February*, 1846.

I am the owner of a horse which has so extraordinary a peculiarity, that I have thought it might excite the attention of the members of the veterinary profession. Since last June, the animal

has refused to eat oats, or if it did eat any, it usually required six or eight hours to consume one feed, and latterly it has entirely rejected them. For a long time I gave him four and often five feeds a-day, together with beans: the dislike to oats first manifested itself in picking out the beans one by one, and leaving the oats. I then abstracted the beans, but still the oats remained unconsumed. I subsequently tried ground oats mixed with bran, when it would eat every particle of the bran and leave the oats. I next mixed the oats with Swede turnips, most minutely chopped, and it ate the turnips but still refused the oats. This unconquerable aversion to oats has now continued for about nine months; and although I have consulted two or three veterinary surgeons and numerous grooms and stablemen respecting it, not one has ever heard of such a case, or can in any way account for it. The horse has had physic given to it, but to no purpose. It is about nine years old, and has for the last two years and a half been regularly worked. The animal appears quite well, and will eat hay, beans, bran, and, in short, any thing but oats.

I am, Sir,
Your's, &c.

To Professor Sewell.

To the Editors of THE VETERINARY RECORD.

Gentlemen, *Rolls Buildings, May 23d,* 1846.

WITH this I send a copy of the Second Annual Report for insertion in the VETERINARY RECORD.

I am, Gentlemen,
Your obedient servant,
E. N. GABRIEL.

SECOND REPORT OF THE COUNCIL OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

To the Members of the Profession.

THE Council of the ROYAL COLLEGE OF VETERINARY SURGEONS have the honour of presenting this their second annual Report to the members of the profession assembled this day under their Royal

Charter of Incorporation, a Charter granted by the gracious condescension of Her Majesty, which has emancipated us from the grade of a nameless and unrecognised avocation, and enabled us to take a position among not only the useful and recognised, but also the liberal and scientific professions of the age; which has given us a name—may it soon be said both "a local habitation and a name"—and contains in its provisions such simplicity of arrangement and liberality of views that it extracts from every thinking mind the highest commendation.

Your Council, impressed with the correctness of these views, conceive they are acting most cordially up to their spirit by presenting, on this the day of our annual general meeting, a Report of their proceedings to their professional brethren and constituents.

Your Secretary states, that he has been indirectly informed—for he has received no official communication to that effect—that an error of a single word was made by him in his Report to the Council of the proceedings of the Board of Examiners in Edinburgh in 1845, and embodied in the first annual Report: that error is stated to have been the misplacement of the word "taught" instead of "examined," in a protest made by Professor Dick during those proceedings: he, the Secretary, adds, that it is just possible such a mistake might have been made, and, if so, regrets the fact. This statement is received without further remark by your Council.

More matured consideration and the experience of the last year have satisfied your Council that the system of education and examination sanctioned by them is one that is working and will eventually work well for the profession, and they beg to express their entire approbation of, and to return their thanks to, the members of the Board of Examiners, both of the London and Edinburgh divisions, for their valuable services in this matter; as also to the Professors for their assistance therein; and to acknowledge the courteous and deferential behaviour of those who have submitted themselves for examination. Your Council regret having lost the valuable services of E. Stanley, Esq., the late Chairman of the Board: his various other professional avocations occupying so fully his time having induced him to tender his resignation; fortunately, however, the vacancy has been most ably filled by the

election of Dr. George Babington; the name alone—so endeared to every one connected with veterinary science—guarantees how well the important and onerous duties connected with it will be sustained.

It is a source of much regret to your Council, that they cannot, as yet, announce the existence of that perfect unanimity and harmony that are so essential for the well-being and advancement of veterinary science. During the past year, attempts have been made by gentlemen connected with the veterinary schools and agricultural societies, to alter some of the provisions of the Charter, which your Council deemed inconsistent with the integrity of that document, as well as contrary to the interest of the profession.

Gentlemen, the members of your Council have no party spirit to misguide them—no personal feeling to prejudice them—no interest whatever either in opposing or acceding to the wishes of either of your recognised schools: they have the welfare of their profession at heart, its advancement and improvement in view, and the proficiency and honour of its members in constant remembrance. Should they shrink from preserving these inestimable objects, they would lower themselves in their own estimation as well as in yours: should they in standing by them, and as far as possible acting up to them, conduce to their being ultimately carried out, they will have the reward of their own feelings, and, they doubt not, of your cordial co-operation and approbation.

But not only has the opposition raised been a source of great regret to your Council, but it has been and still is operating most detrimentally to the interest of every member of the profession; for *one* great object in view in obtaining the Royal Charter of Incorporation was, its being an essential, and indeed an indispensable, preliminary to the obtaining an Act of Parliament to remove the liabilities of being called on to serve certain parochial and other offices, which make great and injurious demands on our time and attention, and an application for these exemptions would, your Council have every reason to believe, be attended with success; but how, with common consistency, can it be made, while the Government is importuned for certain privileges on the one hand and for certain powers on the other? Such disunion would at once constitute a plea for the rejection of even the most reasonable claims, and thus all suffer from the importunities of the

few. Let us hope the time will come when, hand in hand, one great effort will be made to ameliorate and improve the body at large!

Arising out of these conflicting views the following correspondence and result have taken place :—

Sir, *Whitehall, Aug. 18th, 1845.*

I AM directed by Secretary Sir James Graham to acquaint you, that he has received from various quarters, and from parties who feel a deep interest in the advancement of veterinary science, applications for the grant of a Charter of Incorporation differing, in some respects, from that which was lately granted by Her Majesty to you and certain other members of the veterinary profession.

Sir James Graham is disposed to attach weight to the representations which have been made to him on this subject; but it appears to him that modifications might be introduced into the existing Charter which would attain the objects sought by the parties making these representations, and which would, indeed, as Sir James Graham believes, render the Charter itself more satisfactory to the profession at large. Before he takes any steps, therefore, in this matter, he will be glad to learn from you what may be the views which are entertained with regard to it by those to whom the existing Charter has been granted.

Sir James Graham does not think it necessary at the present moment to enter into any detail of the specific alterations which have been suggested to him; but he will be prepared on a future occasion to communicate them to the Royal College of Veterinary Surgeons, in the event of their concurring with him in the opinion that, under the circumstances which he has stated, it is desirable that the Charter possessed by them should undergo revision.

I am, Sir,

Your obedient servant,

Mr. Thomas Turner, H. MANNERS SUTTON.
Veterinary Surgeon, 311, *Regent Street.*

To the Right Hon. Sir James Graham, Bart., Her Majesty's Principal Secretary of State for the Home Department.

Sir James,

I HAVE the honour to acquaint you that a meeting of the Council of the Royal College of Veterinary Surgeons was held at the Imperial Hotel, Covent-Garden, on Thursday the 11th inst., at which it was unanimously agreed as follows:—

"That the views entertained by the Council are, that the present Charter is all that the general body of the profession either wish or require, and, therefore, they are most desirous to retain it in all its present integrity."

These views are founded on the facts, that not a single complaint has been made against it by any one member of the profession unconnected with the Colleges of London and Edinburgh, and that the objections raised by the parties connected with these establishments have not been grounded on the improvement and advancement of the profession at large.

They would also adduce the important proof of the approbation of the body of the profession, given at the Annual General Meeting, in the re-election of five out of six of the retiring members of the Council.

Under these circumstances the Council would take the liberty to observe, that they cannot conceive any points of view in which the Charter with which they have been honoured can require revision.

But at the same time, wishing to treat with the greatest respect the high source from whence these intimations have emanated, they will be prepared to give to any suggestions, when made known, that grave and mature consideration which their importance will doubtless demand.

An anxious duty of the Council has been to prepare a code of bye-laws tending to the improved education and future well-being of the members of the body politic and corporate: they have done this to the best of their ability; but they are well aware that alterations and amendments may still be necessary to render them perfect, and any modications or revisions that may be suggested, having these objects in view, will receive their undivided attention.

I have the honour to be,

Sir James,

Your most obedient servant,

311, *Regent Street*, THOMAS TURNER.
Sept. 12*th*, 1845.

Sir, *Whitehall*, 11*th Nov.* 1845.

I AM directed by Secretary Sir James Graham to acknowledge the receipt of your letter of the 12th September, in which you state that the Council of the Royal College of Veterinary Surgeons is prepared to receive and maturely consider any suggestions which may be laid

before them by the Secretary of State for the alteration of their Charter.

In proposing a revision of the Charter Sir James Graham is influenced by the same desire for the improvement of the veterinary profession by which he was guided in advising Her Majesty to grant it.

Notwithstanding the arguments adduced by you in proof of the general acquiescence of the profession in the provisions of the Charter as now constituted, Sir James Graham has received intimations that this satisfaction is not shared by several important bodies deeply interested in the advancement of your profession. To some of these institutions are mainly due those improvements in the knowledge and skill of veterinary surgeons which entitled you to ask for recognition by the Crown as professing a liberal science; and from that and other considerations they possess claims which it is impossible to overlook. It is anxiously desired by Sir James Graham, that means should be found of interesting them in the progress of your College, rather than that they should continue to urge hostile pretensions, which cannot but be detrimental to your prosperity, and might possibly lead to the establishment of a rival institution, which would weaken your influence and utility as much as their union with your body would impart to it strength and dignity.

The main change which Sir James Graham is desirous of recommending in your Charter would be the reconstitution of your Council, so that it should consist partly of practising members of the profession, partly of nominees of the principal educating veterinary colleges and agricultural societies of the united kingdom.

With a body so constituted some great officers of State—such as the Master of the Horse, the Master of the Buckhounds, and some of the principal medical and surgical officers of Her Majesty's forces—might properly be associated: the propriety of such an addition is obvious, on considering how important veterinary science is to the efficiency of Her Majesty's cavalry.

It is the opinion of Sir James Graham, that by this alteration the opposition of the influential bodies to which he has already alluded might be obviated, and, at the same time, that additional dignity would be reflected on the whole profession.

A body constituted on such a basis as I have sketched would have the character of a national institution, and it is natural to expect that its diplomas would be everywhere received with more consideration than when proceeding from a body exclusively composed of practising veterinary surgeons, as now established, however respectable. I shall be ready, on the part of Sir James Graham, to receive a deputation

from your Council for the purpose of considering the steps proper to be taken, after you have fully weighed this proposition in all its bearings, and the consequences of its adoption or rejection by your body.

I am, Sir,

Your obedient servant,

H. MANNERS SUTTON.

T. Turner, Esq., Regent Street.

In consequence of the intimation thus conveyed, that Mr. Manners Sutton would be prepared to receive a deputation from your Council, your President, Messrs. Percivall, Goodwin, Field, and the Secretary, were deputed to wait on that gentleman at any time that he might appoint; and, accordingly, the interview took place at the Home Office on Monday, Nov. 24, 1845: its result is contained in the following report to your Council:—

"Your President has to report, that an interview has taken place with Mr. Manners Sutton, who at the commencement remarked, that he had requested it upon the understanding that the Council had agreed to certain alterations being made in the Charter. The President, however, begged to remind Mr. Manners Sutton that no such acquiescence had been given. Upon which that gentleman declined entering into any particulars of the views of Sir James Graham, and the interview closed.

"THOS. TURNER, *President*,
on behalf of the Deputation."

You will at once perceive that, should the suggestions of Sir J. Graham, or any analogous thereto, be entertained, the principles of your Charter would be undermined, and its integrity destroyed; for, instead of a Council elected by yourselves, chosen from your own body, and therefore intimately acquainted with the wants and interests of the profession, the whole affair would be under the control of the government; your elective franchise would be lost, and professional talent and character would be undervalued.

But it would appear that diplomas of more weight are desirable than those given by a Board of Examiners exclusively composed of "practising veterinary surgeons, however respectable;" the same remark, then, would apply to diplomas granted by the Royal

College of Physicians and by the Royal College of Surgeons, as well as to the certificates given by the legal bodies; for in either of these cases we find no higher authorities had recourse to than the practising members of the respective professions; but your Board of Examiners is not so constituted: for it is felt but too keenly—would that the feeling was met with in quarters where it is most needed—that veterinary science has not yet taken, although it is now taking, its proper position in public opinion, and therefore the aid of science and medicine has been had recourse to. The name of Professor Brande, your Council presume, is not altogether unknown in the scientific world—the names of Dr. George Babington, Bransby Cooper, and Robert Liston, may, it is believed, be met with in the records of those contributing to and ornamenting the medical and surgical professions; and while combined with these are the most scientific and popular veterinary authors of the age, William Percivall, James Turner, and William Field, your Examining Board may correct the error of its consisting only of practising veterinary surgeons.

You will observe, that in the reply of the Council a strong feeling is manifested to meet the wishes of all parties, as far as certain alterations in the Bye-Laws of the College can be made to do so: and a notice of proposed alterations has actually been suspended for months with this object in view. It must be most clearly understood, however, that the proposed alterations are delayed only in order to learn the wishes of the opposing parties, and to ascertain how far it is possible consistently to meet them.

But the Funds of the College—the mainstay of its welfare, and support, without which no institution can be maintained, no great public good can be carried out—this is, indeed, a sore topic for your Council to touch on. Had it not been for the liberality of a few, and among those an enthusiastic admirer but not a member of our profession, Captain Randall, the necessary expenses up to the present time could not have been defrayed. Numbers of veterinary surgeons, and some of them, too, standing high and holding public appointments, whose names ought to be foremost in any onward progress of our professional condition, have not given one farthing towards even defraying the expenses of obtaining the Charter itself, much less towards enabling that Charter to be worked out in all its efficiency. Why are we

assembled *here* to-day? Why have we not met in our own institution, or at any rate in offices bearing our own name? The answer is too evident—the state of our funds. And why is this? Your Council cannot believe that it is entirely owing to professional depression, for that, though, alas! too severely, is but partially felt. They will not believe it is from mere apathy, for that would be all but a libellous creed; the fact, nevertheless, is so, and your Council would fain hope that the combined exertions of this day may strike out some eligible arrangement for the removal of this disgraceful stigma from our body.

In conclusion, although your Council regret they have not been able to make any great advancement in the paths either of improvement or conciliation, still they have the proud satisfaction of having thus far successfully resisted all the efforts made—and they have not been few nor far between—to deteriorate the Charter with which our most gracious Sovereign has honoured us: to continue to do so will be one great object of their unremitting attention: another—in which they will not yet give up the hope of being seconded by every branch of the profession—will be, to gain those immunities to which we are fairly entitled, and at the same time to prove, by every effort in education, in practice, and unsullied general behaviour, that we are not altogether unworthy of them.

Researches on Rabies.

Observations and Experience of Dr. Eckel, *Director of the Imperial Institute of Vienna.*

[From the "Journal Vétérinaire et Agricole de la Belgique."]

In the February number for 1845 of the "Journal Vétérinaire et Agricola de Belgique," we stated that the result of the observations made by Dr. Eckel on this disease was, that only one case of rabies canina occurred at Vienna, in Austria, in the year 1834 (a year of great drought), and that in 1841 the enormous number of 141 occurred.

According to M. Eckel, the acute form of rabies predominated, for out of these one hundred and forty-one cases, eighty were

affected with furious or raging rabies, thirty-one by the taciturn, and thirty died during the violent paroxysms. The acute form was, therefore, to the taciturn as 2⅔ to 1.

The greater number of cases occurred in the months of February and May, in each of these months twenty-one cases being observed; while in April, June, and January, there were only eighteen, seventeen, and sixteen cases respectively; and five and four in September, November, and December.

In the majority of cases the disease shewed itself during the fourth week in the month: a few cases were observed during the third week, which in regard to number was as 1 to 1⅓. The malady almost always manifested itself at the periods of the new and full moon, that is, during the cardinal phases of this satellite, when either its light was reflected over the whole earth or it received none at all, this affection being but rarely observed during the quarters of the moon.

The greatest number known to occur simultaneously or in one day is four. These occurred on the 11th of January and 10th of February. Twice, three cases occurred in one day; twenty-three times, two cases; and eighty-one times, one case a day.

The disease principally attacked dogs belonging to persons in easy circumstances. Thus, twenty-five belonged to noblemen, sixteen to public functionaries, ten to artists, and fifteen to persons unknown. In general, it was more frequently met with in mongrel-bred dogs than in the better breed. The attacks were in the following proportions:—

Small English breed	12½ per cent.
Spaniel	6½ ,,
Barbet	5 ,,
Wolf-dog	4⅔ ,,
Danish or tiger-dog and mastiff	2⅔ ,,
Poodle and terrier	2½ ,,
Butcher's dog	1⅔ ,,
Greyhound and sheep-dog	0⅔ ,,

Among the one hundred and forty-one cases referred to, one hundred and twenty-six were males, and fifteen females; making the proportion of dogs to that of bitches as 8½ to 1. No instance was known among castrated dogs. The age of those attacked by this terrible malady was from two to seven years; two cases only

being observed in animals under twelve months' old, and only one case in a dog more than seven years old. All were what are called fancy dogs; consequently they were well fed and attended to, having little or no exercise, &c. The disease never attacked the watch-dog, nor those employed in labour.

Invasion and Progress of the Malady.

According to Dr. Eckel, nothing is less clearly marked, or more uncertain, than both the commencement and the termination of rabies. As to its symptomatology, he does not agree with MM. Meyer, Greve, Waerdinger, Locher, Hertwig, and Printz, authors who have with himself observed and described this disease at different times.

The malady can only be well defined during the period of its development, and that by three characteristic phenomena:—

1. The accession of fury, with inclination to bite.
2. The change in the voice, and the bark.
3. Paralysis of the posterior maxillary jaw.

These three symptoms are constant and pathognomonic. The invasion can only be perceived by the master of the dog, or one who is intimately acquainted with the natural disposition and habits of the animal, and who furthermore submits him to a careful examination. In the room the disease shews itself by the animal exhibiting a great deal of anxiety; he gets up and lies down again—seems uneasy—often forsakes his accustomed place without any known cause—his habits are perverted—one moment he will obey the voice of his master with astonishing punctuality, the next moment he pays not the slightest attention to him, or if he does, it is with repugnance, and after only receiving punishment, for which he seems not to care—he keeps constantly near the door—he tries to get out, without having any occasion to satisfy his natural wants. The urinary and fæcal evacuations are scanty; to which may be added, the loathing of food, in particular animal food, and a desire to drink cold water, or cold milk, without however partaking of much at a time.

Out of doors he follows his master with reluctance, and without the least sign of satisfaction or pleasure. Contrary to his usual custom, he walks behind him, and his attention is only excited when he meets with other dogs, cats, or birds, which he tries to

reach, and even to bite. He picks up and swallows all sorts of filth and rubbish, such as the excrements of other animals, dirt, old leather, bits of cloth, &c.

These symptoms are aggravated on the second, or at the latest on the third day, when the appetite becomes entirely lost—the animal, when at liberty, furtively forsakes his home, becomes errant, bites all animals it meets with in its way, and even man, if obstructed or tormented by him. After several hours' running he returns to his home exhausted and harassed, throws himself in some obscure corner, and allows himself with difficulty to be approached even by his master. It becomes, then, most dangerous to use constraint, but with kind usage he may be made to obey. If in this state he is not watched, he again runs away, and never returns; if, on the contrary, he is carefully watched, he may yet continue to follow his master, but bites all dogs, cats, or other animals in his way, without allowing himself to be intimidated by the voice of his master; after which he will again return to him, and allow himself patiently to be muzzled by him, and will even follow him, if kindly treated. In this manner, observes Dr. Eckel, many dogs attacked with the acute form of rabies have been brought to the Imperial Veterinary Institute of Vienna by their masters, even without muzzle or chain. These dogs are very quiet if treated with kindness; but as soon as they are shut up in their cages, and see other dogs, or even hear them, the accession of rage takes place, and they furiously gnaw their litter, the sides, floor, iron bars, &c., of the cage; and when living animals, such as small dogs, pigs, or sheep, are brought near them, their fury for biting redoubles; their carnivorous instinct then reaches its acme—they put themselves in the position of the tiger ready to spring on its victim. These paroxysms occur several times in the day, even without any apparent existing causes. After each paroxysm dogs will generally gladly lap some clean water, but deglutition is difficult; they either lie down or sit on their haunches, and make themselves heard by a frequent bark, the muzzle being turned upwards. This bark is peculiar and characteristic—*sui generis*. It is something between the ordinary bark of the dog and the howl. In the beginning the voice is sonorous and metallic, afterwards it becomes hoarse. In some cases a slight trembling is perceived, which, according to M.

Eckel, never terminates in convulsions, but in a sort of apparent sleep, during which the dogs never cease biting any object presented to them. The desire to bite subsists even after the access of furor has subsided.

On the second day the paroxysms are at greater intervals, less frequent, and of shorter duration. During the intervals the dog remains in a recumbent posture: if he attempts to get up, the posterior extremities seem weak and vacillating—the posterior maxilla drops, and his mouth is half open—drowsiness predominates—the animal expresses no longer a desire for water—he lies quietly with his head on his belly—the sonorous metallic bark is no longer heard, but instead of it a short, hoarse howl is from time to time audible—the external objects which excited him before lose their effect; and it is with difficulty that the animal is made to rise. In ordinary cases this general debility passes at the third, or the latest the fourth, day, into a complete state of paralysis. Then the animal is constantly lying on one side—the head and legs are extended—the mouth and eyes half open, the latter are fixed, the pupil *immobile* and dilated, the cornea dusky and shrunk. Sometimes a fœtid diarrhœa exists, the alvine execretion being of a greyish or blackish colour, and voided involuntarily. The respiration now becomes imperceptible, and in general the animal dies quietly and without a struggle.

Besides these characteristic symptoms of true rabies, there are several others which present themselves to the observer, but which are more or less common to many other diseases incidental to dogs. These phenomena might, with reference to their symptomatologic importance, be classed in the following order:—

a. From the beginning the appetite becomes morbid—sometimes it is entirely lost, diminished, or perverted; then the animal swallows all sorts of filth and rubbish of the most indigestible nature; but when inanition is at hand, this perversion of the appetite ceases.

b. Thirst very intense during the periods of invasion and increase. However, the animal never takes large quantities of liquid at once; he only drinks at intervals, and swallows with difficulty.

c. During the periods of invasion and increase, defecation and the secretion of urine are suppressed. When paralysis

of the posterior part of the body sets in, the fæces become liquid, fetid, and are voided involuntarily.

d. The cutaneous, buccal, and pulmonary transpirations are always and in every case suppressed. The peculiar odour of the perspiration, so strong in the dog, is not perceptible; and even after the strongest attack, says Dr. Eckel, never have we observed a dog to lick himself, or seen any moisture on the tongue or mouth of a mad dog; on the contrary, the nose, mouth, tongue, and teeth, are always dry in a dog attacked by true rabies.

e. Fever, in the strictly correct acceptation of the word, does not exist; for there are not the rigors, nor the staring coat, which denote the access of fever; neither the injection of the vessels of the mucous membranes, nor the difficulty of respiration. According to M. Printz, the acceleration of the pulse and the beatings of the heart are manifested in true rabies. M. Eckel, however, has not observed this in the dog, nor in the sheep and pig, when attacked by this disease. Neither is the pulsation nor the cardiac action in all cases increased in the beginning or at the termination of the malady: sometimes they are rather accelerated and irregular, at others normal and regular; and the same may be said of the respiration. Sheep and swine never shew symptoms of fever, although great thirst always exists.

f. All the senses, with the exception of that of feeling, seem to be much increased during the periods of invasion and increase, and that in such a manner that consciousness subsists, without diminution, even to within a short time before death; and it is only when the general state of debility and inanition are manifested that the senses become dull.

g. The instinct at the onset seems to be more acute and refined, although changed and perverted: the eye, that mirror of the soul, announces from the very beginning profuse languor; and the expression of the physiognomy is anxious, and even horrid.

Taciturn Rabies.

The most marked symptoms of this form of the disease are the constant dropping of the posterior maxilla, caused by paralysis of the inferior muscles; impossibility to deglutate solids or liquids; profuse discharge of saliva and mucus from the mouth; incapa-

bility of biting surrounding objects; provocation causes only a partial and incomplete closing of the jaws; attitude quiet; the animal barks seldom—the voice changed from the first, and he does not attempt to leave the domicile of his master. At the termination of the disease the paralysis becomes general. The other symptoms are similar to those of furious rabies.

Duration and Termination of this Malady.

Rabies is, in the highest degree, an acute and fatal malady. It is proved by Dr. Eckel's observations that its duration, counting from the *debût*, never exceeds six days. In the one hundred and forty-one cases he noticed in the year 1841, the duration was two days for forty-two cases; three days for thirty-one cases; one day for fifteen cases; four days for twelve cases; five days for four cases; six days for two cases; sixteen hours for one case; twelve hours for one case; and four hours one case.

The last four cases were all suffering from true rabies. The cases which lasted six days were cases of taciturn rabies. The mean duration is accordingly fifty-five hours, or two and one-third days.

Sectio Cadaveris.—Dr. Eckel asserts that he made the autopsia of every rabid dog that died at the Institute. The lesions observed by him are similar to those recorded by MM. Locher of Zurich, and Printz of Dresden. M. Eckel says that, in dogs which died rabid, the cadaveric stiffness and coldness consequent on dissolution did not take place so soon after death as in other diseases. The body is always found lying on one side or the other, never on the back or belly. The head and neck are extended, never being convulsively drawn up or down. The limbs, in general, are in the natural position. In the majority, the body is emaciated, the flanks tucked up; the coat is smooth, and in ordinary cases preserves its lustre; the eyes are half open, and sunk in their orbit. In many cases, the inner canthus is encrusted with dry mucus: the albuginea is of a pale blue colour; the cornea has lost its transparency, and is depressed; the pupils are dilated; the nose, muzzle, and lips, are dry and rarely soiled with mucus or blood; the jaws are firmly closed; the tongue pinched between

them on one side or the other; the anus closed; the tail soft and pliable; the external organs of generation not changed. In taking off the skin the subcutaneous veins are found gorged with dark-coloured blood; the muscles are soft, and of a deep red colour; and the salivary glands, parotid and maxillary, are normal.

Interior.—The buccal and nasal mucous membranes are dry, and of a pale blue colour; the tongue is smooth, and covered with traces of blood, but never exhibiting a vesicule or erosion; the frenum of the tongue is not changed; the mucous membrane of the larynx and bronchi is very pale; the anterior surface of the epiglottis is sometimes streaked with blood; the thyroid glands are of a blueish dark red colour, the veins being much injected. The œsophagus in general is normal in appearance; its mucous membrane, however, has sometimes a yellow bile-like tinge, and is occasionally streaked with blood.

Thoracic Cavity.—Pleuræ normal; serous effusion never exists; lungs shrunk and of a pale red colour in young animals, but never gorged with blood; the heart generally distended, pale, and flabby; coronary artery and the openings of the vena cava engorged with dark-coloured blood; auricles and ventricles filled with the like; never any coagulum; the serous membrane of the cavities of the heart and the valves normal. The nervous system of the thoracic cavity presents no alteration.

Abdominal Cavity.—On opening the abdomen any escape of gas is never observed, neither is there any fetid odour. The bowels are not distended; no traces of effusion can be perceived; the peritoneal membrane is in its normal state, and the mesentery is deprived of its adipose tissue. In dogs that die affected with true or acute rabies, the stomach is found distended and hard, and covered externally with dark red-coloured spots, the intervals between which are of a leaden hue. The viscus itself contains a solid hardened mass of a greyish or black colour: sometimes it has a yellowish greenish aspect, and not unfrequently it is bloody. It consists of the hairs of dogs and other animals; hay, straw, pieces of linen, cloth, or leather, small stones, dirt, &c. &c. All these substances have been swallowed by the animal a short time before its death. Sometimes the quantity is small, but mixed with much bile and mucus. On the other hand, the stomach of the dog

which dies of taciturn or dumb madness, is shrunken and seldom contains any ingesta, and never any of the foregoing description. The œsophageal and pyloric orifices are constricted.

In one case of true rabies, M. Eckel found a large quantity of black blood in the stomach. In several other cases, a large quantity of bile, and mucus of a dark green colour. The mucous membrane of the stomach is neither infiltrated nor thickened, but is studded, principally towards the pyloric region, with spots of a reddish copper colour, sometimes large, at other times circumscribed and small. In six cases, M. Eckel found dark spots, varying in size from that of a pea to nearly half an inch, between the folds of the mucous membrane. The spots or specks were of a circular shape, except when prominent, and covered with epithelium: when prominent, they were oval; but when the epithelium was removed, they appeared to be deep, and covered with a black striated pigment. In these cases the membrane is not much inflamed, the spots having more the appearance of ecchymosis. The external surface of the duodenum, in ordinary cases, is also covered with dark red spots. Its mucous membrane is similar in appearance to that of the stomach, with the exception of the black spots, which are never found on the lining of the duodenum. The jejunum and large intestines are found empty, and never distended with gas: externally, their colour is that of lead. The liver is always seen enlarged, heavy, and sometimes gorged with dark blood; in which case its colour is a dark blue. At other times it appears as if filled with bile: it is then of a clay yellow colour, its parenchyma being not unlike Stilton cheese. The vena porta is distended with blood, and the biliary ducts with inspissated bile of a greenish black colour. In many cases the spleen is found enlarged and of a purple colour, and covered with round black spots, which give to it a tuberculated appearance. Its bloodvessels and parenchyma are gorged with blood. The lesion of the spleen is in an inverse ratio to that of the liver. The pancreas offers no notable change. The kidneys are hard and consolidated, and their colour that of indigo. Their vessels are filled with blood. The ureters and external organs of generation are normal. The alterations found in the spinal cord and vertebral column are not always the same. Sometimes serous effusion has taken place; at others, sanguineous congestion or *ramollitis* is present. The vessels of the brain are

often found distended with blood; but the brain itself is, in most cases, in a normal state. Sometimes, however, its substance is softened; but serous effusion is seldom met with in its ventricles, &c.

Dr. Eckel thinks, that, from the preceding observations, he is enabled to make the following deduction:—That of the morbid lesions observable in rabies, those of the stomach, duodenum, liver, spleen, and principal trunks of the bloodvessels, are those only constantly to be met with.

It further appears from the observations and experience of Dr. Eckel, that, in the 141 cases of rabies adverted to, 28 transmitted the malady by the act of biting to 36 persons, 22 dogs, 2 horses, 1 cow, and 1 goat. Of the 36 persons bitten, 3 died hydrophobic. In one of these the disease shewed itself only on the 104th day after the infliction of the wound, and the patient died on the fourth day after the attack. In the two horses and the cow, the virus produced no effect; but the bitten parts had been well cauterized with concentrated hydrochloric acid, and the suppurative action set up lasted for six weeks. The goat, which was also bitten in the lip, was left to nature, and it became rabid; the disease manifesting itself on the twenty-second day after the bite, and death taking place on the fifth day subsequent to the appearance of rabies.

Many experiments performed by Dr. Eckel have proved to his satisfaction that rabies is not transmitted at distances, nor by mediate or immediate contact of the bodies of animals living or dead, but only by the bite of the rabid animal, or by inoculation. During those experiments by bites and inoculation, the shortest period in which the disease shewed itself was in the case of the goat, twenty-two days. The longest period was observed in two of the persons bitten. In one it was 103 days, in the other 102 days. In a pig, 49 days transpired; and in a sheep, 35 days.

It also appears, from other experiments instituted by him, that the potassio-tartrate of antimony, calomel, tincture of nux vomica, disulphate of quina, opium, and hydrocyanic acid, when administered to dogs suffering from true rabies, do not produce the same action as is ascribed to them in other diseases, or under other circumstances; and that they have not the least influence on the duration or the termination of the malady, which they do not in the least modify, even when given in extraordinary large doses.

All the symptoms, psychological as well as somatological, no-

ticed by Dr. Eckel in the numerous cases of rabies, denote a nervo-sanguineous affection; hence the malady may be defined:—

1st. *Somatologically*, an irritation resulting from a decomposition of the blood, emanating from the ganglionic nervous system, and extending afterwards to the spinal marrow, which it soon paralyses. It is at this period of the malady that a specific contagious virus is secreted.

2dly. *Psychologically*, a morbid sensation—an annihilation—a constant contention with the mind, and degenerating into a complete depravity or perversion, which the mental faculties can no longer control, and which terminates, even in the most docile animal, in ferocity and death.

Thus the essence of the disease bears a certain analogy, from the alteration in the blood, to the anthrax of domestic animals: on the other hand, by the nervous irritation, to the melancholic mania in man. Without discussing the question as to the identity of spontaneous hydrophobia in man and rabies canina contagiosa, Eckel is of opinion,—and a thousand years of recorded experience, he says, proves it,—that true rabies is a disease peculiar to the dog; that it attacks the domesticated dog, the wolf, and the fox: hence it is, in the vital relations, external as well as internal, of the genus canis that we must look for its cause.

The physiological characters of the dog, which influence more particularly the generation of rabies, and which are to be sought for in the vegetative, sensitive, and irritable phases of his nature—the fact of his immoderate venereal desires, and his extraordinary fecundity—his quick growth and the speedy development of his faculties—his appetite, and necessity for animal food, putrefied in most instances—his rapid digestion and continual voracity—his excretions, so repulsive in their odour—the faculty of bolting his food, with an equal facility of vomiting it up again—the rapid renewal of the blood—the acceleration of the respiration and circulation—the development of the brain—the large amount of instinct—the activity of the intellectual faculties—the facility of impression—its natural pugnacity and passion; on the one side an unlimited attachment, on the other an implacable hatred, of which no other animal seems to be capable—his temperament; in youth sanguineous, in old age melancholic; all this indicates a

peculiar predisposition to the bilious-nervous diseases of which rabies seems to be the type, *par excellence*. Add to this, the many changes to which domestication subjects the dog. If one considers the ill-treatment he often receives, being sometimes nearly starved to death, at others fed to excess; often exposed to the intensity of heat and of cold; sometimes allowed an immoderate indulgence of the venereal desires, at others prevented at the very moment of satisfying the same; and if we reflect for a moment on the effects produced on the morals of some degraded beings of the human species by venereal desires, we may easily understand the results that follow their restraint, and also the entire prevention of satisfying them. In the dog, where the ejaculation of the semen is to follow so closely upon its secretion, he not being, like man and other animals, provided with a vesiculæ seminales, it will not be difficult to comprehend how a nervous irritation with a sanguineous decomposition, and finally rabies and death, should become developed in him.

So long as the specific cause of the pathological nature of rabies remains undetermined, it would be impossible, *à priori*, to decide on any curative method so as with certainty to combat the disease. Much here must be left to chance. Confining ourselves to the careful observation of the malady; allowing every liberty and every latitude to animals in order to admit of a full manifestation of their instinct, is the only way by which we may one day hope to arrive at an efficacious therapeutic treatment of rabies.

In the mean time we are of opinion that the following treatment might be usefully employed:—

1st. To second nature in her efforts, by exciting vomition by the administration of the potassio-tartrate of antimony, in preference to ipecacuanha, on account of its greater influence on the pneumo-gastric and sympathetic nerves. To take advantage of the depraved appetite, by causing the animal to swallow those saline substances which act on the absorbents, as the salts of potass, ammonia, &c. By exciting the disposition to bite, so as to rid the system of the rabid virus, by the employment of masticators (sticks covered with linen, containing different medicaments, which are put in the dog's mouth). By not confining them in cages, but allowing them a large space to roam about in,

and always treating and approaching them with the greatest kindness.

2dly. By exciting the nerves and vessels of the skin by dry friction, and the application of the ointment of the tartrate of antimony, or cantharides, the use of escharotics, and the actual cautery.

3dly. To endeavour to establish an equality in the irritation, in order to prevent paralysis, which may threaten some part or other.

4thly. To prevent the decomposition of the blood by the administration of mineral and vegetable acids, with quinine or other substances combined with camphor.

5thly. To prevent, as much as possible, the annihilation of the vital forces, by the administration of arnica, hellebore, cantharides, &c., so as to influence the ganglionic nervous system; to give valerian, angelica, musk, and ammonia, to act on the brain; and nux vomica to excite the spinal marrow.

Magnesia an Antidote to Arsenic.

To find an antidote for this frequently-resorted-to poison has long been an object with chemists, and many have been the agents advocated. Few, however, have so long maintained their reputation as the hydrated per-oxide of iron. This compound not being always and immediately obtainable, other antidotes have been sought for; and in our last, in some extracted articles, we adverted to animal charcoal as being available for the purpose. From the following it would appear that this is not to be relied upon, while that which in the subjoined is recommended seems to possess but a questionable power. We however give it, for the subject is doubtlessly one of considerable interest.

"M. Bussy has lately revived the use of magnesia as an antidote in cases of arsenical poisoning. He has communicated his views to the Academy of Sciences in the following conclusions:—

"1. Purified animal charcoal, which has been recently recommended as an antidote, has no power of counteracting the effects of arsenic.

"2. Pure magnesia, slightly calcined, easily absorbs arsenious

acid in solution, and forms with it a compound which is quite insoluble even in boiling water.

"3. That in a gelatinous (hydrated) state it absorbs the poison with still greater rapidity.

"4. That animals to which arsenic had been administered invariably recovered when sufficient doses of magnesia had been given to them.

"5. That this antidote is superior to all others at present known, inasmuch as it may be met with in the shops of all druggists; as it readily and perfectly neutralizes the poison; as it may be administered in large doses without inconvenience; and its general therapeutical effects answer the indications required for the treatment of this form of poisoning.

"6. That magnesia decomposes tartar emetic, the salts of copper, and corrosive sublimate; and there is reason to believe that it may be employed successfully, not merely in the treatment of these forms of poisoning, but in all cases where metallic poisons have been taken.

"7. That the salts of the organic alkaloids, morphia, strychnia, &c., being equally decomposed by magnesia, this substance, by precipitating the alkaloid, may have the effect of preventing or retarding the absorption of these poisons. M. Bussy intends to make this a subject for future investigation.

Gaz. Medicale, Mai 23.

*** "There is no novelty in M. Bussy's suggestion. Mr. Hume long ago proposed magnesia as an antidote in poisoning by arsenic; but it is now well known that this alkali has no chemical action on *powdered* arsenic—the form in which the poison is commonly swallowed. Its power of absorbing and combining with arsenious acid when dissolved in water is therefore irrelevant in a practical point of view. If it have any action on the poison in a powdered state, it can only be of a mechanical nature, i. e., by investing the particles of the poison, and in this respect it is not likely to be superior to common charcoal. Its action on an aqueous *solution* of arsenious acid we have found to be so feeble as not to justify the inference that it acts as an antidote. One grain and a half of arsenious acid, perfectly dissolved in water, was digested with thirty grains of pure magnesia, which had not

been calcined at a high temperature. The mixture was well shaken with distilled water for a quarter of an hour, and then filtered. The solution had lost its acid re-action, and was feebly alkaline. On boiling it, it became turbid from the precipitation of arsenite of magnesia (?) In the clear filtered liquid, arsenic was abundantly detected by all the usual tests. We cannot, therefore, at all agree in the fifth conclusion drawn by M. Bussy."—*London Medical Gazette.*

REVIEW.

THE PLOUGH. *A Journal of Agriculture and Rural Affairs.* London: Hurst, King William-street, West Strand.

SOON after the creation of man commenced the practice of agriculture, and with the advancement of civilization it has extended; for from the beginning, it was decreed that man should eat of the fruits of the earth. Agricultural improvement has consequently engaged the attention of the patriots of all nations, each striving in succession to accumulate new facts by which to improve the methods of those who had gone before them. England, like ancient Greece and Rome, can boast of her early writers on husbandry, and, with the introduction of printing, she has handed down to posterity the opinions of the olden cultivators of her soil. A perusal of these authors shews that, in this as in most other things, improvements have been but slow, although of certain, growth.

Agriculture has, however, now resumed the character of a science, calling forth the best energies of its votaries, and seeking the assistance of the collateral sciences, chemistry, geology, mineralogy, and botany. These have all eagerly responded to the call, and are now indissolubly united with her, thus insuring her onward progress.

Unshackled industry, and the increase of periodical literature, being the main agents in the advancement of any art or science, we hailed with pleasure the introduction, at the commencement of the present year, of another journal devoted to agricultural improvement. A perusal of the numbers as they have appeared

has not disappointed us in our expectation. In the pages of "The Plough," much valuable matter, well suited to the present times, has, with each returning month, been laid before its readers. Where every thing is so good, it is difficult to make a selection: we would, therefore, earnestly recommend the perusal of this periodical to all interested in agricultural prosperity—and who is not?—but especially to the British farmer, and particularly now that he is about to be freed from the trammels of monopoly.

TRANSACTIONS OF THE VETERINARY MEDICAL ASSOCIATION.

TUESDAY, DECEMBER 9, 1845.

The PRESIDENT in the Chair.

Mr. F. SEWELL was elected Member.

Mr. W. ERNES directed the attention of the members to the guttural pouch of a pony filled with pus and distended to a considerable size.

Mr. ERNES, *loq.*—The subject from whence the morbid parts before me were taken was a bay pony, six years old. When first brought under my notice, he appeared to be in a state of high excitement and extreme emaciation; constantly coughing, pulse small and weak, respiration not impeded, except when exerted; great difficulty in deglutition, the food, when masticated and attempted to be swallowed, being returned with a spasmodic cough into the manger. My first impression was, that it was an attack of cynanche; but on a careful examination, I perceived the œsophagus to bulge, and one of the guttural pouches to be considerably distended. I communicated this to the owner, and advised the evacuation of the pouch by an operation, which I told him was one attended with some danger; but, before this was or even could be performed, the animal became worse, and soon died of an acute attack of inflammation of the lungs, these organs being previously tuberculated. On examination of the body after death, I found this left guttural pouch much distended, and filled to repletion with pus. The guttural pouches, as you are aware, are two membranous

bags, peculiar to the monodactyles, lined with a delicate mucous membrane, and situated posterior to the os hyoides, having openings towards the nostrils and tympani. When diseased, they pour out a vitiated secretion, which is often mistaken for that of glanders; and when in a state of distention from the openings becoming closed (as was the case in this one), they press upon the pharynx and larynx, and give rise to such an impediment to the respiration as often simulates roaring.

The mode of operating for the evacuation of these pouches, when thus diseased, is as follows :—A vertical incision is to be made about two inches in length a little anterior to the middle of the transverse apophysis of the atlas, about three fingers' breadth from the ear, and close to the posterior border of the parotid gland. This incision is best made by raising the skin into a fold. The head should not be too much extended, thus putting the bloodvessels and nerves on the stretch, which would make it more difficult to avoid them with the scalpel. You must now carefully dissect until you arrive at the posterior border of the parotid gland, which corresponds to the anterior border of the atlas, and then separate the gland from its adhesions. This dissection is to be continued until you feel the os hyoides with the index finger, and arrive at a broad muscular expansion arising from the styloid process of the occiput, and inserted into the tuberosity of the hyoides, the stylo-hyoideus muscle. The guttural pouch is underneath this muscle, and through it the opening into the pouch should be made. But, to avoid wounding any of the bloodvessels and nerves which abound in this region, the head must now be extended, and the bistoury directed with its back towards the parotid gland, and its edge upwards and in the direction of the fibres of the muscle, the handle being a little inclined towards the withers, so as not to make the opening posterior to the pouch. A puncture being now made, it will be followed by the escape of the imprisoned matter. As this, however, will not suffice; injection of tepid water must be resorted to, and a counter-opening made at the lower part of the pouch in the following manner :—Introduce the probe, and make it point towards the angle of the posterior maxillary, in the space between the bifurcation of the jugular vein, keeping close to one of its divisions, so as to lessen the danger of wounding them. On

the point of the probe thus introduced the counter-opening must be made, and a seton inserted. The injections are to be continued until the discharge becomes nothing more than that resulting from an ordinary seton. This operation was first introduced by the French, and has received the name of "Hyovertebrotomia."

I have felt the more desirous of describing the present case to the members of the Association because the pony had been sent to the College for advice, and doubtless many present had seen it. It will be remembered that the death of the animal was not caused by the enlarged guttural pouch, but by the disease of the lungs. The quantity of purulent fluid contained within the sac, which was perfectly closed, and which also shewed the remains of a cicatrix, could not have been less than a pint: it was of a cheesy consistence, or semi-solid. The inability to deglutate was without doubt the cause of the debility under which the animal laboured; still there was an absence of the dyspnœa observed in other similar cases. Probably it was the result of strangles, the abscess not having freely discharged itself, or its formation being suppressed.

The President had seen cases bearing a close resemblance to that described by Mr. Ernes, yet he doubted whether they really resulted from distention of the guttural pouches, as stated by him. He was rather inclined to believe that they were the formation of encysted abscesses in the vicinity of these cavities, and which pressed upon and eventually obliterated them. An analogous case Mr. Hunt related to the Association a session or two since, containing pus in a state of inspissation. (It is recorded in the proceedings of the Association for 1842-3, p. 357.)

Mr. Ernes had no doubt, from the state and location of the other pouch, that this was its enlarged fellow. No inflammation or ulceration existed in the pharynx or larynx; and the impediment offered to free and perfect respiration he believed to have been the cause of the diseased state of the lungs; therefore, had the operation of the removal of the distended pouch been performed some time before, the death of the animal would have been prevented.

Case of Ruptured Spleen.

By Mr. J. Cooper, *M.R.C.V.S.*

Ash, next Sandwich, December 7, 1845.

Sir,

I have forwarded to you the spleen of a two year-old-colt, late the property of Mr. John Chandler, of Crix-hall. The history of the case is briefly this:—On Tuesday, December 2d, the colt was put to work about nine o'clock, when it began to jump about, and appeared very lively the whole of the day; it, however, fed but little that afternoon, but did not evince any symptoms of pain.

On the attendant going into the stable on Wednesday morning, the colt was seen standing still, still manifesting no pain, yet he appeared languid, and would neither eat nor drink. He was again put to work, but about ten o'clock he became so weak, that Mr. Chandler ordered him to be sent home. I was now summoned to attend, but, being professionally occupied, did not arrive at Crix-hall before noon. On going into the stable, the colt was in a standing posture; and the first thing that arrested my attention was, the state of profuse perspiration in which the animal was, associated with a continual shifting of his legs, and slight attempts to lie down. The respiration was about 20 in the minute, and the pulse imperceptible at the jaw, but 60 when taken at the heart (it having that peculiar jerking action which is characteristic of the heart being insufficiently supplied with its vital stimulus, blood): a pallidness of all the visible mucous membranes was present, and the large veins, as the radial and vena saphæna, appeared nearly empty.

Diagnosis.—A rupture of some important vessel in the abdominal cavity, probably of the liver.

Prognosis.—From the hæmorrhage that was taking place, speedy death.

Treatment.—I administered an acidulated draught, and ordered a little water to be given every hour, which, I was afterwards informed, he took freely, and had him placed in a loose box. About three o'clock P.M. he laid down; shewed great symptoms of abdominal pain; gradually became weaker and weaker, and about four o'clock died.

Post-mortem examination.—On laying open the abdominal ca-

vity, there gushed out a large quantity of blood; in fact, the intestines were completely floating in it. All the viscera were quite healthy, with the exception of the spleen, which you will find is extensively ruptured on its concave surface; and, near its apex, there likewise appears to be a tumour of an hæmorrhagic character, situated contiguous to where the rupture took place.

I beg to remain,

Sir,

To Charles Spooner, Esq. Your's very respectfully.

The President.—An external view of the organ shews that a rupture to a very great extent has taken place on its concave surface, and, on cutting into its substance, its cells are seen congested with blood. It is not much increased in size, if at all, for it may be presumed it was taken from a cart colt. A lesion of this kind is very unusual in a young animal. In older animals the spleen often becomes enlarged and disorganized, like to the liver, and then a rupture is by no means uncommon.

The symptoms described by Mr. Cooper are clear and characteristic of hæmorrhage taking place from some internal viscus: but there was the absence of one indication which would have told him that the liver was not the organ, namely, a yellowness of the visible mucous membranes. Whenever a rupture of the liver takes place, it is always preceded by a greater or less amount of functional derangement, whence results an absorption of bile into the circulatory system; or it is imperfectly formed, and does not become separated from the blood in its passage through the liver.

He had no hesitation in expressing his belief that the animal was in health prior to the rupture taking place, for the appearances presented by the spleen were such as might have taken place in twenty-four hours. The rupture was caused by the violent plunging and jumping of the animal, which it is well known colts will do when just put to work; this, in all probability, being connected with the state of this viscus at the time. It being a diverticulum for the blood, a more than ordinary determination of that fluid had taken place to it; congestion followed, and by pressure a laceration of its capsule ensued. The morbid changes that present themselves in an organ, especially when they are traceable to known causes, often point out the function of the

organ affected, and shew us more than all the experiments that may or can be instituted upon the living animal.

The case is also important in reference to veterinary jurisprudence. It might have been that this animal was purchased only a few days prior to his death; and the inquiry would then be made, Was the spleen at the time of sale in a normal condition? He had already expressed his belief that this was so; but it might be the case, that, in another instance of rupture of the same viscus, such appearances would be presented as to lead to the inference that some organic change had previously taken place, and then the decision would be in accordance therewith.

We likewise learn from this specimen, how Nature labours to bring about in parts a restoration to health or normal condition. On the edges of the fissure she has thrown out a quantity of blood which has become coagulated and firmly adherent, but the rupture was too large to enable her to perfect the healing process.

Mr. Cooper had described an hæmorrhagic tumour on the spleen, and, on cutting into it, it is seen to be formed by a quantity of blood having become effused into the cells of the organ and destroying their integrity. The President considered the symptoms to be clearly given; yet, perhaps, he might be permitted to name a tympanic state of the abdomen, and syncope being induced by elevating the head, as strongly indicative of internal hæmorrhage taking place.

Mr. Fishwick had witnessed a case of ruptured spleen which had exhibited all the appearances of an affection of the bowels.

On Enlarged Vesiculæ Seminales.

By the President.

The specimen before me has been brought from the knacker's yard, and was reported to be "a triple bladder found in a horse," but whether from an entire horse, or a gelding, the party could not tell me. Now, it is not surprising, judging from their appearance, that these three bodies should have been mistaken by a person unacquainted with anatomy for a peculiarly formed bladder. The central one, however, is the true urinary cyst: the other two pyriform sacs are parts of the male organs of generation, the vesiculæ seminales, as they are improperly termed. They are enlarged

six or seven times beyond their natural size, and dissection shews that they have been taken from a castrated animal. This is known by the peculiar state of the other parts of the generative organs with which they are associated. The semen as secreted by the testes is conveyed by the vas deferens into the urethral canal. At one time it was thought the vesiculæ seminales were the receptacles for this fluid. This is not the case, as the relative situation of parts prove; for the duct of these hollow or sacculated glands, and the termination of the vas deferens enter the urethra together, the latter a little below the former; so that the semen would have first to enter the urethra, and then to pass backwards to get into these cavities, were this the fact.

In the adult and entire male, the vas deferens in its onward passage to the neck of the bladder will be seen to become much and abruptly enlarged, resembling the body of a bottle as compared with its neck; but in the young animal we do not find this enlargement to exist, and the same also obtains in the gelding, shewing that no storing up of the semen has taken place in these tubes, as is the case in the adult entire horse, prior to the venereal act being performed, their office being to retain it for this purpose; since, if they be opened, pure semen will be found contained within them.

What, then, is the use of these so-called vesiculæ seminales? those bodies we have now before us in this distended state, and which I have before stated have evidently been taken from a gelding, there being no true seminal reservoirs at the termination of the efferent ducts. That they are secreting structures there is no doubt, and the character of the secretion is that of a viscid mucus of a yellow colour, which has been supposed to constitute a vehicle for the semen to be conveyed out of the body during its emission, or for the purpose of giving to it momentum or force when ejaculated.

Here, again, from a morbid specimen we are taught, in a great degree, the use of a part, although careful dissection will demonstrate the same truth; for, although the two fluids—that secreted by the testes, and that by the vesiculæ seminales—enter the urethra by apparently one common opening, like the biliary and the pancreatic ducts, which pierce the duodenum, yet they have each their terminating tubes, and no admixture of them takes place until they reach this point.

Doubtless, many have noticed that geldings are capable of erecting the penis, and emitting a fluid which by some has been thought to be semen. Now this is nothing but the secretion from these vesicles. Such animals cannot beget a foal, unless it be immediately after castration, when as yet some true semen remains within the vas deferens. Probably in these cases the fluid which is emitted depends on an abnormal condition of these parts, similar to the specimen now on the table.

On some of the Diseases of the Encephalon of the Horse; with the Anatomy and Physiology of those Parts of the Organ that are principally affected.

By Mr. J. Mannington.

[It is with reluctance we omit the anatomical and physiological portions of this essay; but we are compelled to do so from press of matter. Mr. Mannington's method of describing the brain and its membranes possessed novelty, and the details were correctly and lucidly given. We are able to introduce the pathological part only.—*Editors.*]

Meningitis.

The cineritious neurine having been considered in a former part of this thesis as the prompter or generator of power; if this supposition be correct, we must, in cases where this substance is affected, or the membranes in apposition with it are inflamed, infer that we shall then have augmentation of the functions of the brain, and those of the nervous and muscular systems under its control, or general exalted action: in short, "spasmodic action without loss of voluntary power;" no paralysis or loss of sensation being present, as the texture of the brain is not compressed or disorganized. In the human subject much aberration of the intellectual faculties is shewn in this affection.

Named from its symptoms, it is usually designated phrenitis: but this is only an effect; and as I do not think we are warranted in drawing so nice a distinction as to suppose the arachnoid membrane to be alone inflamed—having found one membrane as much affected as the other—I have preferred the term Meningitis. There is no disease to which the horse is liable, except rabies,

which presents such urgent symptoms as this; and there is none which requires more decisive and active treatment; which must be evident when we consider that the very source of power, the *primum mobile* of the animal machine, and the governor of its actions, is involved: and that the least change of structure in so delicately formed an organ must of necessity be attended with an alteration of function, and ultimately followed by very serious consequences.

The *causes* of this disease are, over-exertion; and that more especially in plethoric horses who have been living in a state of idleness (though even in these the lungs are more liable to become affected); pressure of the collar on the jugular veins, causing a congested state of the vessels of the brain. (This latter I believe to be a very frequent cause. In two cases I have seen it occur in horses who have had one jugular vein obliterated.) Injuries to the integument covering the frontal or parietal bones, the vessels of which anastomose freely with those of the meninges: and fracture of these bones will also produce it. It likewise occasionally occurs as a consequence of other diseases, especially those attacking the mucous coat of the stomach. I have also seen it follow enteritis, and supposed it to have been caused by long continued agony. Extension of inflammation of the lining membrane of the jugular vein will occasionally give rise to it, as well as that of the Schneiderian membrane; and it is frequently a sequela of tumours and abscesses in the cranium, or accompanies their formation. The disease known by the name of stomach staggers is a sympathetic kind of meningitis, caused by excessive distention of the stomach.

In some cases this affection is slow in its attack, and is ushered in by common febrile symptoms; the pulse and respiration being slightly quickened, the mouth hot and dry, the mucous membranes a little injected, and the ears and extremities cold. But, generally speaking, the first indications are those of drowsiness and lethargy; the animal standing in a fixed position with his head depressed, and sometimes rested against or on the manger, and much weight thrown on it. The pulse is generally slower and fuller than natural, and the respiration occasionally stertorous; the Schneiderian and conjunctival membranes are invariably injected, the fæces scanty and hard, and the urine secreted in diminished quantities. At times the patient will apparently rouse

himself, seize a mouthful of hay, and begin to masticate it; but he generally lets it fall from his mouth, or else retains it there during another comatose fit.

This stage continues a longer or shorter period in different cases before the phrenitic stage makes its appearance. The dull heavy look is then succeeded by a watchful brightened appearance of the eye; the head is held erect, and the ears pricked forwards; the mucous membranes become intensely injected, the pulse quick, bounding and hard, the respiration also quickened; the mouth very hot and dry, and the legs and ears cold: indeed, every symptom shews, as plainly as possible, that re-action has taken place, and inflammation has succeeded to congestion. The animal now moves about in the most excited manner; paws as if in abdominal pain; a few hard fæces are occasionally passed; and sometimes he makes a circuit of his box for a long time together, regardless of any object placed in his way, and seemingly wishing to escape; neighing loudly, on hearing another horse stir. To this stage of excitement succeeds one of utter unconsciousness; he rears up, and, perspiration covering the body, he dashes himself about against the sides of the stall or box, inflicting severe injury on his head, until he becomes a frightful spectacle; then throws himself down, the muscles of his face performing convulsive movements, and presenting a very haggard expression of countenance.

In some instances, a second stage of congestion accompanied with coma comes on; which is again succeeded by phrenitic symptoms, and the animal expires completely exhausted by the violence of the paroxysms.

Yet, all these phrenitic symptoms may be present without true meningitis, as they are sometimes produced by tumours pressing on and lacerating the fibres of the cerebral mass, of which some illustrative cases have been related to us by Professor Spooner in his lectures. When arising from this cause, the state of excitement is not preceded by that of depression.

In *Stomach Staggers*, or sympathetic meningitis, the symptoms are much the same as those present in the idiopathic form of meningitis, with the exception of the coma being more intense and of longer duration. The buccal and conjunctival membranes also often present a yellowish tinge, tympanitis exists, and the manifestation of abdominal pain is more marked. If we obtain

the history of these cases, we shall, in most instances, find that the patient has been kept for a long time without food, and, then being abundantly supplied with it, has eaten it voraciously, filling his stomach to repletion in a short time. This is most commonly the case among old horses that have a morbid appetite, and in these a rupture of the stomach often ensues.

The post-mortem appearances of meningitis are very well marked. The membranes are gorged with blood, as are the arteries supplying the brain, and also the sinuses. The plexus choroides is much enlarged, and often presents an almost black appearance. The lateral ventricles generally contain an abnormal quantity of fluid: some parts of the cineritious layer of the cerebrum are much injected, and, on cutting into its substance, the puncta vasculosa are distinctly seen: other parts, more especially when the case has existed for some time, are softened, and of a yellowish colour. The exterior surface is generally most softened: the medullary neurine is but little altered in its texture or appearance. At times some of the abdominal or thoracic viscera are likewise inflamed.

Treatment.—Whether we are called in during the comatose or phrenitic stage, our first act must be to abstract blood. This is easily accomplished should the animal be still in a state of stupor, and the blood should be suffered to flow until symptoms of syncope make their appearance, which will often stop the onward progress of the disease. When the animal is in a state of phrenzy, it is much easier said than done, as it is frequently impossible to approach him without imminent danger: an opportunity must, therefore, be watched for, and an opening made into one or both temporal arteries; or, if the jugular veins be preferred, a ligature must be applied to the neck, and the animal allowed to bleed until he falls, or becomes so weakened by the loss of blood that the ligature can be removed, and the veins secured.

Much diversity of opinion has arisen respecting the propriety of bleeding from the temporal arteries in preference to the jugular veins; and those who prefer the latter method have certainly a strong argument in their favour, when we consider that the temporal artery is only a branch nourishing the masseter muscle, and that the jugular vein conveys the blood directly from the inflamed and diseased part. Practice, however, shews the beneficial effects

of the former mode of procedure; nor must we forget the great relief which is known to follow from the abstraction of arterial blood from the system instead of venous, in urgent cases: perhaps the relative benefits derivable we have yet to learn. I may be permitted to add that Professor Spooner and Mr. Percivall are decidedly in favour of arteriotomy, and such names as these carry with them great weight. While the animal is in the depressed condition caused by the bleeding, a powerful cathartic should be administered to him in a liquid form. Aloes and croton oil are, perhaps, the best that can be given; but no stimulant must be conjoined.

If the fæces are collected in the rectum, they must be removed, and a clyster, in which some aloes has been dissolved, thrown up. The head should be frequently wetted with an evaporating lotion, and a blister applied two or three inches behind the ears, extending under the throat and down to the breast. Stimulants (as sinapisms) and bandages to the legs should also be had recourse to. If, after the animal recovers from the state of syncope induced by bleeding, the phrenitic symptoms do not again make their appearance—if the pulse, though quick, becomes soft, and the eyes do not present a wild appearance, our prognosis will be favourable; but if phrenzy again comes on, the pulse being quick and hard—if cold sweats make their appearance, and the extremities continue cold, we shall then be compelled to judge unfavourably of our patient. The bleeding may now be repeated, and another cathartic and enema administered; our great end being to produce purgation, which acts as a depletive, and also determines the nervous irritation from the brain to the intestinal canal. I do not approve of what are called sedative agents during this stage of meningitis, as they act as stimulants in the first instance; but if, in the course of twelve or twenty-four hours, the animal becomes tolerably tranquil, purgation commences, the warmth of the extremities returns, and the blister is seen to be acting, I should then recommend the extract of belladonna, or digitalis, or the potassio tartrate of antimony, to be given in small and repeated doses in a solution of nitrate of potash, alternating with mild aperients, as linseed oil or small quantities of aloes.

Dietetics.—During the comatose and phrenitic stages of this disease, little or no disposition to partake of food is evinced by

the animal; but should it exist, it must be checked by removing any that may be in the manger or rack, as the motion of the jaws promotes the flow of blood to the head. Mashes and gruel only should be allowed for some days; and when corn may be given, it should be in very small quantities at first, gradually increasing it. In favourable cases, the return to convalescence is generally rapid, and this may be assisted by an occasional laxative and the administration of vegetable tonics. In the generality of cases I should now apply setons over the parotid glands, to act as counter-irritants, and thus remove any lurking inflammatory action about the brain; as in many cases, when the animal is apparently restored to health, a sub-acute disease sometimes still exists, which will ultimately prove fatal.

Enlargement of the plexus choroides, too, will often gradually take place, producing phrenitis at some future period unpreceded by coma. The only observable symptom of this is, that the head is generally carried on one side. It is needless to say that under such circumstances as these all remedial means are useless.

The lining membrane of the lateral ventricles may likewise take on diseased action, and pour out an increased amount of its secretion, which constitutes

Hydrocephalus.

The *symptoms* of this affection are—frequent attacks of coma; a slow and irregular pulse; fixed and dilated pupils; loss of appetite, and inability to stand active exertion; the bowels are generally constipated; the head is often carried on one side, and syncope is occasionally produced on its being elevated.

Treatment.—Powerful local irritants are here indicated, as blisters over the parietal bones, the discharge from which may be kept up for an indefinite period by dressing with the savine ointment; also setons over the parotid glands. Bleeding is generally contra-indicated; but in some few cases it has been found beneficial. The bowels must be kept in a soluble state, and the iodide of potassium, or calomel, or diuretics, may be had recourse to; but our hopes of any success are very faint.

The post-mortem appearances, when meningitis has not supervened causing the death of the animal are—the lateral ventricles

distended with serous fluid of a straw colour; the plexus choroides pale, enlarged, and, as it were, sodden; and the whole substance of the brain softened and readily broken down.

The *treatment* of meningitis caused by over-distention of the stomach differs, in some respects, from that necessary in the idiopathic form of the disease. The tolerance for loss of blood is not so great, but even more purgatives may be administered: indeed, we can scarcely give too large a quantity, always remembering to exhibit them in a liquid form and combined with a stimulant or carminative, so as to cause the stomach to contract on its contents and force them onwards; and occasionally we are required to combine some agent that will neutralize or decompose the gas eliminated. Carbonic acid gas being given off in the first stage, ammonia in some form is indicated, by which a gentle stimulating compound is produced. But in a later period of the disease, the fetid binary compounds of hydrogen being disengaged from the decomposing ingesta, some of the compounds of chlorine will be alone found available, the compound resulting being hydrochloric acid, the natural acid of the stomach, while the bases are set free. The chloride of lime is generally preferred. From the difficulty attendant on the passing of the probang into the horse's stomach, we cannot anticipate the same benefit as that which attends its use in cases of hoven in cattle; yet in desperate cases it may be tried, and if successful, fluids of a stimulating nature injected into the stomach with a view to soften the mass of food contained in that viscus, thus allowing it to pass on through the pylorus. I am not aware that any other form of treatment is called for.

The post-mortem appearances, besides inflammation of the membranes of the brain, are as follow:—An over-distended state of the stomach, both from food and gaseous elimination; its mucous coat much inflamed, and spots of ecchymosis exist on it, more particularly towards the pylorus; all the coats of the intestines are also frequently inflamed in patches; and oftentimes the liver is of a soft texture, and easily broken down, while the thoracic viscera are in a congested state: occasionally the medulla spinalis has been found of a softer consistence than is natural.

Coma.

By this term is implied a cerebral affection presenting the same symptoms of stupor throughout its whole course. This disease, although rare, occurs sufficiently often as to be classed as a distinct one. It is dependent on a congested (not inflamed) state of the substance of the brain, its meninges and sinuses; and may be caused by obstruction in the veins, which, indeed I believe, is most commonly the case; or by too great a quantity of blood being conveyed to the brain by the arteries. Through want of power in the over-distended vessels, reaction, followed by inflammation and exalted action, does not supervene; and the substance of the brain, and more especially the origin of the nerves, become so compressed, that a state of unconsciousness, loss of voluntary power, and propensity to sleep, are induced, from which the disease derives its name.

Symptoms.—These are nearly the same as those accompanying the comatose state of meningitis; in fact, it is impossible to say whether phrenitic symptoms may or may not shortly succeed. The stupor is, however, certainly more intense; the pulse has a more oppressed feel, and is very slow; the visible mucous membranes have a bluish appearance; the respiration is feeble, and the fæces and urine scanty, these secretions partaking of the torpidity of the system. The animal generally bores forward, forcing his head against the manger; but in one instance which came under my observation, he as obstinately backed to the corner of his box, and, whilst there, continued his attempts to retrograde. The legs and ears are very cold, and the pupils dilated.

Post-mortem appearances.—In fatal cases, rupture of some of the vessels of the brain takes place, constituting apoplexy; the medullary substance of the brain is also invariably very much congested.

Causes.—These, too, are nearly the same as those producing inflammation of the membranes of the brain. It generally occurs in old horses in a plethoric condition that have been exposed to the sun—for instance, at work in the harvest field—and whose jugulars are pressed upon by the collar for a considerable time together. These aged subjects are not so likely to have inflammation supervene on congestion, their arterial system being

weaker, and therefore they are not so prone to take on inflammatory action as younger horses are.

Treatment.—In all cases of congestion or inflammation of the encephalon, our first step must consist in the abstraction of blood, and that to an extent which a common observer would think unwarranted, the tolerance possessed by the animal being extremely great. As soon as the pulse falls, the coma in many cases will not be so intense, and the animal will in a short time commence feeding; this disposition should, however, be prevented by removing all food. If the animal be not already in a loose box, he should be removed to one, there kept as quiet as possible, and not exposed to a strong light. A powerful cathartic is now to be administered; avoiding calomel, which I have found produce colicky pains. Clysters must not be omitted. The legs should be stimulated and bandaged, and the throat, neck, and breast, blistered with ol. cantharides. It is very possible that the patient may be relieved for twelve or twenty-four hours by this plan of treament, and that at the expiration of this time all the comatose symptoms will return: if so, we must again bleed, and administer another cathartic; for in these cases full purgation will rarely have been established. The animal will again appear relieved, but the state of stupor may again make its appearance, and must be combatted by the same measures as before. I have seen a horse rally and relapse in this manner five or six times, feeding a little at intervals on such sloppy food as he was allowed. He was bled as often as he relapsed, until his pulse sunk; and notwithstanding the debility present from depletion and general wasting of his system during seven days, he had ol. lini. Oiij, aloes ʒiv, and calomel. ʒv, given to him before purgation was set up, although griping pains were often produced.

In most instances, as soon as the bowels are freely acted on, the comatose symptoms gradually disappear, and then a more nutritive diet may be allowed; for up to this time nothing but gruel and mashes should be given. The action of the bowels, however, must be kept up in a moderate degree by means of laxatives, alternating with tonics or duretics, as the case may demand. In one instance which full under my notice, an immense discharge of unhealthy purulent matter took place from both nostrils during the return to convalescence, accompanied with tumefaction of the submaxillary lymphatic glands. This was checked in about three weeks by the administration of the diniodide of

copper, conjoined with vegetable tonics, a blister being also applied over the enlarged glands. In cases which terminate fatally the coma is not relieved by bleeding; but the pulse becomes quick and indistinct, the extremities deathy cold, the jaws fixed, the membranes turgid with blood, and cold sweats bedew the surface of the body: the animal now staggers to find a resting-place for his head; the eyes become glassy, and insensible to light; the breathing becomes stertorous; and he at last falls and dies almost without a struggle.

Powerful stimulants, such as ammonia, may be tried in this stage; but there is not the most remote chance of any success.

It is not uncommon for a temporary state of coma to be observed in horses that have been the subjects of protracted illness, as influenza. The pulse is soft and weak, the membranes rather pale, the respiration a little slower than natural, and the legs and the surface of the body chilly; but bleeding is not advisable here, since these comatose symptoms will generally pass off quickly on the administration of some diffusible stimulant, such as the spirit of nitric ether given in the solution of the acetate of ammonia; the legs being at the same time bandaged, and clothing applied to the body. By these means, the balance of the circulation is restored. If found necessary, the head may be kept wet with some evaporating lotion.

Apoplexy.

This affection does not often occur in the horse, the vessels of the brain being guarded against over-distention and rupture by the tortuosity of the arteries, and by the small sized foramen at which the carotids enter, as well as by the sinuses and varicose veins situated about the muscles of mastication; yet, despite all these provisional agents, rupture of a vessel or vessels sometimes does occur, and, as far as my practice has enabled me to observe, it is invariably fatal.

The rupture is generally produced by excessive exertion, and oftenest occurs in young plethoric horses with short necks: tumours on the inside of the cranium may also press on the vessels, and produce their rupture; or, if an old horse be the subject of this lesion, it is probably the result of some chronic disease existing in the bloodvessels themselves. *Post mortem-appearances* present effusion of blood on some part of the brain, generally within the

ventricles, or about its base, as here the greater number of vessels are situated. The vessels are black from over-distention and retention of the blood, and the substance of the brain is much congested, the puncta vasculosa being very numerous and plainly seen.

Symptoms.—Sometimes the animal continues standing, presenting indications of intense coma; at others, he is found lying in a perfectly insensible state, apparently completely paralyzed. In either case the pulse will be found full and hard, the respiration slow and laboured, and, perhaps, accompanied with frequent sighing: the mucous membranes much reddened, the legs and ears deathy cold, the body covered with cold perspiration, an abundant discharge of saliva flowing from the mouth, and the eyes perfectly amaurotic. Convulsive twitchings are seen in those parts of the face whose nerves originate from the parts compressed by the effused clot, and we may thus judge with some degree of certainty what vessel is the seat of rupture. The muscles on the opposite side are in a state of partial or complete paralysis, whilst those on the same side are convulsed in consequence of excited action being set up on the opposite side of the brain from continuity of substance. It appears impossible to rouse the animal—in fact, he is dead to all surrounding objects; and although some cases in which but little effusion has taken place may linger for a time, and such generally terminate in phrenitis, yet, as a general rule, the pulse soon becomes intensely hard, quick and running down; the respiration very stertorous; and death quickly closes the scene.

Treatment.—Our first effort, of course, should be to remove the congestion which exists in the cerebral vessels, and to prevent effusion going on to a greater extent; and here we should have recourse to bleeding from the jugular veins in preference to the temporal arteries, it being a vein, in most instances, which is the seat of the rupture. By bloodletting, our desire is to produce local rather than general depletion. The angular veins may also be opened, to remove the congestion that always exists in the superficial vessels of the head. If the power of deglutition be not already lost, diffusible stimulants must immediately be administered to rouse the vital powers, and enable the vessels to contract on and force onwards their contents. Such agents may be ad-

vantageously combined with cathartics. Powerful stimulants are to be applied to the head and extremities, as sinapisms, to which the oil of turpentine or of cantharides may be added, the body being kept warm, and the legs bandaged. Clysters should also be frequently thrown up; and if the animal be in a recumbent position, and the urine cannot be voided, a catheter must be passed occasionally to withdraw it. I have seen a horse rally for a short time from the adoption of these means; meningitis however supervened, and he died phrenitic. On examination after death, a coagulum of blood was found on the supero-anterior part of the brain, and those parts of the meninges contiguous were much inflamed. In another instance, death was caused almost immediately from a rupture of the posterior cerebellar vein on the left side, which produced pressure on the corpora olivaria, thus paralyzing the respiratory muscles, and causing death from asphyxia. Tracheotomy might have been had recourse to in this case, but it could have been with only temporary benefit.

I think it probable that, in those extreme cases of coma which occasionally recover, an effusion of blood may have taken place which becomes organized, producing those tumours that are sometimes found in the brains of horses, and which at some perhaps far distant period causes their death: or it is possible, if the medullary fibres are only separated and compressed by the effused clot, that absorption and perfect recovery may take place. The disappearance of hemiplegia in the human subject, which remains for some time after an apoplectic fit, is thus accounted for; but if the fibres have been lacerated and ruptured, recovery cannot take place.

Should a horse appear to be recovering under the treatment I have pointed out or any other, the perfecting of the cure must depend upon circumstances, it being impossible to lay down any specific plan. If any loss of motor power should exist, strychnia may be advantageously employed, and the iodide of potassium given, and also applied externally to the cranium, so as to promote the absorption of effused blood which we may reasonably suppose still remains on or within the substance of the brain. Horses, however, are said not to be so often the subjects of hemiplegia consequent on effusion of blood on the brain as man, should they recover from apoplexy.

Megrims.

This is a peculiar affection of the brain, producing symptoms very much resembling those of epilepsy. From the suddenness of the attack, and also from the animal oftentimes quickly recovering without any remedial measures being adopted, it is evident that there is something specific in this disease. Harness horses are most liable to it; indeed, saddle horses are rarely attacked. Those animals that have prominent eyes and a vacant stare are most obnoxious to it, and such are pointed out by almost every groom or horse-dealer as being "likely to become megrimed." Blind horses, I believe, are never the subjects of it, and those animals who have attacks escape them in a great measure in winter; but in the spring or autumn, when the sun suddenly shines out brightly from beneath the clouds, they frequently become affected.

The predisposing causes and pathology of the disease are involved in much mystery. Its exciting cause, it is pretty evident, is dependent on a temporarily congested state of the vessels or sinuses of the brain, by which an undue degree of pressure is imparted to the organ. I am of opinion that this state of congestion is preceded by "dizziness," similar to that experienced by the human subject when he has gazed too long or too intensely on any object; and that this dizziness is referrible to a false and dazzling impression produced on the retina by the rays of light becoming converged to a focal point too quickly, either by excess of convexity of the cornea or crystalline lens, or the too great density of the aqueous or vitreous humour, or both.

This dizziness may also arise from excess of irritability of the retina, and then the disease under notice may be induced by the presence of one colour continually applied to the eye, as the black of the winkers, or by the sudden influence of the sunbeam, already alluded to. I think that I am borne out in viewing these predisposing causes as being centred in the visual organ, by the fact that megrimed horses are invariably shy: and my opinion as it regards the congested state of the brain is proved to demonstration to be correct, from bleeding immediately relieving the symptoms, and by plethoric horses being the most frequently attacked.

Symptoms.—The horse will, perhaps, be travelling with apparent ease, when he will suddenly stop as if determined to proceed no farther: he shakes his head, and often partially turns round. Inexperienced persons, from this, frequently believe that temper is the cause of his stopping. This state of stupidity may last for some minutes, and at the expiration of that time the animal goes onwards as if nothing had happened. Generally, however, he describes two or three circles, falls, and, when on the ground, struggles violently, attempting ineffectually to rise: the eyes are protruded and glassy—convulsive twitchings of the muscles of the face take place—saliva escapes freely from the mouth—and the fæces and urine are passed involuntarily. These symptoms may last some little time, when the animal will rise, and, with a frightened look, gaze about him as if recalling what had happened to his recollection; and in many cases will now be able to proceed on his journey, although evidently enfeebled.

In other instances, the subject of an attack of megrims will sink in a state of apparent syncope, without struggling or becoming convulsed in the least degree. I have seen this happen more than once to horses when brought from a darkened stable into the full glare of daylight.

Treatment.—Although many horses recover from an attack of megrims without being bled, yet, as I view the affection as one of congestion, so I would recommend venesection to be had recourse to immediately, as it invariably shortens the duration of the fit. The jugular or angular veins, or both, may be opened; or if arteriotomy be preferred, the palatine artery may be cut down upon, although the procuration of any quantity of blood from this vessel is often very uncertain. Cold water may be dashed over the head; and, if the horse be required to pursue his journey, a cold wet towel may be wrapped over the forehead with advantage.

Should the animal be in a plethoric state, he should be prepared for a dose of physic as soon as he has reached home; and after this has produced its desired action, increased exercise should be ordered. Should he be a young animal, and not above two or three attacks have been experienced by him, we may reasonably expect benefit to arise from a course of alterative medicine being entered upon, consisting of mercurials or antimonials, conjoined with a low diet. This treatment I think preferable to turning out

to grass, as the dependent position of the head predisposes the animal to cerebral affections or renewed attacks. I would also advise blisters to be applied to the head, or setons inserted under the jaw or over the parotid glands, so as to remove any ill effects the sudden congestion might have had on the encephalon; and more especially would I adopt this last-named plan if the animal presented symptoms of stupor after the acute attack, which is sometimes the case.

It would seem that this peculiar disease is removed for a time by preventing the brain from receiving its full quantity of blood. This is instanced in a case in which the late Mr. J. Field applied a ligature to the carotid artery on one side, which relieved the animal for a twelvemonth; and, the symptoms again returning, they were again removed by taking up the other carotid. There were, however, some symptoms in this case which lead me to suspect it was not one of true megrims.

If we have an old horse under our care, we cannot expect to confer any permanent benefit: our treatment must therefore be entirely prophylactic, and be confined to the occasional abstraction of blood, the administration of laxatives, and keeping the animal on a low diet; also, if possible, let the horse be used for riding purposes, and not for harness.

I cannot speak from observation as it respects the post-mortem appearances. It is stated, that water has been found in the ventricles of the brains of those horses who have been subject to repeated attacks of megrims; but I should be inclined to view this as the effect of repeated congestion of the sensorium, by which the lining membrane of the ventricles had taken on an increased action. In those cases where animals have been for a long period subject to attacks of megrims, we may reasonably, I think, conclude that an organic change has taken place in some part or other of the encephalon.

TUESDAY, DECEMBER 16, 1845.

The PRESIDENT in the Chair.

Mr. J. Coleman was elected member.

On the table were placed a pair of racing plates and of galloping shoes; also the brain of a sheep affected with hyatids, presented by Mr. H. W. Stephens, V.S.

Mr. Bencraft exhibited his improved patent hames, and explained the advantages that are derived from their use. The President, Mr. Braby, and other members, spoke in commendation of them.

The remainder of the evening was occupied by the consideration of Mr. Mannington's Essay.

[To preserve the entirety of the subject, the principal points of the debate will be given as a whole, although the discussion occupied two or three meetings of the Association.]

In accordance with the views taken by Mr. Mannington of the disease designated Megrims being caused by light, it was, he said, the sudden impression made by it on the retina which gave rise to it. He believed he had seen several instances thus originate, when horses were brought from out of a comparatively dark stable into the bright glare of the noonday sun. In like manner, harness horses are most obnoxious to this disease, from their eyes being rendered more susceptible to the impress of light through the wearing of blinkers. It was not congestion of blood on the brain nor over-exertion which acted as exciting causes under these circumstances, although these may occasionally become causes, but solely an effect produced upon the nervous system re-acting upon the vascular.

Mr. Mitchell, having noticed that this disease is most common in horses wearing collars, and particularly when these are small, recommended their disuse altogether. As this malady was rarely met with in the winter, he thought there was much in this fact to favour Mr. Mannington's view of its being the result of nervous influence caused by light acting on the sensorium through the medium of the optic nerves.

Mr. Varnell said that he had seen megrims very common in

America during the winter season, and he had referred the cause to the bright light reflected from the snow acting on the visual organs.

Mr. Dexter believed that the state of the digestive organs had much to do with this malady, by which the blood became of an abnormal character; this, however, operating more as a predisposing than an exciting cause.

Mr. Clements having seen a horse attacked with megrims while in the stable, also thought the state of the stomach to be a disposing if not an exciting cause. The animal to which he referred was in good condition, and had not been the subject of any previous disease, although he was what is usually designated "a weaver." He was attacked with giddiness amounting to vertigo, loss of consciousness, and that peculiar and characteristic twitching of the muscles of the ear and face, indicative of megrims.

Mr. Bass remarked that although, as stated by Mr. Mannington, in inflammation of the substance of the brain we may have coma present, apoplexy following rupture of its vessels, and phrenitis supervening on meningitis, yet it is often difficult to distinguish these lesions by the symptoms presented. Moreover, in phrenitis he had frequently met with the substance of the brain inflamed as well as its membranes, accompanied with an effusion of fibrous matter under the pia mater; and in such cases he had found death to take place more quickly than when the meninges were alone affected. The symptoms also were more complicated, and the treatment demanded more energetic.

Mr. Mannington observed, that many horses are of an hæmorrhagic tendency. He related an instance of a horse subject to hæmorrhage from the nostrils, which at length died of apoplexy; of another which was attacked with coma, and apparently got well, but ultimately died from effusion of blood between the hemispheres, the thinness of the coats of the cerebral arteries favouring their becoming ruptured.

Mr. Bass replied, that to have effusion it was not necessary that rupture of the vessels must take place. An altered state of the blood would give rise to it, this fluid then finding its way through the coats of the vessels by transudation; that is, when the plasma and blood corpuscles are not in their relatively normal proportions to each other. Again, the growth of tumours within the cranial cavity would give rise to symptoms simulating those of apoplexy,

although for a time their development would be unnoticed from the parts accommodating themselves to each other, but, having attained to a certain size, they then interfered with organic life.

Mr. Mannington, in answer to the inquiries, said that the signs indicative of the presence of tumours on the brain, &c., will vary with their location. If on the cerebellum, there will be a loss of power over voluntary motion; if pressing on the medulla oblongata, paralysis; if on the upper part of the brain, meningitis unaccompanied with paralysis. These tumours are frequently of very slow growth, often taking months, and even years, to become of any size; and, after undue excitement, certain indications will shew themselves, which will pass off again and again, until at last most violent symptoms set in, and the animal dies phrenitic.

Instances of bony tumours, almost filling the cranial cavity, have been recorded in the "Transactions of the Association," the indications of which were peculiar, and deserving of more notice than has been given to them.

Mr. Rose related an instance of rupture of the vessels of the brain taking place consequent on an attack of stomach staggers.

Mr. Shepperson said, that three instances of stomach staggers, from eating of wheat, had fallen under his notice. In one a rupture of the stomach took place, and in the others a remarkable distention of the bursal sacs about the knee joints appeared within three days afterwards, which proved very obstinate to reduce.

Mr. Gowing described a case of gastritis, produced by a horse getting free during the night, and eating full a bushel of oats from the bin. By the adoption of active remedial measures he got well, but the grain was voided entire for some time afterwards.

Mr. Fishwick related an instance of extreme nervous irritability in a horse. If the hand were placed on him, he became violently excited; and the like state was induced whenever the box in which he was kept was suddenly opened. The pulse became accelerated, and profuse perspiration bedewed the surface of the body. From the peculiar symptom being present of the animal's carrying the head on one side, effusion into the ventricle, or the presence of a tumour, was prognosticated; but he ultimately got well from a free use of depletives, followed by the employment of nux vomica.

Mr. Harmer preferred the exhibition of medicines in the form of ball in those diseases, since from the loss of nervous power in

the pharynx, fluids often passed down the trachea, giving rise to much inconvenience, to say the least of it, and oftentimes to bronchial inflammation.

Mr. Varnell believed that, if proper care were exercised, there was no ground for the apprehension of danger on this account. The advantage derivable from the quicker action of a draught is of very great moment in these affections; nor should he object to the use of the stomach-pump for their administration: indeed, he had frequently known it to be successfully employed.

He had lately received a communication from a friend in the country, which had reference to the employment of the probang in cases of choaking in the horse; and this bearing somewhat on the subject, he would, with permission, read an extract from the letter he had received:—

Walpole, January 11, 1846.

My dear Sir,

* * * * * * * * * *

As choaking in horses is an accident generally attended with very violent and painful spasms, and which may frequently be removed in a few minutes, it behoves the members of the veterinary profession to collect all the evidence they can, in order that the true value of the "probang" may be impressed on the minds of the junior practitioners.

I have known the death of horses to result from choaking through no attempt having been made to pass the probang, this arising from a fear—an ungrounded one—of danger being attendant on the operation.

For the sake of method, I will begin by enumerating the agents with which horses are most commonly choaked, confining myself to cases that have fallen under my notice. They are carrots, dry bran, bean meal, and in three instances, "old fog or aftermath" in the spring. The symptoms are violent coughing, saliva flowing from the mouth and nostrils, extreme excitement, the animal stamping with his fore feet, and occasionally he throws himself down in a paroxysm; spasmodic contractions of the musles of deglutition are seen, and if food be attempted to be partaken of, it is quickly ejected, and nearly all of it is returned through the nostrils.

The treatment I have adopted is as follows:—If the offending agent be impacted near the beginning of the œsophagean canal, I have, by careful manipulation at the moment the animal attempted to regurgitate, succeeded in bringing it back again into the mouth. But should the substance be so placed as not to be felt by the hand, and we are led to infer that it is situated at the curvature of the thoracic portion of the œsophagus, then the probang must be resorted to, employing great caution in its introduction. Indeed, the anatomical difference of the velum palati, &c. of the horse, with his long and arched neck, tend to call for much greater care in the use of this instrument in him than in the ox.

The probang employed by me for several years was nothing more than a common cane tipped with a piece of sponge. Instead of the cane, I have substituted a whalebone staff, covered with fine cat-gut. Having first soaked the sponge in warm water, or, what is better, warm lard, the horse is backed into a narrow stall, and a twitch put on his ear. A balling-iron is now introduced, and the head and neck being brought into as straight a line as possible, the probang is passed into the œsophagus, and firmly, but without violence, pushed quickly down to the obstacle. The animal will now, most probably, make a violent effort to regurgitate; the probang, therefore, should be drawn back a few inches, until the spasmodic action subsides, the head being held firmly, and every means employed to quiet the animal. When this has been effected, continuous pressure must be given, always avoiding force. If unsuccessful in the first instance, I always wait for some time, and then renew the attempt. A small Welch pony, only twelve hands high, was last week operated upon by me. He was subsequently fed on soft diet, and did well.

I should have stated that, in two cases that came under my care, the symptoms being very alarming before the probang was attempted to be passed, both the horses were cast to be operated upon, and with careful nursing they subsequently got well.

I feel fully convinced that, in the hands of the scientific and careful practitioner of veterinary medicine, the probang is among the most useful instruments we possess.

I am, your's sincerely,

A. S. Copeman.

Mr. Mannington was not of opinion that, in the earliest stages of stomach staggers, we had congestion of the blood in the vessels of the brain to any amount; but an undue nervous excitement was set up, quickly followed by derangement of function, which was as quickly transferred to the vascular system. Thus we have, frequently, congestion of the brain supervening, and meningitis succeeding this, all resulting from sympathy with the stomach, brought about by the intervention of the nerves supplying this viscus, the result of reflex action. And in like manner it might depend on the influence of the heart through the medium of the eighth pair of nerves that supplies this organ, though this is not so likely to be the case, as other parts would be as liable to become diseased as the brain, did it solely depend on excited action of the heart. The free and frequent communications which most of the nerves about the head have with the pneumogastric, will fully account for the paralysis of the iris, and derangement in the action of the muscles of the pharynx, larynx, &c. In cases of cerebral disturbance, from partaking of large quantities of wheat, the disease is in some instances transferred to the laminated structure of the foot; and he thought this transference would take place from the brain to the feet rather than from the stomach to the feet.

When coma is an attendant, he would rather refer this to pressure on the nerves than to an absorption of the eliminated gaseous matters by the blood acting on the nervous fibres; although he was aware that many of the compounds of hydrogen are rapidly absorbed by blood, and they operate powerfully as sedatives on the system. In hoven in cattle we have considerable distention of the rumen, and yet no coma present.

In those animals subject to what is commonly designated stomach staggers, he had frequently found a morbid or depraved appetite to exist; yet he did not attribute the production of the disease to this, as much as to a sudden repletion of the stomach, by which as sudden and unnatural an impression is made on the sensorium.

By some authors this disease had been made to consist in a specific inflammation of the stomach, with which opinion he did not agree.

As a sequela of meningitis we frequently have effusion of fluid

into the ventricles, or of lymph over the substance of the brain itself, which would, of course, give rise to a train of characteristic symptoms, and in the end prove fatal.

As curative means, bold antiphilogistic measures should be had recourse to, such as bleeding, the administration of active purgatives, &c. Among the latter agents he objected to the employment of calomel, as, the function of the stomach being interfered with, it could not become converted into a soluble bichloride, and thus it frequently became a cause of colic. Croton oil and aloes were the therapeutic substances he should place the greatest reliance on, at all times preferring their exhibition in solution to that of any other form. Nor should he object to the use of the stomach-pump for the purpose of injecting fluids and medicines into the stomach, could it be safely made use of; but he had never witnessed its successful employment, and he believed it to be somewhat dangerous from the restlessness of the horse. As it respects blood-letting, he had found the pulse full and oppressed, shewing great tolerance of the withdrawal of blood; therefore the bleeding should be copious, and, if possible, arterial blood abstracted, as the loss of this acted more immediately on both the vascular and nervous systems.

Mr. Gowing had successfully passed the œsophagus tube into the stomach of a horse in a case of choaking with beans. Having given some tepid water to the animal, he manipulated the mass externally till softened, when he easily passed the tube onwards, and injected fluids through it into the stomach with evident benefit.

Mr. Fishwick objected to the use of the stomach-pump for the horse. He had almost invariably seen it produce suffocation in that animal. He also advocated the junction of some diffusible stimulant with the purgative agent, by which it would be more likely to bring about the desired action of the bowels.

Mr. Mannington feared the exciting influence of a stimulant of any kind while increased vascular action was present. He would rather rely on the well-known correcting action of some of the compounds of chlorine, so as to decompose the gases eliminated, and throw up medicated enemata.

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ON THE PURGING CROTON.

By Mr. JAMES WESTERN, *V.S. Body Guard, Honourable East India Company's Service, Madras.*

[Extract from a Letter.]

Dear Morton, *Madras, 8th July,* 1846.

* * * * * *

I TAKE great pleasure in watching the proceedings of the profession at home, and frequently, when reading what is going on, long to be present with you to have "my say" indulged.

THE RECORD of April has reached me by the last mail, and its leading article is "On the Purging Croton," by yourself. I have used this seed from the date of my arrival in India, in 1827, on all occasions, and what little I am acquainted with of its qualities more than you state I will, in a hurried dozen lines, give you to make what use you like of; and, at the same time, send you a small parcel of the nuts, which are procurable at all times and in any quantity in our bazaars. It appears to me that the nut is the only safe or certain way of administering the medicine, for the oil is by no means certain in its action, and the farina still less so; while I rarely find thirty grains of the nut fail in producing a full and free purgation, equal to an ounce of your cathartic mass. In your paper alluded to, you state that Mr. Hughes, of Calcutta, informs you that he does not consider croton is given in India to horses with a view to cause death. I have had frequent cause to think differently, and I believe it is a generally received opinion amongst veterinary surgeons on this side India, that it is not uncommon in the cavalry. I will give you the history, from recollection, of a

case that occurred when I was in the 5th Cavalry, stationed at Jaulnah :—A troop horse, to which a rough rider was attached, was brought to the hospital at stable hour in the morning, 6 A.M., freely purging and refusing his gram: the nose-bag containing it accompanied him. He died the same afternoon, about 5 o'clock. I had walked over to see him at that time, and found he had just expired. The farrier major then brought to my notice the fact of two native horsekeepers having been attacked during the day with the same symptoms as the horse, and stated they had eaten a good deal of the gram from the bag that the horse refused: they were both removed to the hospital, and had a narrow escape, but both recovered. The remainder of the gram had been thrown away.

This was the third horse belonging to this rough rider that had died under similar circumstances while I was with the regiment,—all troublesome, vicious beasts, and, no doubt, got rid of to relieve the man from trouble. Nothing could be proved against him, but proceedings of so searching a nature were instituted that he did not again repeat the experiment.

I think there were here good grounds for supposing croton had been used, for the symptoms were precisely the same in a horse I afterwards destroyed by a double dose, viz. ʒj. I have no doubt the nut had been given over-night, and a repetition of the dose, to make death certain, was intended for the next morning, which fell to the share of the horsekeepers.

The gram given as food to horses at Jaulnah is a kind of bean, which is slightly crushed and then wetted. It is by no means unpalatable, and something in flavour resembling malt; it is constantly eaten in curries by all classes, and is not in the least unwholesome. I will send you a little along with the croton, and some of the other kind of gram also, that we feed on in the Carnatic, which is called *kooltee*, and is always boiled. I have had many similar cases of death to the above, no doubt from the same cause, for the patient is invariably either a vicious beast, an unruly one in the ranks, or one inclined to mange; in either case a source of punishment to the Sepoy.

I do not consider croton at all to be compared to aloes as a general purgative, but one that is frequently of great use.

In the second letter of your paper is a case of death from over purgation, produced by the croton oil, where the mare could not

be made to take a ball. I have an English mare now under my care, to whom a ball cannot be given without casting her; but on whom thirty grains of croton nut, given in a handful of gram, act as a safe and full purgative. It is not uncommon to find some horses on whom an ordinary dose of aloes has no effect; here, then, croton is useful: again, in tetanus, where there is still the power to masticate, it is invaluable, for we know how necessary it is to keep the bowels open.

There is a method of preparing the nut that I do not think is mentioned in any work describing the drug. The kernel should be taken out whole, and with a little tact and practice divided with a penknife into halves, lining each of which will be found a thin film, which should be removed, for the natives declare this to be the poisonous portion of the nut. This does not agree with your account of the two horses that, by your experiment, were purged to death; neither does it with my account of the safety of the nut, for your dose and mine is the same. I have never tried what would be the consequence of allowing the *plumula* to be given; but, from the positive manner in which the natives assert its acridity, I have taken what they say for gospel, and *always prepared the nut myself* to make sure. I have not time before this mail to make the experiment, but it shall not be long before I do. I have no notes of a single case in which harm has resulted from the exhibition of croton in my practice; and I am therefore led to believe that we have too readily discarded a powerful purgative from our pharmacy, which, perhaps, these few lines may induce the profession to make another trial of, and thus, possibly, restore.

If there should be any drug that you think I can procure for you here in a better state than you can find it in the London market, I shall be very glad to assist you, or in any other manner that will benefit the profession.

I sent home, some months since, a phial containing some worms of a peculiar description, from a small horse destroyed for lameness. The phial was to be sent to the College by my brother, and it has just occurred to me that he has never told me that he had delivered it. The horse was always out of condition,—was castrated, and fell off greatly after it. I saw it the morning instructions were given to destroy it, but could not remain to examine into the cause of the excessive pain and lameness in the off hind

leg, arising, no doubt, from an accumulation of pus. It was not a patient of my own, but of one of the livery stables; and I requested, as a favour, that I might be informed of the cause of the lameness; and the worms being found in the "*large gut*," as they described it, they were sent to me, and no further investigation made. They are totally different to any I have before met with, and although *apparently broken* at one end, are, I believe, perfect, as *all were the same*.

Believe me to remain,
Sincerely your's.

P.S.—I have half a dozen, or more, specimens of the Filaria Oculi, which I will send with pleasure, if of any value to you. I have sometimes many of these cases in the months of February, March, and April, when they are most frequent, although they occur at all seasons; and I have a Cape horse now under care, from whose eye I have taken one. I have lately rolled the patient on his back for the operation, so as to allow the worm to gravitate towards the then lower portion of the eye, and if the incision be made at the outer canthus, the spot is covered by the upper lid when the horse is standing, and not the slightest defect is visible. I find I am too late to send the seeds by this mail: they shall come by the next.

ON PLEURO-PNEUMONIA IN CATTLE.

By Mr. J. JEKYLL, *M.R.C.V.S.*

THE disease in cattle, recognized by the term pleuro-pneumonia, is a peculiar inflammatory affection of the lungs and pleuræ; attacking these organs either in an epizootical or enzootical form, depending upon causes not clearly explained.

Much might be said about the primary cause or causes of this disease. In the present state of general science, however, all that can be advanced is, at best, vague conjecture; I shall, therefore, leave this division of the subject for future elucidation. The secondary causes, or modifying influences, may be traced somewhat more definitely. That which appears to exert its influence

in developing this disease in an epizootical form is any sudden change in the weather, or a long continuance of very hot weather: those circumstances, however, which seem to originate the enzootical form are numerous: for instance, old pasture lands, especially such as are productive of the malady called red-water; impure water, bad fodder, low and insufficiently ventilated places, where accumulations of decomposing animal or vegetable matter are allowed to take place, and, indeed, any thing that deranges the general health of the animal.

This particular form of inflammation of the lungs and their investing membrane differs from ordinary inflammation of those textures, both in its commencement, symptoms, treatment, progress, terminations, and post-mortem appearances; and, also, in the fact that it rarely appears in isolated cases, it generally attacking more than one animal in the locality where it may shew itself.

This disease is with great propriety divided into two forms,—the acute and the chronic; the acute (when unaccompanied with derangement of any other organ) being as marked for the great rapidity of its progress, towards either recovery or death, as the chronic is for its very slow progress towards either of these terminations. It is on the acute form of this disease that I intend more especially to dwell.

Acute pleuro-pneumonia may be divided into simple and complex; simple, when it occurs independent of and not involving other organs; complex, when it does implicate some other organ.

Simple acute pleuro-pneumonia is of rare occurrence. It generally attacks full-grown cattle in high condition, or a state of plethora. It is this form of the malady that most quickly terminates either in death or recovery, and it very seldom runs on to the chronic form. This, I think, is explained by the two following considerations:—first, the kind of beast attacked, and the state the animal is in when attacked;—secondly, when diseased action is diffused over many parts of the frame it is generally less intense, and has a greater tendency to assume a chronic form than when all its baneful energy is centered in one part of the animal system.

Symptoms.—The breathing of the animal becomes quick (called by Mr. Simonds spasmodic breathing), the back is slightly arched, and the skin looks very dry and unhealthy. If a milch cow, the

milk will become somewhat diminished. In some cases a slight cough is present, in others none. These symptoms pass off and recur with shorter intervals between each, until they become permanent, which is generally in from one day to three days. The pulse, up to this period, has not been perceptibly affected; but it now becomes accelerated, and the disease is about to shew itself in all its frightful activity. The breathing rapidly becomes catching and painful; a total loss of appetite and rumination follows; the extremities are sometimes hot and at other times cold; the muzzle is alternately dry and moist; the pulse is increased to above a hundred beats in the minute, and occasionally it is as high as a hundred and thirty—full and *oppressed*, if the inflammatory action more particularly attacks the lungs; but full and *bounding*, if it exerts its influence on the pleuræ. When pressure is applied to the intercostal spaces, pain is evinced, and that more especially on one side. The animal generally lies down with the head stretched along the ground, the mouth open, and the tongue hanging out, although, in some few and very rare cases, he will obstinately stand. The breathing now becomes extremely quick and laboured, each expiration being accompanied with a loud groan; occasionally the groan is absent, or much suppressed: the pulse also participates in this increased action, and becomes almost indistinct at the jaw.

The breath, in some cases, has a cadaverous odour, more especially if the animal has been affected with the disease three or four days prior to death taking place; the extremities are deadly cold; the eye is much sunk in the orbit; and the animal quickly gets up and as quickly lies down again, keeping the head stretched out, and, at last, dies almost without a struggle; although, in some few instances, I have observed death to be preceded by considerable struggling.

Auscultation must never be neglected by us in any one stage or form of this disease. Carefully and assiduously must the ear be applied to every part of the chest to which we can possibly bring it. It is by means of auscultation, more than any other aid, that we are enabled to form something like a correct opinion as to the ultimate issue of the malady, and to shape our prognosis. Although it is a subject too extensive to enter minutely upon in a paper like this, yet it is far too important to be passed over in silence; I

will, therefore, be as brief as I can, confining my remarks to its application in the acute form of the malady.

The first sound that auscultation gives is, an increase of the vesicular respiration in some isolated spots, all the other parts of the lungs yielding normal sounds. These abnormal sounds are more marked on one side. The vesicular respiration in these isolated spots becomes very loud, and so marked, that they cannot well be mistaken by even a careless attendant; the parts yielding the increased sound being, up to this time, the diseased parts. As the malady advances, the vesicular sound, where it was increased, suddenly becomes lost; and now it is that the parts which yield no sound are the diseased parts, while those portions of the lung which before gave a normal sound now give to the ear an increase of the vesicular sound, these being the parts in a state of health, or least diseased. The bronchial sounds are now increased, more particularly in the vicinity of these consolidations*. Those portions of the lung where the vesicular respiration is lost gradually become more and more extensive, until it cannot be heard throughout the whole, or nearly the whole, of one lung, and a very large portion of the opposite lung. Where the vesicular respiration can still be heard, it is very loud. The bronchial respiration is also much increased. In the latter stages the mucous *râle* is generally present, and the crackling râle may generally be detected in some part of the lungs in every stage of the disease. A serous fluid is not unfrequently thrown out by the pleuræ; it is, however, very difficult to detect this by means of auscultation. If there should be —as there is in some instances—an horizontal line along the chest detectable below which the respiratory murmur is lost, and above which it is audible, it is a very strong evidence of the existence of effusion. But the absence of this line does not prove the contrary; for if nearly the whole of one lung had become consolidated, it is obvious there would be no line, even though effusion should have gone on to a great extent within the pleural sacs. If percussion be employed, and the hand carefully applied to the lateral parieties of the thorax, an undulating sensation is frequently detectable when the fluid has collected in any quantity.

* I have used the term consolidation, to signify the alteration of structure that takes place, which is altogether unlike hepatization.

Treatment.—The treatment of this disease demands our greatest skill and energy. The tendency to debility is very marked; therefore, while we are prompt in the employment of our remedies, we must watch the effects produced with extreme care, so that we may not push them too far. Even from the commencement of the disease we must pay great attention to the dieting of the animal, so that his strength may be supported. Among the curative means, blood-letting stands first in importance. If the animal is seen during an attack of spasmodic breathing, before the pulse has become accelerated, a full bleeding, followed by a dose of purgative medicine, will be often all that is required to effect a radical cure. But it is rarely the case that animals are seen thus early, or, if they are, the veterinary surgeon is not often called in until the animal refuses his food, and the pulse has risen to about one hundred, and the other symptoms have made corresponding progress. Blood must now be abstracted from the jugular vein until a decided and marked effect is produced upon the pulse; which effect will be much sooner manifested if the orifice from which the blood flows is large, the advantage that results being a saving of the animal's strength. In ten or twelve hours after bleeding, the pulse will probably fall to about eighty, and be much altered in character. If the pulse again increases in frequency, and becomes either full or bounding, even though consolidation should have gone on to a great extent, I would again abstract blood, but with caution, closing the opening in the vein the instant the pulse becomes affected. In some cases, where consolidation has not become extensive, the pulse will again suddenly increase in frequency, and be full and bounding as the pleuræ are more or less involved. In such cases I have, with great caution, bled the animal a third time, and with the very best results. In some few instances apparent consolidation of a large portion of the lungs takes place very early in the attack, the pulse ranging between one hundred and one hundred and thirty, the artery being so distended that it requires great delicacy of touch to count the number of beats. These cases have a fatal termination in a few hours, if not relieved. In such cases I give a full dose of spt. etheris nitrici et ammoniæ sesqui. carb. This in a short time renders the pulse more distinct; and as soon as I perceive this action, I open the jugular vein, and allow the

blood to flow until a decided effect is produced upon the pulse. If the ear be now placed to the sides of the suffering animal, the vesicular respiration will be heard throughout the whole, or nearly the whole, extent of lung that previously emitted only the bronchial sounds. In such a case as this recovery is frequently very rapid.

Some persons may condemn me for using the lancet so freely. To such I answer, I write from practical experience, and from personal observation of the effects produced in very many cases, in various stages of the disease, and under numerous modifying circumstances. Before a principle is condemned, the condemnator should be well assured that the fault is in the principle, and *not in his application of it*.

COUNTER-IRRITATION is next in importance. In this disease, to be successful, it must be both extensive and severe. In many cases, long setons, when medicated, will suffice. I have found Mr. Morton's medicated setons very valuable. But, whether Mr. Morton's medicated tape or the ordinary seton be employed, the action of either will be much increased by the following compound:

Unguentum hellebori nigri compositum.

℞ Pulv. helleb. nig.
- capsici min.
- cantharides
- croton tiglii. āā partes equales

Adeps ppt. duæ partæ. Misce fiat unguent.

The above ointment, when applied under the skin by means of the seton, produces considerable swelling, with an almost continuous discharge of a serous fluid from each incision. The advantages resulting from the use of this ointment are, its instantaneous and powerful action, and the safety with which it may be continued; but if it is employed too freely, sloughing of the skin is sometimes the consequence.

In very severe cases, when disease has made some considerable advances before the veterinary surgeon is called in, blisters should also be employed. These agents must be well rubbed in for half an hour over an extensive surface. The skin of the ox is so thick and insensible, that the very strongest irritants are here necessary, and they often require a second or even a third application. I have resorted to various formulæ for this purpose. The following

are among the best:—The terebinthinate solution of the acrid principle of the croton seed, introduced by Mr. Morton. This is, perhaps, the most valuable. I have, also, used with benefit one part ol. canth., and two parts of liq. ammon. fort; likewise an ointment made of equal parts of antim. pot. tart., pulv. canth., pulv. croton tig., et adeps. This ointment, however, often causes extensive sloughing to take place, and indolent ill-conditioned sores follow its use. In extremely severe cases, the setons and the active compounds described, placed under or upon the skin, will all fail to produce the least effect: such a state is generally indicative of a speedy and fatal termination. But all hope is not yet fled:—we have still a most powerful remedy in reserve,—it is the application of boiling water to the back and sides of the affected animal. This must be both extensively and carefully applied, for if it falls repeatedly on the same place the hair will never return. The beneficial effect resulting is frequently very marked. When the discharge from the medicated setons commences, or the blisters begin to produce their wonted action, an improvement, evidenced by every symptom, quickly follows. Unfortunately, in some cases, this anticipated good is only transient. Yet I would not, even now, despair, for a second application of the boiling water has sometimes brought about a favourable issue. But should the second application fail, a third will rarely succeed. It may be designated a cruel, but it is a most powerful and invaluable remedy, and only to be had recourse to in emergencies.

The exhibition of internal remedies requires circumspection. An aperient is generally called for in the first instance. If, however, the bowels should be constipated, a bold cathartic may be given with advantage. Sedatives are valuable, but, owing to the quickly supervening debility, their action must be carefully watched. The extractum belladonnæ I have found to be the safest. It may be given in small doses with the liquor ammoniæ acet. and spt. æther. nitric, morning and evening. As soon as its action on the pulse can be detected, it must be administered only once in the day, and on the first symptom of approaching debility it must be withheld; the solution of the acetate of ammonia and the spirit of nitric ether being continued twice a-day, adding one or two drachms of ammon. hydrochloras. If the debility increases, the sesqui-carbonate of ammonia may be substituted; and should no

visible change result, I have found good follow from the substitution of the liquor cupri ammoniati* in four-drachm doses, repeating it every eight hours. Should this compound induce constipation, which it will in some cases, a mild aperient must be interposed. As the animal has no inclination for food of any kind, it must be given by the mouth; and it should consist of such matters as will both support the strength and keep the fæces soft. These indications are fulfilled by the following:—equal quantities of linseed and oatmeal separately boiled with water until thick, then well mixed, and, when cold, two or three gallons given to the animal thrice in the day. With this gruel, aperients are rarely required. As the animal advances towards recovery, and the appetite partly returns, newly mown grass, or clover, or vetches with crushed malt, ground oats, or broken oil-cake, may be allowed. If in the winter, some of the edible roots, well washed and cut in thin slices, or a little sweet hay, or any kind of good food that will tempt the animal to eat, should be offered.

If the symptoms present are such as to lead to the inference that serum has become effused within the thoracic cavity, the operation of paracentesis thoracis should be at once and immediately performed. The operation here requires rather more than the ordinary care, on account of the enlarged state of the lungs, the danger of wounding them being thereby increased. If no fluid follows the withdrawal of the stiletto, a thick probe with a very obtuse extremity should be passed carefully through the canula, for the coagulated lymph is in some instances so abundant as to completely choke up the tube, even when a large quantity of fluid is present. The whole of the fluid should not be withdrawn at once, as it might produce collapse of the lungs, and death: it is better that the operation should be repeated on the following day. Generous food, with tonics and diuretics, and also the application of mercurial ointment to the parts where the blisters were applied, will frequently bring about a restoration to health.

I will conclude this division—the treatment of this form of the disease—by a few remarks on the internal agents I have employed. Belladonna is the only direct sedative I have found it safe to administer. The potassio tartrate of antimony I have sometimes

* Made by dissolving one part of the sulphate of copper in four parts of water, then adding the liq. ammon. fort. until the desired compound is formed.

given with advantage in doses of a drachm, twice or thrice repeated. If given more freely, it frequently induces disease of the digestive organs. In one instance, the third drachm produced regurgitation of the food (resembling vomition) to a great extent. In this disease, the mucous membrane lining the alimentary canal has a tendency to take on inflammatory action, and it is well known that this agent exerts its influence on mucous surfaces. The nitrate of potash may be given in doses of ʒiv every day with advantage. Digitalis I have tried, and I condemn its use in any and in every form. It debilitates the animal, and lessens the naturally inherent power of resistance to disease without ameliorating any one symptom. The spirit of nitric ether is a most valuable compound. In the early stages it relieves by its febrifuge action. Its effect on the skin is marked. The "harsh, dry, staring coat" is quickly rendered by its influence as sleek and as glossy as in health: this, I think, proves its diaphoretic influence. In the latter stages it supports the sinking energies of life. Ammonia, with all its compounds, possesses a marked therapeutic agency. There is no stage or form of the malady in which some one of its compounds may not be given with great advantage. While I am no advocate for the addition of more compounds to the veterinary pharmacopœia, yet, when I find centered in one compound such real worth as I believe to exist in the solution of ammoniated copper, I cannot refrain from especially recommending it to the notice of the profession. Its medicinal properties are considerable in many diseases, it being a most powerful stimulating tonic. In this malady, when the animal is much reduced, the pulse up to one hundred and thirty, and felt as a mere thread at the jaw, if this medicine be given as I have directed, the effect is often almost magical. The pulse increases in tone, but decreases in frequency from ten to twenty per diem, and the animal rapidly regains his strength. During the convalescent stage, the vegetable tonics may be combined with the above compound of copper with advantage.

A post-mortem examination at once shews "the why and the wherefore" that this disease is so difficult to treat and so fatal in its consequences. The structures involved are essential to the maintenance of life, and the tendency of the disease to produce morbid changes of structure is most marked. When we think of the extremely delicate organization of these tissues, and the com-

plicated chemical processes that must always be in active exercise in them, we can only feel surprised that life can be maintained for any time when such an amount of disorganization has been produced in them. As soon as the thorax is opened, the pleura pulmonalis, in the majority of instances, is seen covered in every direction with lymph, and in some instances strong bands, constituting false membranes, unite the pleura pulmonalis to the pleura costalis. In some few cases, a large quantity of serous fluid is found collected within the pleural sacs, having flocculi of lymph floating in the otherwise clear fluid. The great difference in the size of the lungs next strikes the examiner. One lung is found sometimes twice, or even more than twice, as large as the other; and one is frequently a mass of diseased structure, while the other is comparatively healthy. But it generally happens that even the more healthy lung is very much affected, and it not unfrequently is the case that the more diseased lung has still some small part or parts where disorganization has not taken place to any extent. When a clean cut is made into one of the most diseased parts, it presents much the appearance of a painted surface; the ground being a dark red, and yellow lines, irregular in thickness and direction, are seen running in every conceivable direction, dividing the dark red into various shaped angular pieces. This appearance is characteristic of the disease, and is caused, according to Mr. Simonds, by a deposit of the hæmatosine of the blood into the interstitial cellular tissue, and the coagulation of albumino-serum in the interlobular cellular tissue. This appearance is also very irregular, being much more marked in some parts than in others. If the disease has continued some days, spots may be found where pus has been deposited, and which, if the animal had survived, would probably have been the seat of future abscesses.

Having thus described SIMPLE ACUTE PNEUMONIA, I proceed to remark that complicated acute pleuro-pneumonia is by far more frequently met with, and the digestive organs are most frequently involved.

Many of the symptoms, in all the complications of this disease, are similar to those present in the simple form: I shall, therefore, only describe those which may be viewed as additional, and notice those which are absent. The pulse is softer and more frequent; the appetite is sooner lost; the fæces are one day hard, dry, black,

and covered with mucus; the next day, very probably, diarrhœa has set in, the evacuations being generally black and fœtid. The eye is more sunk, and the tendency towards debility even greater and more quickly manifested; these indications being accompanied with large accumulations of gaseous compounds in the rumen.

Treatment.—Bleeding in this form must be employed with more care, and rarely repeated a second time; but the counter-irritation should be most active. Belladonna, too, must be more cautiously administered, and the tartarized antimony and nitrate of potash altogether withheld. The spirit of nitric ether, combined with stimulants and tonics, may be more freely given. Both the aromatic spirit of ammonia and the chlorinated lime will fail to condense the eliminated gases: a trocar, therefore, must be passed into the rumen, and the canula allowed to remain in for two or three days. Give every six hours liq. ammon. acet. ʒvi, spirit. æth. nit. et liq. cupri ammon. āā ʒss. The mucous lining membrane of the alimentary canal likewise appears to generate a gaseous fluid, and the above compound will be found to correct this tendency. Let not the practitioner be afraid of giving stimulants and tonics because there is inflammation of the lining mucous membrane. The inflammation induced is of a peculiar morbid character, and will rarely yield to either laxatives, sedatives, anodynes, antacids, or the compounds of chlorine. When constipation is present, a very mild laxative is required. When diarrhœa sets in, astringents with antacids are called for to restrain the increased action. Astringent and anodyne enemas will also be found beneficial.

Post-mortem examination.—The thoracic viscera shew the usual marks of the disease. In addition to which inflammation of nearly the whole of the lining membrane of the alimentary canal exists. The inflammation rarely extends to the muscular coat, and still more rarely to the peritoneal covering.

The next most frequent complication of pleuro-pneumonia is when the heart or the pericardium, or both, are involved.

Symptoms.—The animal is rarely found standing, and appears in great distress, the countenance being peculiarly anxious. If the pericardium alone be affected, the pulse is very quick, full, and firm. If effusion has taken place, an undulating action is observable in the vicinity of the heart. If the substance of the heart be involved, the pulse is quick, violent, and irregularly intermittent.

Auscultation gives abnormal sounds. If the hand be applied to the region of the heart, it will be perceived that the heart strikes the side with violence, and the stroke is repeated with less and less force until a pause, or silence, ensues, and then the violent action is renewed.

Treatment.—Bleeding is here called for, and that to a large extent. The animal generally experiences relief soon after the blood begins to flow. If blood has been abstracted to a large amount in the first instance, a second bleeding is rarely required; for if the animal survives the first twelve hours he generally recovers. I have found the hydrocyanic acid an invaluable agent in this form of the disease, giving it in doses of half a drachm twice a day. The extract of belladonna may also be administered in combination with spirit. æther. nit. et liq. ammon. acet. Stimulants and tonics must not be employed so early as in the simple form of pleuro-pneumonia, and they must also be exhibited in less doses and at longer intervals. Counter-irritation is required as in the simple form. If fluid be present in the pericardial sac, the operation of tapping may, perhaps, be had recourse to; but as I have never had occasion to perform it, I shall give no opinion on its merits or demerits.

In addition to the post-mortem appearances presented in the simple form, the internal surface of the pericardium is much inflamed, and contains flocculi of lymph, and, in some very rare instances, a large amount of serous fluid. The substance of the heart is softened, and in some parts almost black with extravasated blood. In other parts the colour is much heightened. Thick layers of black extravasated blood are seen situated between the substance of the heart and the membrane that lines its internal cavities.

Bronchitis is an occasional accompaniment of pleuro-pneumonia. I believe the membrane lining the bronchial passages is rarely healthy in this disease; but I refer to that state in which the membrane is affected to such an extent as to form a dangerous and prominent feature of the malady.

Symptoms.—The cough is frequent, dry, and troublesome; and, after the disease has lasted some days, a very large quantity of unhealthy mucus is coughed up through the mouth and nostrils. The pulse is rarely above a hundred, and very soft and yielding.

The mucous râle is very loud, and may be heard in almost every part of the chest. It is, of all the forms of pleuro-pneumonia, the least fatal.

Treatment.—Great care is requisite in the abstraction of blood, and its repetition is rarely allowable. Counter-irritants must be adopted, as in the other forms. Sedatives may be given, with the same precaution as in the simple form of pleuro-pneumonia; the action of these therapeutics being sooner manifested. The hydrocyanic acid administered once a-day will relieve the cough considerably. Febrifuge agents are here of more value than in any other form of the disease, and the mildest laxatives will suffice. Stimulants and tonics require to be given in very small doses, and their action carefully watched. The strength of the animal must be well supported by gruel. Besides these characteristic marks of bronchitic pneumonia, should the case terminate fatally, we shall find extensive disease of the mucous membrane constituting the inner covering to the air-passages, the membrane being inflamed from the air-cells to the extreme parts of the larynx. In some places it is of a red colour, in others it is almost black. Many of the smaller bronchial tubes will be seen completely filled with dark unhealthy-looking mucus, while all of them will contain a large portion of the same morbid secretion.

Thus have I cursorily, perhaps hurriedly, reviewed the outlines of the modifications of this disease. I have not deemed it wise to dwell long on the different divisions, because between the forms in which a disease shews itself much similarity must necessarily exist, as I have before hinted; *et, verb. sapient. sat.*

Newland, Lincoln.,
July 25, 1846.

Splenitis with Cholera in Cattle.

[A communication having the above heading has been received by us from Mr. G. B. Webb, V.S., of Balsham. As the disease described by him presents some singular features in its progress, and is quickly fatal, we make the following extract from his letter, with a view to ascertain if the same disease has shewn itself else-

where. We are at present in correspondence with Mr. Webb, and, should any further information be elicited by us, we will not fail to put our readers in possession of it. Cases somewhat analogous are recorded by Mr. Howell in the first volume of THE RECORD, page 129.—*Editors.*]

Dear Sir, *Balsham, Aug.* 13, 1846.

A DISEASE, to which I have given the above name, is prevailing among the cows which are placed under my professional superintendence in this district. If not altogether a new disease, the symptoms are certainly uncommon. It appears to be an epizootic, and fatal without exception; at any rate, eight cases have fallen under my notice, and all of them have died. In one case the proprietor sent for another practitioner. He gave some medicine to the animal, and said there was nothing the matter of the least consequence: the cow, however, was dead the next morning. It is a month since the first case was seen, and the last occurred this morning.

The cows were all in one parish, and feeding upon low meadow ground, but dry; they had, however, access to a beautiful running stream of water. Generally, they die within from ten to twenty hours after they are attacked.

Symptoms.—A slight disinclination to feed; secretion of milk diminished; the pulse natural, indeed unaffected; nor is there any alarming symptom whatever till within about four hours before death, when there is a slight swelling of the body perceived; diarrhœa quickly supervenes, with pain of the bowels—the animal frequently lies down—the pulse becomes quick and full—the respiration accelerated—total loss of appetite; and death.

Post-mortem appearances.—Inflammation of the small intestines to the extent of about half a yard—in some not more than a foot—a short distance from the stomach. The portion of bowel diseased is so much decomposed that it is a difficult thing to identify it when withdrawn, it having the appearance of clotted blood, and being the colour of pitch. The spleen is inflamed and enlarged: in one case it weighed nine pounds and a half. This organ would seem to have been the primary sufferer, although I do not view it as the immediate cause of death: this I refer to the sphacelitic state of the intestines. The lungs are but slightly affected, and

in some instances they present only a little increased vascularity. In the cow that died this morning they were perfectly healthy, and the trachea with its continuation into the bronchi also.

Treatment.—Here I have felt myself altogether at a loss. Narcotics and astringents have had no effect whatever. Some I have bled copiously, others not at all. I have also given laxatives to aid nature in getting rid of that which appeared offensive; yet all has been of no avail. Any advice under this head will be esteemed a favour by

Your humble servant.

To Professor Spooner.

Epizootic Disease among Cattle in Russia.

An epizootic disease is at present diffusing itself among cattle in the southern provinces of Russia. The symptoms are somewhat similar to those of the cholera, and it was observed to prevail among the cattle of these districts during the prevalence of this disease in 1830-1.

Medical Gazette.

Cattle Disease in Transylvania.

The disease among cattle, which, during the last two years, has effected such dreadful ravages in Germany, has recently reappeared in Transylvania. The contagion is carried even by persons who have remained a moment in the neighbourhood of an afflicted animal. It often does not appear for five or six days after contagion, and the first symptoms are manifested by rigors and constant shaking of the head, the nose and mouth of the animal become dry and hot, and soon a fluid distils from them, giving off a strong smell. Pustules are found under the skin, violent diarrhœa supervenes, and the animal dies usually about five days after the commencement of the disease.

The Medical Times.

MR. JACKSON presents his compliments to the Editors of the VETERINARY RECORD, and would esteem it a favour if they will permit the enclosed to appear in the ensuing Number of their ably-conducted and excellent periodical.

Long Clawson, Melton Mowbray,
July 3, 1846.

A CONTRAST.

HEART—ARTERY.	SPLEEN—VEIN.
1. The soluble and nutritious portion of the food passes from the digestive tube into the *lacteals*, and through the *mesenteric glands* and *thoracic duct* into the *left subclavian vein*.	1. The soluble and nutritious portion of the food, as well as the drink, passes from the digestive tube into the *intestinal capillaries*, and through the *mesenteric veins* into the middle of the trunk of that *Great Vein, whose roots are in the spleen, and whose branches are in the liver*.
2. It is a large ARTERY which takes the blood to the lungs.	2. It is a large VEIN which takes the blood to the liver.
3. To this artery a HEART* is prefixed.	3. To this vein the SPLEEN is prefixed.
4. Into the heart, *large* VENOUS *roots* go—the cavæ.	4. Into the spleen, *small* ARTERIAL *branches* go — the branches of the splenic artery.
5. Out of the heart comes an ARTERY—the pulmonary or cardia-pulmonic.	5. Out of the spleen comes a VEIN—the splenic or splenohepatic.
6. The reverse or contrary of the ARTERY is the VEIN.	6. The reverse or contrary of the HEART is the SPLEEN.

Diametrically different *anatomical causes* produce diametrically different *physiological effects*.

7. The bloodvessel going to the lungs, consisting of a HEART and an ARTERY, produces a *constant* and *rapid* motion of the blood through the capillaries of the lungs.	7. The bloodvessel going to the liver, consisting of the SPLEEN and a VEIN, produces an *intermittent* and *slow* motion of the blood through the capillaries of the liver.

J. J.

* i. e., one auricle and one ventricle.

The Operation of Lithotomy successfully performed.

Communicated by Mr. G. Norman, *M.R.C.V.S.*

Dear Sir, *Dunmow, Aug. 21st,* 1846.

Having, on the 7th ult., witnessed the operation of lithotomy most skilfully performed by Mr. Thos. Folks, veterinary practitioner of Bishop's Stortford, I thought the details of the case well worthy of a place in your valuable periodical, The Veterinary Record; but, perceiving he was somewhat dilatory in forwarding them to you, I asked him to allow me to do so, to which he has consented. They are as follow:—

The patient was a chestnut cart-horse, the property of Nicholas Parry, Esq., Master of the Puckeridge hounds. Mr. Folks had been frequently called in to alleviate the sufferings of the animal; but being convinced that a calculus existed in the bladder, he requested permission of the owner to extract it; and, having obtained his consent, the animal was removed to his infirmary to be placed under preparatory treatment. On the operation being performed, a calculus was extracted, which weighed eleven ounces four drachms and two scruples. A watery solution of opium was injected into the bladder immediately after the operation, the edges of the incision in the perineum were drawn together by sutures, a free use of demulcents was subsequently had recourse to, and the patient never evinced one untoward symptom after the operation. He left the infirmary perfectly well within a month, and is now performing his usual work.

I am, dear Sir,

To J. B. Simonds, Esq. Your's truly.

Case of Rupture of the Colon in a Mare.

By Mr. T. W. Gowing, *V.S.*

A grey mare, eight years old, of the cart breed, but not of very heavy make, the property of extensive railway carriers of Camden Town, was seized with spasmodic colic in the stable on the morning of Christmas Day last. The head horsekeeper of the establish-

ment ordered the carter, under whose care the horse was placed, not to work the animal that day; but the man, notwithstanding this, during the absence of his superior, harnessed the mare and took her out in a wagon or cart, starting from Camden Town at about ten o'clock, A.M., and returning at five o'clock, P.M. The mare was driven at the usual speed, being a trotting pace.

I could obtain no account of what symptoms were exhibited during the period when the mare was at work; but when she returned to the stable her state was such as induced the head horse-keeper to request my immediate attendance.

On my arrival I found the animal in her stall. The pulse was quick but not full, and its tone rather denoted exhaustion than inflammation; the body was wet with perspiration, the extremities warm, and the visible mucous membranes slightly heightened in colour.

Having observed these symptoms, I carefully watched the animal. She remained upon her legs, and shewed no disposition whatever to roll or lie down; however, she frequently drew the nostrils upwards in a very peculiar manner; the head was turned occasionally to the right side, and always in that direction, and she sometimes pawed as if in pain, exhibiting, in fact, general indications of disquietude.

The symptoms not being sufficiently marked to enable me to form any decided opinion, I was inclined to think that the case was either one of protracted colic, or that, from its continuance, enteritis in a mild or subacute form had supervened.

As the animal appeared to be in a low condition, I ordered her into a loose box, and administered a draught of a mildly stimulating nature, with six drachms of aloes in combination with opium; hoping, by its effects, to quiet the system, and also to produce an evacuation, the fæces in the rectum indicating some constipation to be present. Enemas of soap and water were likewise from time to time thrown up.

I saw the patient twice that night, and at nine o'clock I repeated the draught, perceiving no effect to follow from that I had previously given. At twelve, P.M., my assistant visited the animal, and the horse-keeper informed him that she appeared easier, and he thought it better that matters should remain as they were for the

night. The next morning I again saw the mare. The pulse had now become quicker and stronger; I, therefore, abstracted six quarts of blood, which lessened the number of beats and rendered the pulse softer. I then gave two drachms of powdered opium dissolved in warm water, and stimulated the abdomen with the liniment of cantharides, using about four ounces of that agent, which was well rubbed in. I also removed all dry food, ordered a pail of white water to be placed in the manger, and left two drachms more of opium with the horse-keeper, with directions for it to be given in four hours, or sooner if the pain should appear to increase: this was done. At one o'clock, P.M., I again visited my patient, and still could perceive no change in any of the symptoms.

I continued to attend upon the animal till her death, and during the whole period I detected no alteration whatever. The symptoms throughout, for six days, were of the same character. No medicine appeared in any manner to affect the disease, although my treatment at times was particularly active. I repeated the stimulant to the abdomen; and, as the purgatives did not create any abdominal irritation, in four days I gave no less than five ounces of aloes mixed with four pints and a half of linseed oil, besides three half drachms more of opium (at intervals), and also three drachms and a half of calomel.

My object in administering such large doses as these was to procure an alvine evacuation, as from the continuance of the unfavourable symptoms I was led to suspect the presence of a calculus, or some other foreign body; and I believed that the success of the case depended upon my being able to overcome the mechanical obstruction.

On the fourth day I discontinued all treatment, only exhibiting enemas, and giving directions concerning the nature of the animal's food. Without any marked change the mare gradually sank; but so gradually, that even an hour before her death it required some attention to discover any alteration in the symptoms. On the morning of the 31st of December she voided several small portions of dung, which were of a pultaceous consistence. The near hind leg became paralyzed, and about twelve at noon she expired, without evincing any suffering.

In consequence of the large doses of purgative medicine that were administered having caused no apparent aggravation of the disease, and also from the circumstance of the abdominal pain, although continuous, yet still being throughout of a mild character, notwithstanding the unremitted constipation the bowels present, I felt convinced that the post-mortem examination would disclose an intestinal calculus, probably of that kind denominated dung-ball; and, impressed with this belief, I proceeded to make my examination: but no sooner was the abdomen opened, than the fæces were seen to be free within the serous cavity, shewing at once that some portion of the alimentary canal had become ruptured. The stomach was entire, although considerably distended with fluid. The small intestines were healthy, the peritoneum being only in a few places inflamed, but not in any part intensely so.

The seat of the rupture was found to be the colon, just where that intestine terminates in the single colon. The rupture was transverse in its direction, extending from one longitudinal band to the other, and situated in the most capacious part of the gut. The coats of the colon were somewhat thickened, and the mucous membrane much discoloured by inflammation throughout its whole extent.

The peculiarity of the case appears to me to be the sub-acute character which it displayed throughout; for the symptoms were never characterized by any severity, notwithstanding the quantity of medicine exhibited was alone sufficient to have induced the most powerful action under ordinary circumstances. At what period the rupture took place, of course, I cannot positively say; but from the unaltered and uninterrupted chain of symptoms, I am unable to conjecture otherwise than that it existed from the very first; although, that foreign matter should for six days have been in contact with the peritoneum, and at the end of that time the animal have sank rather from exhaustion than acute disease, appears to me somewhat unaccountable.

No. 1, *Stucley Terrace,*
Camden Town.

Pleuro-Pneumonia Epizootica complicated with Gastritis and Gastro-Enteritis.

By M. J. J. Dele, *Veterinary Surgeon, Antwerp.*

[From the "Journal Vétérinaire de Belgique."]

This disease, according to M. Dele, broke out for the first time in the month of June 1829, in the commune of Duffel, in a farm on the banks of the river Nethe, a low and marshy situation, subject to frequent inundations. In 1830 it prevailed in the arrondissement of Antwerp, where it continued its devastations until 1834 and 1835, when it lost much of its malignity, and in 1837 it had entirely disappeared. But in 1838 this disease again broke out among a large number of oxen in the canton of Eckeren, and prevailed more particularly in the meadows of Polder Austruweel, Wilmarsdonek, &c., where it continued until 1840, when it extended itself to the stables of the cowkeepers at Antwerp, and destroyed a great number of milch cows.

Principal Symptoms of this Disease.

The earliest symptoms of pleuro-pneumonia are dulness, the animal standing back from the manger if in the stable, or leaving the herd if out at grass; extreme sensibility on pressing the spine; dryness of skin; diminution of rumination, and the secretion of milk; with a more or less frequent cough, which is often small and dry. In some there is no loss of appetite, while others refuse all solid food, but drink with great avidity cold water in considerable quantities. The pulse and respiration are accelerated. Auscultation furnishes nothing very important at this early stage; the respiratory murmur, however, is short, and distinctly heard. Percussion at the onset of this disease is only of importance to denote the tenderness of the region of the pleura-costalis. At the end of three or four days, the malady having made some progress, the air expired is found to be hot, the cough more frequent, the respiration laborious, the general fever increased, the eyes injected and yellow, and tears secreted in increased quantities; the nostrils discharge a

white viscid mucus, the muzzle is hot and dry, and the pulse small and ranging from 60 to 90 beats in the minute. Those animals in which these symptoms exist seldom lie down; they also become more and more hide-bound. The respiration is accompanied by a peculiar plaintive noise. The excrements, which were up to this time dry and scanty, now become soft, and exhale an unpleasant odour. The animals fast lose flesh, and they are either much tucked up, or meteorization exists: the rumination and secretion of milk become entirely suspended, and if in calf, they abort, which is a sure sign of approaching death.

As the disease becomes more intense, all the symptoms necessarily increase in urgency. The respiration becomes more and more difficult and loud—the animal can hardly keep on its legs—the pulse is small and almost imperceptible at the jaw—the nostrils are dilated. By percussion, the chest yields a dull sound—the contractions of the heart are accelerated—the fore legs are wide apart—and sometimes an œdematous swelling is perceived at the sternal and intermaxillary regions.

In addition to these symptoms, diarrhœa often supervenes, the fæces being of a black or greenish colour, and so fœtid as to be almost unbearable: this is constantly followed by death on the second or third day. The duration of this form of pleuro-pneumonia in young and plethoric animals is, in the majority of cases, from five to ten days. It has been observed to be more frequent in cattle fed on the refuse of distilleries. Rarely does it terminate in resolution. The lesions most generally met with are hepatization of the lungs, and effusion into the thoracic cavity, with adhesion of the pleuræ to each other by bands of lymph. When the disease assumes the chronic form, its duration may then be from twenty, thirty, or forty days, or even three months.

We will not follow M. Dele in the different causes he assigns for the disease. Of its contagious nature, he says, no one at the present time doubts; and he further states, that the disease has now prevailed for fifteen years in his district, sometimes epizootically, and at others enzootically. The morbid lesions otherwise observed by him are as follow:—

It is invariably in the thoracic cavity that the greatest changes are found to have taken place. Generally one lobe of the lungs is hepatized, weighing sometimes from fourteen to fifteen kilogrammes

(about from thirty-five to thirty-eight pounds). We seldom find both lobes involved. The affected parts are hard, compact, resisting, crackling when incised, and presenting a marbled appearance, more or less coloured, according to the intensity of the disease. The general aspect is red, corresponding to the lobulæ, and either white or yellow in the interstices. The cellular membrane is much thickened, and has acquired a density equal to the fibrous tissue. The pleural sacs are filled with an albuminous serosity and covered with pseudo-membranous exudations. Frequently spots of ecchymosis are observed on the surface of the lungs. The pulmonary vessels are almost completely obliterated by the exudation which adheres to their parietes.

The viscera of the abdomen do not exhibit any morbid appearances externally, with the exception of the fourth or true stomach, which is somewhat enlarged and hard, and the gall-bladder is also distended with black bile.

I have frequently met with traces of inflammation on the stomach, and found ulcers of a black or brown colour on the mucous membrane; principally in the vicinity of the pyloric orifice: this lesion was most remarkable. M. Delafond, to whom we are indebted for an important work on pleuro-pneumonia, having stated that nothing remarkable was to be found in the viscera of the abdomen, &c., I have thought it right to describe those alterations which I have met with.

In the month of August 1840, the canton of Puers was visited by this terrible epizootic. It prevailed with great violence in several communes, and carried off the cattle in from eight, twelve, and fifteen to twenty-five days. M. Dele, in conjunction with M. Van den Putte, of Malines, was appointed by government to watch the progress of the disease, and M. Dele gives the following account of it:—

On the 26th of August we made our first visit. We found in the commune of Oppuers twelve stables in which the epizootic had already carried off several of the stock: in St. Amand two stables, and in Bornham six, similarly situated.

The potassio-tartrate of antimony, advocated in this disease, was administered in doses varying from ʒiv to ʒvi, several times a-day during the period of its increase. Suppuratives were inserted in the dewlap, and bleeding and limited diet were ordered, with

friction, so as to excite the exhalents of the skin. Barley water was allowed as drink.

On the 30th, no amendment being perceptible, the dose of antim. pot. tart. was augmented to ʒj for each animal, and it was repeated on the following day.

September 2d.—No amendment. The alvine evacuations are in a liquid state, and emit an offensive odour; the pulse is small, and almost imperceptible; and the animals can hardly walk,—they are also much emaciated. It was our opinion that the diarrhœa was produced by the tartarized antimony.

On the 4th of September, two cows, in which superpurgation existed, were slaughtered. The autopsy, immediately after, shewed the following lesions:—

Thorax.—Hepatization of the right lobe of the lungs. Adhesion of the pleuræ, with effusion of from fifteen to sixteen litres (nearly four gallons) of yellow serum.

Abdomen.—Small intestines of a bluish colour. The rumen contained a certain amount of aliment, which, however, presented nothing particular. The maniplus (omasum) was hard, and filled with dry food, and its mucous membrane peeled off with great facility.

The abomasum (fourth or true stomach) internally was coated with a dark-coloured mucus, and exhibited some spots of ecchymosis, with here and there ulceration. The small intestines were filled with a mucous secretion, and their lining membrane seemed thickened.

To assure ourselves whether the inflammation of the abomasum and the diarrhœa were really the effect of the antim. pot. tart., or were consequent on the pleuro-pneumonia, or indicated a typhoid affection concomitant with it, we discontinued the sedative medicines, and adopted instead the use of emollients and anodynes; but we always found the same lesion in the digestive tube to exist. Nevertheless, the diarrhœa always increased, and the animals died sooner under the influence of tartarized antimony than when it was not given.

A cow which had laboured under pleuro-pneumonia for twenty-eight days, and had not been put under any medical treatment whatever, was killed on the 10th of December, 1840. At the

autopsia I found in the abomasum of this animal deep ulcerations in the mucous and muscular coats, these being almost completely destroyed. We at once proceeded to make a necroscopical examination of several cows that had died of this disease, and which had not been put under any treatment, and every one of them exhibited the same gastro-intestinal lesion.

Alarmed at the devastations the disease committed in the canton of Puers, the Minister of Interior directed Dr. Sauveur (Commissionaire du Service de Santé Civil) to join us, to ascertain the best means to be adopted so as to check the progress of this fearful malady.

We made several autopsiæ in the presence of this functionary, and the lesions in every instance were similar to those above described.

This epizootic, during the same period, made great ravages in Flandre Occidental, principally in the neighbourhood of the capital, St. Pierre, Lissewege, Knocke, &c. We made, with M. Van de Wattyne, my honoured colleague, several autopsiæ in the presence of the Commissaire du Service de Santé Civil, and also two Professors of the Veterinary School at Brussels, and we found, in every case, traces of inflammation and ulceration of the stomach; but these lesions were certainly less extensive than those met with in the canton of Puers. M. Sauveur informed us, that M. Moraeu, veterinary surgeon to the government at Namur, had made several post-mortem examinations in his presence of cows that had either died from or were destroyed on account of being affected with pleuro-pneumonia; but in them no lesions of the digestive canal were found.

In the meadows of Polder d'Austruwell, where the disease during several years has destroyed a great number of cattle, the affection of the lungs is always complicated with ulceration of the stomach.

In 1841, the disease was less intense, and then I observed no inflammation in the gastro-intestinal tube.

During the second quarter of 1844, this disease broke out afresh in the canton of Contich. One case was placed under my care, to which I administered small doses of antim. pot. tart. for three days; but, perceiving there was no hope of cure, the animal

was destroyed. I immediately proceeded to the autopsia, and found the right lobe of the lungs to be hepatized, the pleuræ adherent by false membranes, and the cavity of the chest filled with serum. The viscera of the abdomen presented nothing abnormal externally, but internally the mucous coat was thickened, and many ulcers existed in the abomasum, principally towards the pyloric orifice.

On the 5th of September 1844, I made a necroscopic examination of a cow, in which I also found ulcers in the abomasum, and hepatization of the right lobe of the lungs, which weighed twenty-four and a half kilogrammes (about fifty-five pounds), while the left lobe, which was sound, weighed one and a half kilogramme only (about three pounds and a half).

On the 7th of the same month, another cow was killed, and the autopsy, made on the 8th, shewed the right lobe of the lungs to be in a complete state of hepatization, with adhesion of the pleuræ, and traces of inflammation were also found in the abomasum, principally towards the pylorus. In the womb of this cow was a dead fœtus, which I opened, and found the right lobe of the lungs to be hepatized, and adhesions of the pleural covering, the same as in the mother. I had occasion to open two more calves; one ten days old, and the other six weeks old, in both of which I found the characteristic morbid lesions of pleuro-pneumonia; but these might have become diseased after birth, as they had inhabited a stable in which affected cows had sojourned. From the details of these examinations, and many others too lengthened to translate, M. Dele contends that pleuro-pneumonia epizootica is often complicated with other diseases, and most commonly with gastritis and gastro-enteritis. But, he asks, Are these diseases consecutive to the first, or might they not be concomitant with it? And then adds, I am inclined to believe the last; and I even think that the alterations met with in the digestive tube may, in certain cases, proceed from the pulmonary alteration, particularly when these result from the influence of miasma on the animal economy, which would tend to diminish the secretions generally, and particularly the gastro-intestinal, as is always the case in typhoid diseases. Under this head, therefore, I think we ought to place this form of pleuro-pneumonia, for which I would propose the name of PLEURO-PNEUMONIA TYPHOIDUS.

A new Mode of preserving Animal Substances.

The Abbé Baldaumik, preparator at the Museum of Natural History at Vienna, has succeeded in rendering animal substances as hard as stone. To effect this he immerses them in water holding in solution bichloride of mercury and hydrochlorate of ammonia. Substances that have remained in this liquid for some time acquire the hardness of stone: they may be polished, will resist the hammer, have an angular fracture, and give out a metallic sound when struck. They preserve their natural colour, and require no more care after they are taken out of the solution.

Journal de Chimie.

REVIEW.

A few Notes on Cruelty to Animals: on the Inadequacy of Penal Law; on general Hospitals for Animals, &c. *By* R. Fletcher, Esq., &c. London: Longman & Co. Paternoster-row.

> "But many a crime deemed innocent on earth
> Is registered in heaven; and these, no doubt,
> Have each their record, with a curse annexed.
> Man may dismiss compassion from his heart,
> But God will never."

Surely no incentive to kindness to the lower animals should be needed; yet the very opposite is the fact. Every day witnesses the infliction of cruelty on some defenceless and entrammelled slave to the capriciousness of man: a proof of cowardice on the part of the perpetrator; for were the real or imagined offender free, he would either escape the punishment or resent the injury. This, doubtlessly, has its origin in want of education. If, as the vulgar ignorantly say, "brutes have no feeling," why do they exhaust themselves in their determination to give them pain? Why is the lash so unmercifully had recourse to, and other still more barbarous and unmanly expedients adopted? But perhaps the expression is to be accepted in a comparative sense only; and

although we may not be inclined to go to the full extent with the immortal bard, when he says

"The poor beetle that we tread upon
In corporal sufferance feels a pang as great
As when a giant dies,"

yet we do know—indeed the truth is so palpably evident as to need no proof—that animals are extremely sensitive; they feel as acutely as ourselves. If we examine their frames, we find they are constituted as we are, their tissues being as delicately and as finely wrought as ours; and where we find similarity of structure, there we infer similarity of function to exist. This the uneducated are ignorant of; and hence publications like the one before us are calculated to effect much good, by iterating truths all are not conversant with, and exposing barbarities practised by those who disgrace the name of men.

We witnessed with gratification the efforts made by the Society for the Prevention of Cruelty to Animals some years since; and we have often perused with mental profit, not unmixed with regret that such things should be, an unsuccessful Essay by one who deservedly stands high amongst us*; and, unquestionably, by these efforts much has been accomplished. Yet we think this should not preclude others from following in the same track. Moreover, we are of opinion that *local* influence oft-times proves effective where general endeavours fail; therefore we hesitate not to commend the literary labours of Mr. Fletcher, and to say to others, to those possessing *status* and talents for the task, "Go, and do thou likewise." Each in his separate sphere co-operating cannot fail, in the end, to bring about the object which each has in view. We, too, are fellow-labourers in the same field; since it is both the duty and the interest of the practitioner of veterinary medicine, in common with the philanthropist, to mitigate, as far as he is able, the sufferings of all God's creatures, and especially those man has subjugated to his use, the treatment of whom he is responsible for, and by which is made manifest to the most superficial observer the character of the man.

Having thus written in general approval of the design of the work, we may be now permitted to allow the author to speak for himself. In a preliminary note he says,—

* "The Obligation and Extent of Humanity to Brutes." By W. Youatt, &c.

"The quantity and variety of suffering endured by the lower creation of animals when domesticated with man have struck the author with awful force, but more especially since his connexion with a Society for their alleviation: a mingled feeling of pity, horror, and anxiety, is left on the mind at the hapless and certain fate of such a vast crowd of innocent beings. Imagination itself droops at the task of measuring the extent of these sufferings.

"Helpless as he is guileless, we compel the dumb creature to labour beyond his strength, even in the hour of sickness and pain, and, often, till he drops on the scene of his miseries. We feed him only to gratify our avarice or our pleasures: we eat him; and, that the meal may be more luxurious, we cruelly bleed him, even to faintness, in a horrid way, and deprive him of food long before that hour arrives which will happily terminate his woes: finally, when that hour has arrived, he is put to death in the most barbarous and revolting manner, if not sometimes flayed alive!

"All this we daringly do to God's creatures, of whose feelings and characters we know but little, and of whose destination we are wholly ignorant.

"There is a moral as well as a physical character to all animal life, however humble it may be,—enveloped indeed in obscurity, and with a mysterious solemnity, which must ever belong to the secrets of the Eternal."

The "importance of the subject," and "the objects in view," are thus stated:—

"A part of the object of the author is, to bring before the public *some* of his own own experience of the prevalence of cruelty; which, limited as it is to this city and neighbourhood, a small district, will give some idea of the extent of a dreadful evil which must be hourly going on over the whole land. For if one small city, checked by the operation of a Preventive Society, yield so much within a few months, what must be yielded annually by hundreds of towns and cities, unchecked by any Society? And be it remembered, that the account,—a mere abstract from a great number of cases,—is taken generally from convictions, or offences committed in public: the awful and cruel examples of such crimes perpetrated in stables and slaughter-houses are, of course, unknown, but it is probable that their numbers far exceed, and beyond all comparison, the discovered ones.

"Such a practice as bringing into light so great an evil is salutary. By exposing the nature and extent of the disease, there is a better chance of its removal.

"Another part of the object is, to shew the utter inadequacy of the present law of forty shillings fine, which allows the power of mitigation; for the crime of cruelty is incessantly recurring under this system of mitigation, and is even repeated by the same individuals. Some of the offences also require a much heavier punishment than the forty shillings."

We confess we were not prepared to meet with so many instances of atrocious cruelty occurring in a locality of comparatively small extent. Of course, it would be easy to extract illustrative cases, but these we should be obliged to abridge, which would lessen the force of description; we, therefore, prefer referring our readers to the work itself, in which will be found much that is suggestive, and worthy of thought and consideration.

DURING the scholastic session 1845-6, the following Students of the Royal Veterinary College received their Diplomas from the Royal College of Veterinary Surgeons.

To those before whose names a single asterisk appears have been granted CERTIFICATES OF MEMBERSHIP of the Veterinary Medical Association; and to those having two asterisks prefixed, CERTIFICATES OF FELLOWSHIP have been also awarded for essays introduced and defended by them at the hebdomadal meetings of the Association.

April 8th, 1846.

Mr. William Desfarges, Wereham
Mr. George Hayden, Dublin
Mr. Alfred Rushall, London
Mr. Paul W. Hayden, Ashbourn
** Mr. John Mitchell, Leeds
Mr. Henry Draper, Leighton Buzzard.

April 29th.

Mr. William Phillips, Colchester
** Mr. James Rose, Warwick

* Mr. John Dunsford, London
** Mr. Edward T. Bass, Aylesbury
* Mr. George Sargisson, Spilsby
* Mr. William Allan, Chesham
* Mr. John Arnold, Yoxford
** Mr. George W. Varnell, Woodton
** Mr. John Mannington, Brighton
** Mr. George White, Lichfield.

May 22d.

* Mr. James Thacker, Ashton-under-Lyne
* Mr. William Keyes, London
Mr. William Emms, Kingston
** Mr. Thomas P. Dexter, London
* Mr. Samuel Keay, Ellesmere
** Mr. Henry Fishwick, Oldham.

June 24th.

* Mr. Richard Hudson, Drogheda
* Mr. W. H. Hooper, Great Caufield, Essex
* Mr. William Harber, Birmingham
* Mr. Arthur Sewell, London
* Mr. Edw. Jones, Horton Lane, Cheshire
* Mr. John Reynolds, Mansfield.

August 12th.

Mr. John Booth, Twemlow Hall, Cheshire
** Mr. W. H. Kent, Liverpool
* Mr. L. E. T. Vicary, Cadbury, Devon
* Mr. Thos. Barrell, Keynsham, Somerset
* Mr. C. W. Hawes, Lynn, Norfolk
* Mr. S. Sheperdson, St. Petersburgh.

Finance Report of the Royal College of Veterinary Surgeons, to May 4, 1846.

Receipts.	£	s.	d.
1844.			
Contributions received from the body of the Profession, from 1841 to Christmas 1844..	617	7	6
By Loan	739	10	0
Examination Fees	197	8	0
Copies of Charter.....	0	14	0
1845.			
Contributions	75	3	6
Examination Fees	131	5	0
1846.			
Examination Fees	81	18	0
	£1843	6	0

Expenditure.	£	s.	d.
1844.			
Fees for Charter of Incorporation	553	0	2
Fees at the Herald's Office..	78	8	6
Solicitor's Account.....	96	18	9
Engraving the Seal.....	15	0	6
Advertisements.....	29	3	6
Printing.....	41	17	6
Books	8	19	0
Rooms for General Meeting, Councils, and Committees	22	18	8
Deputation to Edinburgh..	34	15	0
Fees to the Board of Examiners	68	3	0
Postages	7	11	6
1845.			
Rooms for General Meeting, Councils, and Committees	15	15	0
Engraving Diplomas	15	18	0
Stamping ditto.....	8	5	0
Printing.....	24	13	3
Advertisements.....	10	11	6
Expences of Secretary to Edinburgh.....	12	0	0
Fees to the Board of Examiners	138	12	0
Allowance to Secretary....	30	0	0
Stationery, Stamps, Envelopes, and Postages	12	9	2
One-third of the Loan repaid with interest to Feb. 16..	283	9	6
1846.			
Advertisements.....	5	12	4
Printing.....	3	7	6
Stationery, Stamps, Envelopes, and Postages.....	2	11	5
Fees to the Board of Examiners	50	0	0
Council & Committee Rooms	3	13	0
Printing & Stamping Diplomas	4	4	0
	1577	17	9
Balance in hand..	265	8	3
	£1843	6	0

LIABILITIES.

	£	s.	d.
By two-thirds of Loan remaining unpaid, and Interest thereon to Feb. 16	517	13	0
Balance in hand as above.....	265	8	3
Deficit.....	£252	4	9

F. KING, Jun., *Treasurer.*

TRANSACTIONS OF THE VETERINARY MEDICAL ASSOCIATION.

TUESDAY, JANUARY 6, 1846.

The Association met pursuant to adjournment over the Christmas holidays this evening,

The TREASURER in the Chair.

Messrs. R. COOK, J. M. HARRISON, and T. TEAT, were elected Members.

CASE OF LACERATED ŒSOPHAGUS IN A COW.

Mr. ERNES placed on the table the lacerated œsophagus of a cow, and directed the attention of the members to it. It was, he said, caused by the incautious use of the probang in an attempt made by the owner of the animal to dislodge a portion of a Swedish turnip, which still remained impacted in the œsophageal tube.

The owner, perceiving the animal to be choaked, immediately introduced the smaller end of the probang; which, from the shape of the piece of turnip, suddenly passed on one side of it, and lacerated the muscular fibres of the œsophagus. When he (Mr. Ernes) was sent for, he found the usual indications of choaking present; and, in addition, the neck much swollen from the surrounding cellular tissue being distended with air. This inflation had been caused by an escape of gaseous matters from the rumen, and not from any decomposition set up in the parts. On puncturing the skin its escape at once took place.

He again attempted to dislodge the offending body, but found the probang to pass freely by its side through the opening previously made. He then administered a little chlorinated lime to bring about a reduction of the tympanic state of the rumen; but, finding that no marked benefit resulted from the means he employed, and the animal being in a good condition, he recommended that she be immediately slaughtered, which was done.

Mr. Ernes remarked, that in cases of this kind in ruminants he did not altogether despair of sometimes establishing a cure. His plan would be as follows :—In the first instance he would set about emptying the rumen, so as to prevent the elimination of the gaseous compounds resulting from the decomposition of the ali-

ment. Food of a highly nutritious kind, and in a liquid form, should then be carefully given, and that frequently and in small quantities; and thus, by the parts being put into a state of comparative rest, the adhesive process would be set up in the laceration. He spoke, however, problematically, yet he thought the plan merited a trial at least.

Mr. Simonds observed that, in this case, they should be slow to condemn the operator, since the piece of turnip was of a peculiar shape; and the small end of the probang, first used by the owner would by it be easily turned aside, and thus rupture the coats of the œsophagus. In all cases of choaking it is a far better plan to use the larger end of the probang; and, indeed, he felt convinced that this instrument, as usually made, has not bulbs sufficiently large nor of proper shape. In cases of laceration of the œsophagus resulting from this cause, there are usually immediate and certain indications of the accident.

First: The probang being forced on to the obstructing body, and pressure applied, a sudden loss of the resistance offered is experienced by the substance passing through the coats of the œsophagus, after which the instrument passes freely onwards to the rumen: the animal will also be found to shrink at the moment the lesion takes place.

Secondly: The disengagement of gas from the rumen never becomes complete; and not only is this the case, but, when some has made its escape, more is quickly generated, and that in increased quantities; rarely, however, producing so much distention as when the foreign agent remains impacted in the œsophagus.

Thirdly: As a confirming proof, the bulb of the probang, on its being withdrawn, will be found smeared with blood.

In the proposed attempt to effect a cure of this lesion, as suggested by Mr. Ernes, there was much plausibility, yet he doubted if it would prove effectual, unless a very small laceration existed; and even then the cicatrix that resulted would afterwards interfere with the function of the œsophagus, and, moreover, render the animal liable to a recurrence of the injury. It is true that he believed he had been successful in two or three cases where partial lacerations of the coats had taken place, but as soon as the animals became fit for the butcher he had directed them to be slaughtered.

Mr. Mannington related a case of the probang having been forced through the coats of the œsophagus into the chest, which caused the death of the animal.

Mr. Harman stated that, in Sussex, it was a common practice for the owners of cattle, in cases of choaking, to use a piece of the wild clematis to dislodge the turnip or other substance; and, by their imprudently introducing the smaller end of it, lacerations of the œsophagus were very common. He considered it extremely desirable that the practitioner should be conversant with certain indubitable signs by which he might at once be able to say that such a solution of continuity had taken place, otherwise he might —as, indeed, had been the case with him—be charged with having effected it in his subsequent endeavours to get rid of the impacted body. He had stated that he had been so charged, and he well remembered the case: it was one similar to that related by Mr. Mannington, but a portion of the bark of the clematis being found retained in the lungs, at once cleared him from the imputation, since he need hardly say that *he* had made use of the common probang to remove the offending body.

Case of Scirrhous Tongue in a Cow.

By Mr. T. W. Nobbs, *M.R.C.V.S.*

Dear Sir, *Cerne, Dec.* 1845.

A brief history of the case of the tongue of the ox forwarded by me is as follows:—The animal was attended by Mr. Kerby, of Dorchester. About the 10th of October last the ox was observed to foam at the mouth considerably, and about the 20th to have lost flesh, when he was taken into the yard. On giving him some hay, he could not masticate it, but threw it out of his mouth again. On examination, the tongue was found to be enlarged and indurated at the root. Nothing was done till the 1st of November, when an enlargement had made its appearance under the jaw (this I have observed to be the case in some that have come under my care). Mr. K. inserted a seton about ten inches long from within four inches of the lips to the neck, which, I am told, discharged freely; but, despite all that was done, the ox

continued gradually to lose flesh, and on the 7th instant, being unable to get up, he was destroyed.

I have seen two cases of this kind recover by freely lancing the tongue its whole length, and applying a strong solution of iodine over it three times a-day, also, at the same time, using the ointment of iodine externally. Nevertheless, I consider the better plan is to destroy the animals when we are satisfied of its cancerous nature; for, if they recover, the cure becomes very tedious and protracted, and, with the exception of the two named, the remaining five out of seven cases were lost.

I am, Sir,

To Mr. Simonds. Your's respectfully.

Mr. Simonds.—The affection termed scirrhous tongue is oftener met with in the ox tribe than in any other of our domesticated animals, and, like many other diseases, it is too frequently confounded with maladies which differ very essentially in their nature from it: thus an attack of acute inflammation of the tongue, a disease by no means unfrequent among cattle, accompanied with much swelling of that organ, and a total incapability to collect or masticate food, is often mistaken for scirrhus. Glossitis, it is true, may lay the foundation of chronic induration of the organ; but even this result differs materially in a pathological point of view from true scirrhus, although practically it may not offer a greater chance of cure.

These cases of structural change depending on inflammatory action are generally to be traced to some exciting cause, and rarely exist singly; but, on the contrary, several of the herd are found to be affected at the same time. They have been known likewise to succeed an attack of eczema epizootica; an instance of which was laid before the members of the Association by Mr. Bainbridge, and published in the last number of THE VETERINARY RECORD.

The causes of scirrhus are obscure, but they are evidently of a constitutional nature, as the disease is generally insidious in its attack, gradual in its development, and fatal in its consequences; the poor beast dragging out a miserable existence, no mode of treatment that has been yet adopted affording much relief.

Besides these peculiarities, we observe that, in the early stages

of the malady, there is but little swelling present, and never that redness of the tongue and buccal membrane, with great heat of mouth, discharge of ropy saliva, pain on the application of pressure, and protrusion of the organ from the mouth, which mark acute inflammatory attacks. The tongue slowly increases in size, and the animal makes such strange efforts to employ the organ in collecting its food, or in directing it upon the molar teeth, that often the owner's attention is first directed to the beast by this action, associated with the loss of condition. An examination shews the tongue to be hard and unyielding to pressure, and but slightly moveable; there is little change of colour present, but, if any, it will be found in isolated patches. As the disease advances, these spots assume a darker hue, and the process of ulceration commences in them; but, like bovine cancer in general, there is but little disposition to ulceration compared with similar cases in the human subject. In some extreme instances the tongue hangs from the mouth, and the animal cannot gather sufficient aliment to prevent inanition. The disease has little disposition to extend to the surrounding structures; but in most instances it is accompanied, in its later stages, with a swelling under the jaws; this, however, is seldom any thing more than a serous effusion into the cellular tissue surrounding the parts.

As to treatment, the scarifications mentioned by Mr. Nobbs seldom prove of benefit, except in cases of ordinary glossitis. In scirrhus I should not recommend them. Glossitis is to be combatted by bold antiphlogistic treatment; scirrhus, by endeavouring to bring about a complete alteration in the system. The compounds of iodine, topically applied and internally administered, are our chief remedies. Mercury, also, is another agent by which we may effect our object. Turpentine, used with friction to the organ, has been known to give temporary benefit. These, with many other agents, will force themselves upon the mind of the veterinary surgeon who is fully conversant with the true nature of the malady: but rarely will the best-directed efforts bring about a normal condition of the organ; and, under such circumstances, it is hardly necessary to add that we should endeavour, by generous diet, good nursing, and every other means, to support the system of the patient, and not keep the poor animal long under treatment, as such generally proves fallacious in the end.

Case of Abscess in the Mammary Gland of a Mare, containing Pea-shaped Masses of Pus.

By Mr. Edwin Taylor, *M.R.C.V.S.*

Dear Sir, *Bury St. Edmunds, Jan. 5th,* 1846.

Having met with a somewhat unusual case, I have thought it would prove interesting to the members of the Association. The history of it is brief:—Yesterday afternoon, about five o'clock, a mare, belonging to the railway company was brought down to our infirmary by one of the men, who stated that she was dull, off her appetite, very stiff, and swelled in her hind legs; and that he had, in the morning whilst cleaning her, discovered a knot, as he called it, in the udder. Upon examination, I found this to be correct, there being between the two teats an abscess about the size of an orange. To the feel it was very hard, and scarcely any fluctuation was perceptible. Yet, feeling assured it must contain matter, I freely opened it with my lancet, when a quantity of dark-coloured thick pus, mixed with a great number of the pea-shaped bodies I have sent you, issued from the opening made.

On inquiry, the man told me that the mare had had a discharge from one of her teats for some days past: I am, therefore, inclined to think that the more fluid parts of the pus had thus escaped, leaving the more solid parts behind, and which had become hardened and formed into round masses. The mare has had, I believe, although it is some time since, one or two foals. The cause of the abscess in the mammary gland must, I suppose, have been some injury. If my memory is correct, a case somewhat similar is described by Mr. Hunt, in the second volume of The Transactions of the Association; but there the masses of pus were more of the shape of beans.

To Mr. Morton. I remain, your's truly.

Mr. Simonds.—In similar cases of pus concretions recorded in our "Transactions," different causes would appear to be in operation to produce the like results. The first case was an imprisonment of pus in the guttural pouches of a horse, related by Mr. Hunt; and the passage of the air in and out of these cavities was thought to be

the agent by which the matter was formed into the "bean-shaped" masses. The second, described by Mr. Christian, contained "pea-shaped" bodies, similar to those before the members; and in this case the voluntary muscles were believed to effect a triturative action on the purulent secretion, and thus cause their formation. He (Mr. Simonds) could not help thinking that some other cause besides these must be acting; since, in the present instance, neither atmospheric air nor direct muscular motion could have been in operation to produce the effect. He would suggest that these accumulations result from a power of attraction inherent in the pus corpuscles themselves; so that, whenever pus was long retained in a cavity, they approximated and formed differently shaped masses, the fluid parts having been removed by absorption or otherwise.

Mr. Harman had met with abscesses on the withers of cattle containing pus that had become inspissated and assumed various shapes, such as that of small mushrooms, flattened ovoid discs, &c. Abscesses containing masses of hair had also frequently been found by him.

Mr. Ferguson thought that the formation of these masses was a subject of some interest. If we take into consideration, he said, the constitution of pus *en masse*, it is well known to be made up of corpuscles, floating in a fluid resembling serum. Now, it is quite possible, as suggested by Mr. Simonds, that, by the aggregation of these corpuscles, through the force of attraction operating on matter of the like kind, these masses are formed, while the more fluid parts make their escape from the cyst by exosmosis.

TUESDAY, JANUARY 13, 1846.

The TREASURER in the Chair.

ON DIGESTION IN THE HORSE.

By Mr. E. T. BASS.

DIGESTION is the process to which the food is subjected during its passage from the mouth through the intestinal canal. It has for its object the extraction of certain materials from the food, in order that they may be converted into blood, which fluid is con-

stantly undergoing deterioration during its circulation through the body. Its normal performance, therefore, is of the greatest importance to the animal economy; for, as the well-being of a part immediately depends on a constant supply of healthy blood, so does the integrity of that fluid become impaired when any cause is in operation to prevent the food from undergoing those changes requisite to resolve it into chyle, and certain other principles equally as important to the well-being of the system. With regard to the nature of digestion, many opinions have been entertained by physiologists. Thus, some have attributed it to trituration of the food, performed by the coats of the stomach; but mere trituration would not alter the arrangement of the elements making up the principles existing in the food. It cannot, then, be the result of such a cause. Others suppose it is a result of putrefaction; but as putrefaction is characterized by the production of binary compounds of hydrogen principally, I need not dwell on the absurdity of such a theory as this. Others have attributed it to a vital principle. It is now considered that the change which takes place in the food in the stomach is the result of chemical action; and this being supported by incontrovertible arguments, is the one to which all others have necessarily given way.

The food of the horse may be divided into two grand classes, the AZOTIZED and NON-AZOTIZED.

The azotized compounds contain either albumen, fibrine, or caseine; the non-azotized, starch, sugar, oleaginous substances, &c. These two classes of food exist together in the cerealia, in grasses, and in succulent roots; the azotized compounds being much more abundant in the former than in the latter. Combined with both classes are certain inorganic elements of immense importance to the system: these are lime, sulphur, phosphorus, iron, common salt, &c., either separate or in combination. All parts of the body are constantly undergoing decay, and this more or less rapidly in proportion as they are called upon for the discharge of their functions. It is evident, then, that the food of animals is required to replace those tissues which in consequence of exertion have ceased to exist as constituents of the frame; and as all parts of the body are formed from the blood, it follows that those compounds can only be considered nutritious which are

identical in composition with this fluid. It is a singular fact, that vegetable fibrine and albumen resemble in every particular the albumen and fibrine of the blood; and even as regards the relative quantity of phosphorus and sulphur, no difference whatever can be detected. In addition to vegetable fibrine and albumen, the food of the herbivora contains numerous substances containing no nitrogen, as sugar, starch, gum, &c., the composition of which is different from any compound existing in the blood. The question naturally arises, then, as to the use of these substances in the food of those animals. During life the horse is constantly inhaling oxygen, which is generally expelled from the system either in the form of carbonic acid or of watery vapour. Part of the carbon thus expired (which amounts to about eighty ounces per diem) is derived from the waste of the tissues; but by far the greater amount is derived from the non-azotized elements of the food, or about four-fifths.

We have before stated that the waste of the tissues is constantly taking place; the result of which, according to Leibig, is the formation of urea, choleic acid, ammonia, and carbonic acid. These transmutations, he supposes, are brought about by the elements of starch, rendered soluble in the stomach, being absorbed by the blood, and conveyed to every part of the body, re-acting upon the elements of proteine which have undergone transformation. Thus, while he accounts for the principal secretions and excretions, he thus explains the use in the system of the non-azotized portions of the food, and also the generation of animal heat. It becomes an interesting question, if these substances can, under any circumstances, be converted into azotized compounds within the body. In order to determine this point, Majendie kept dogs upon pure sugar, gum, oil, water, &c.; but in every instance death took place in about thirty days. But these experiments cannot be looked upon as decisive, as the same physiologist found that a change of food is always requisite to support life for any length of time: thus, other animals fed exclusively either upon albumen, fibrine, or caseine, died in rather a longer time than those which he kept upon sugar. Dr. Prout, in some experiments which he instituted on this head, discovered distinct traces of albumen in the duodenum when the animal had been fed on pure sugar alone, and when this

principle could not be detected in the stomach. He supposes that urea may have been secreted from the blood into the stomach or duodenum, and there, combining with the saccharine or oleaginous principles of the food, it would form the albuminous compound. Others conjecture that the nitrogen taken in with saliva in the form of atmospheric air, may, by union with the fatty matters, constitute a principle which may be applied to the restoration of the tissues. The opinions of Leibig are decidedly opposed to any such unions. He maintains that the only nitrogenized compounds which can enter the blood are the different forms of albumen, and that, unless these are supplied to the animal ready formed, death must inevitably ensue.

Having given this short description of the nature of the food of the horse, I will now consider the mode by which its nutritious parts are rendered available to the wants of the system; in doing which I shall not enter farther into anatomical description of the digestive organs than is requisite for a proper comprehension of my subject.

In order that solution of the food should take place, it is necessary that its cohesion should be first more or less weakened by a mechanical process; next, that it should be exposed to a somewhat elevated temperature, and subsequently to the action of a fluid which can exert a solvent property on it; and it follows, of course, that there should be a cavity or sac in which these operations may be carried on.

The horse having gathered his food by means of his lips, passes it, by the action of the tongue, to the posterior parts of the mouth, and subjects it to the triturating or grinding action of his molar teeth: it is there mixed with the secretion of the mucous membrane of the mouth, and with that of the salivary glands. The salivary glands are composed of numbers of vesicles ranged round the exterior of an efferent duct, of bloodvessels, nerves, and connecting areolar tissue. Several of these vesicles have a duct of their own, which conveys the fluid secreted by them into other ducts, which, by uniting and re-uniting, ultimately form one or more tubes of considerable size, which empty themselves into the mouth.

The saliva is a colourless, transparent fluid, slightly alkaline in its nature, but more so just prior to and at the period of taking

food than at any other time. It contains about one per cent. of animal matter, various salts, with the sapho-cyanide of potassium, which is its characteristic ingredient, distinguishing it from the pancreatic secretion. It also contains a quantity of corpuscles derived from the epithelium of the mouth, and from the secretory vesicles of the glands. The animal principles are mucus, ozmazome, and a substance called salivary matter, which is soluble in water and insoluble in alcohol: it, however, differs in its nature from albumen. It appears that this salivary matter may, in the mouth, convert a portion of the starch of food into sugar; and that this proximate vegetable principle may also by it be converted into lactic acid.

The food which has been masticated and mixed with this secretion is now passed by the tongue into the pharynx, which, by a reflex action, contracts on it, and presses it into the œsophagus; and this tube, by a series of contractions, conveys the bolus into the stomach.

The question as to the particular nerves engaged in the transmission of food through the pharynx is an interesting question in physiology. The glosso-pharyngeus has usually been regarded as the one principally concerned in this act; but, according to the experiments of Dr. Reid, when this nerve is divided and the divided ends pinched, scarcely ever is any contraction of the pharyngeal muscles produced. He states that this nerve is an efferent one only, conveying impressions to the medulla oblongata, which office is also performed by some filaments of the fifth pair, and by the branches of the superior laryngeal distributed upon the pharynx; whilst the motor influence passes principally along the pharyngeal branches of the par vagum and of the lingual.

The stomach of the horse is very small, in comparison with the size of the animal and the quantity of food he consumes; but this smallness is compensated for by the great volume of his intestines. Thus, while the process of digestion is not impaired, the animal is rendered additionally useful to man. It is covered externally by peritoneum, under which membrane or coat are its muscles, so arranged as to impart, under the influence of the par vagum and sympathetic nerves, a certain amount of pressure to the food, and by this means to cause an intimate mixture between it and the secretions of the organ, likewise to determine

the passage of the food along its great curvature towards the pylorus. The mucous membrane of the stomach is of two kinds, cuticular and villous, each possessing the distinctive characters of this class of structure; viz., an epithelium covering its free surface, a subjacent basement membrane, and an areolar tissue enveloping the vessels, nerves, &c., which constitutes the main thickness of the membrane, and serves to connect it to the adjacent structures. The cuticular portion lines that part of the stomach in connexion with its cardiac orifice; it is white in colour, dense in structure, and its epithelium has considerable more permanency of duration than that covering the villous portion of the membrane. It secretes a fluid whose only property appears to be to soften the aliment, and to protect the membrane itself from the irritation which imperfectly masticated food would set up in it. In order that this secretion should be abundant, we observe that the membrane is thrown into numerous folds, termed follicles, and this is the case with all mucous tissues, The villous membrane of the stomach is very vascular and soft; it has a velvety appearance, from the presence of minute villi, and it lines that portion of the stomach in connexion with the duodenum, or, in other words, the pyloric portion.

In addition to the crypts or follicles which exist in the cuticular membrane, there are found in the villous coat other structures for the elaboration of the gastric juice; and hence they are called the gastric follicles. These follicles are composed of a number of tubuli closely applied to each other, and bound together in bundles by areolar membrane; their blind extremities are in contact with the submucous tissue, whilst they open into small pits or depressions on the surface of the stomach. Bloodvessels pass up from the submucous tissue, and form a vascular net-work on its surface. The gastric fluid elaborated by these follicles is of importance, as it is the only secretion proved to exert a solvent property on the food. It is a clear limpid fluid, with an acid re-action, which is owing to the presence of hydrochloric and acetic acids: the former being derived from the hydrochlorate of soda of the blood, the latter, probably, from an alteration of the elements of the saccharine matter of the food. It contains, also, some hydrochlorates and the phosphates of soda, lime, &c.

But the most active agent in the process of digestion is an

organic compound to which the name of *Pepsin* has been given. Without this substance the other principles of the gastric juice have no power of chymifying alimentary substances, therefore it is requisite that they should be combined with pepsin in order that this change should take place. Pepsin is supposed to be a result of the transformation of the epithelium of the villous membrane of the stomach, and which possesses the property of exciting in other substances with which it may be brought in contact a like state of transformation. Liebig states that the fresh lining membrane of the stomach of a calf digested with weak muriatic acid imparts to this fluid no power of dissolving coagulated albumen; but if the membrane be dried by exposure to air, a substance will be yielded to dilute muriatic acid which gives to that fluid the property of dissolving various substances. It is hence inferred that the epithelium of the villous membrane of the horse's stomach is destroyed by the oxygen introduced into it with the saliva, and the organic compound thus formed is pepsin.

Action of the Stomach.

The food having reached the stomach, is received by its cuticular lining membrane, and exposed to the secretion proceeding from its follicles; from thence, by the action of its muscles, it is propelled along the great curvature to the villous membrane. It is then exposed more immediately to the action of the gastric juice, which converts it into chyme. The chyme will be more or less fluid, according to the quantity of liquids the horse has partaken of; but we seldom find any great quantity of fluid in the stomach of this animal. A portion of that exhibited is, no doubt, taken up immediately from the surface of the organ by the vessels ramifying on its surface. The action of the gastric juice on the food appears to alter the arrangement of the elements of the azotized principles it contains, converting the fibrine or caseine into albumen, also bringing this albumen into a soluble state, thus rendering it capable of being absorbed by the lacteals. Its action on the non-azotized portion of the food, through the pepsin existing in it, induces the starch to combine with two atoms of water, and thus to form sugar. The sugar very probably undergoes a still farther change, and, by the loss of a certain quantity of oxygen, is converted into fat, a principle highly important in the

horse for the formation of bile, and for affording the system protection from the chemical agency of oxygen; while the oxygen that is liberated will, by its action on the villous membrane, determine the formation of the compound denominated pepsin. The chymous mass is now passed into the duodenum, and undergoes admixture with the secretion of two glands, namely, the pancreas and the liver. But, previous to the consideration of these secretions, I will give a brief outline of the arrangement of the intestines, dwelling more particularly on the mucous membrane, it being more intimately connected with my subject.

The intestines are divided into large and small: the latter are subdivided into the duodenum, jejunum, and ileum; the former into cœcum, colon, and rectum. They have three coats,—a peritoneal, a muscular, and a mucous coat. The mucous coat differs in complexity of structure in different parts of the alimentary canal, the difference being attributable to the presence of various glandulæ distributed on its surface. They may be divided into three classes: first, Brunner's glands; second, glands of Peyer; third, follicles of Lieberkühn.

Brunner's glands are principally distributed in the duodenum: they differ from both the other classes, being more complex in structure, and much resembling the salivary glands. They occupy the sub-mucous tissue, forming a continuous ring round the duodenum. The glands of Peyer are generally found aggregated together on the surface of the mucous membrane of the small intestines, and they are surrounded by the openings of the follicles of Lieberkühn. They have no excretory duct, the secretion which takes place in them being poured through their walls. The follicles of Lieberkühn exist principally in the small intestines: they resemble somewhat the gastric follicles of the stomach, and they open by an innumerable number of pores on the surface of the mucous membrane. These openings are most abundant around the bases of the villi. The villi are short processes arising from the surface of the intestines, giving to it a velvety appearance. In the horse they are disposed to lamellate, and are connected together so as to form folds or ridges.

There are, besides the glandulæ which have received the above names, numerous others distributed throughout the whole

of the intestinal canal; but, as the nature of the secretion which takes place from them is not determined, I shall not speak any further of them. The secretion which takes place in the cœcum and colon of the horse is distinctly acid, becoming less so just after the latter intestine has made its left iliac flexure. This acidity is supposed to exert on the food a solvent power analogous to that which takes place in the stomach, rendering those nutritious parts of it, which, on account of the small size of the stomach have undergone imperfect digestion in that organ, capable of being absorbed by the lacteals.

Of the Biliary and Pancreatic Secretions.

Bile is the peculiar fluid secreted by the liver. It possesses a weak alkaline re-action, and is miscible with water in any proportion, frothing like soap. It is of a yellowish-green colour, which becomes darker on exposure to the air, and has a bitter nauseous taste. Many chemical analyses of bile have been furnished by different physiologists, some of which present very different results. This arises from the fact of the bile being easily decomposed by the substances used in order to determine its nature, so that many compounds described as normally existing in it are probably the result of decomposition thus effected.

There are three proximate principles which are now generally believed to make up the principal part of the solid matter of bile, which amounts to ten per cent. One of these, constituting by far the larger part, is a peculiar organic acid, and which has received the names of picromel, bilin, bilic acid, or choleic acid. Another is called chloresterine, or the fat of bile, constituting the largest part of those concretions called gall-stones, which are sometimes found in the ducts of the liver of the horse. The other constituent is the colouring matter, which is excreted with the fæces, these being thereby rendered either lighter or darker in colour, depending on the amount of colouring matter mixed with them. Bile also contains soda, which, according to Liebig, is united with choleic acid; also some phosphates and chlorides are found in it.

The pancreatic fluid in the horse has an acid re-action, depending on the presence of free acetic acid. It resembles somewhat

the salivary secretion, with the exception of no sulpho-cyanogen being found in it. Its animal principles are albumen, caseine, and osmazome; and its inorganic constituents are composed of the carbonate and phosphate of lime, the hydrochlorate, and phosphate of potass and soda.

This secretion, very probably, tends to perfect the solution of those portions of the food which have passed from the stomach in a state of partial solution: if we admit this, we shall at once see the reason why the pancreatic fluid is acid in the horse, and neutral or alkaline in most other animals.

The primary action of bile on the chymous mass is to neutralize its acidity. It next acts as a precipitant on it, separating the nutritious from the innutritious matters, and bringing the former within the sphere of the selective power of some part of the lacteal system, for without the admixture of bile with the chymous mass chyle will not be separated; or, if a small quantity should be found in the lacteal system, it will not possess the general characters of that fluid. By some persons it is thought that some of the elements of bile unite with portions of the aliment and are taken up in the form of chyle; but there appears to be no valid reasons for such a theory. Bile, certainly, is capable of being re-absorbed, as but a very minute portion of its solid constituents can be found in the fæces; but into what compounds it passes prior to this absorption, or how its elements re-act on the food so as to determine the separation of chyle from chyme, is not at present known. Bile is also necessary to induce the peristaltic action of the intestines. The chymous mass is mixed in the duodenum with these secretions, and also with mucus from its lining membrane; it is then, by the peristaltic motion of the intestines, passed through the jejunum and ileum into the cœcum. During this passage it combines with the succus entericus, which appears to be rather a protective agent to the mucous membrane than of any essential service in the digestion of the food. A considerable portion of its azotized constituents are now removed by the lacteals in the form of chyle, and a part of the non-azotized compounds are taken up by the mesenteric veins. In the cœcum and anterior parts of the colon a still further solution of the imperfectly-digested materials of the aliment takes place, and the

passage of the food is retarded by the peculiar construction of these parts; whilst from their vascularity, and from the numerous lacteals which arise from them, considerable secretion is afforded, and much absorption takes place. The alimentary mass begins to assume a fæcal character in the colon, and a small quantity of the binary compounds of hydrogen and carbonic acid gas are here always found in it. The fæcal mass at length reaches the rectum, which is dilated into a sort of sac for its retention; but still absorption takes place from it, as is evidenced by the hardened state of the fæces when an animal from some cause has been prevented from voiding the contents of this intestine.

When a greater or less quantity of fæcal matter has accumulated in the rectum, a desire is felt by the animal to evacuate it; and then the insoluble portions of the food, and those parts of it which have been but imperfectly digested, together with mucus from the intestines, a very small portion of the bile, and some few salts, are expelled from the system.

On Absorption from the Intestinal Canal.

The lacteals arise from all parts of the intestinal canal, excepting that part anterior to the opening of the biliary and pancreatic ducts. In the horse they are particularly numerous on the surface of the colon. They take their origin from the villi existing in the internal surface of the mucous membrane, from the midst of a vascular plexus. It appears that they never arise by open mouths, their free extremities being covered by a thin transparent membrane analogous to the basement membrane described as lying between the epithelium and areolar tissue of mucous membranes. Within this basement structure the lacteals are covered by a quantity of cells, which possess, according to Mr. Goodsir, the selective power generally ascribed to the lacteals themselves. These cells are supposed to be in the process of growth, in order to the completion of which they select from the aliment those materials necessary to the formation of chyle; after which their term of life expires, and, by a disruption of their cell-walls, they pour their contents on the surface of the lacteals, which, by their free extremities and by endosmose, take up the fluid thus prepared for them. The chyle

is then conveyed through one or more of the glands that exist in the mesentery, the lacteals as they proceed acquiring a greater size and becoming fewer in number, until, at last, they form a trunk of comparatively large magnitude, which courses along the right side of the lumbar and dorsal vertebræ, and pours its contents into the left jugular or axillary vein.

During the passage of the chyle to the heart, it undergoes very important changes. That contained in the anterior division of the thoracic duct is found to be different in its character from that which exists in the lacteals on the surface of the intestines. Chyle taken from the last-mentioned vessels is without the power of coagulation, and is composed of a great quantity of fat globules, a few chyle corpuscles, a medium quantity of albumen, and a minimum quantity of fibrine. When procured just as the lacteals are leaving the mesenteric glands, it contains a less quantity of fat globules; a large quantity of chyle corpuscles, which are as yet but imperfectly formed; a maximum quantity of albumen, and a medium quantity of fibrine. In chyle drawn from the thoracic duct the fatty matters have almost disappeared, the chyle globules have become perfectly formed, and the albumen has decreased in quantity, while the fibrine has increased.

From these statements, for which I am indebted to Dr. Carpenter, it appears probable that, during the passage of chyle from the intestines to the thoracic duct, albumen is elaborated from its fatty matters, the nitrogen necessary for such a change being derived from the blood, and that the albumen so formed is converted into fibrine. But, besides the lacteals, there is another class of vessels which have the power of removing substances from the intestines, and that to a much greater extent than the lacteals themselves; these are the minute veins which ramify over their surface: they have, however, no power of selection, but absorb indiscriminately any substances which the intestines may contain in a perfect state of solution. Thus it is the animal frame is supported by principles taken into the mouth, some of which undergo most important changes in the organism, all contributing either to the perfecting of parts, or the formation of those secretions necessary to the maintenance of health and life.

TUESDAY, JANUARY 20, 1846.

The PRESIDENT in the Chair.

Mr. G. A. STATHAM and Mr. W. G. REEVE were elected Members.

MR. MITCHELL exhibited an ossified trachea of a horse. The history of the case in which it occurred is as follows:—When a colt, the animal was attacked with strangles. The symptoms becoming urgent, and the respiration highly laboured from tumefaction about the region of the pharynx and larynx, the operation of tracheotomy was had recourse to, which gave instant relief, and the animal ultimately recovered. Some time after, however, the respiration became much impeded, and at length so difficult, that, to put an end to his misery—all ordinary modes of relief having failed—he was destroyed.

On examination, it was found that ossification of the trachea to a considerable extent had taken place.

Mr. Spooner said it appeared to him that, prior to ossification taking place, the cartilaginous rings were much distorted, the caliber of the trachea being diminished in several places. This ossification was, most probably, the result of the *entire division* of the rings of the trachea in the operation. Still, however, ossification might have resulted, in consequence of inflammation, under any circumstance. Nevertheless he thought it always desirable, in the operation of tracheotomy, *not entirely* to divide any of the rings; but to take a portion out of two rings sufficiently large to admit the breathing tube, thus avoiding a constriction of the trachea after the removal of the tube; while the remaining portions of the two rings which have been only partially divided will then be able to support their natural transverse diameters.

A lengthened Essay on Pleuro-Pneumonia in Cattle, by Mr. Henry Fishwick, was then read, which awakened an animated discussion. The subject having already occupied our pages to a considerable extent, and the press of a superabundance of other matter, will preclude our introducing this Essay, and also some others. In the debate which took place, referring to the employment of

the potassio-tartrate of antimony, it was remarked by the Secretary, that much circumspection was called for in the use of this agent, since its action being determined to mucous surfaces, and there being a tendency to diarrhœa in this disease, which it was at all times desirable to avoid, frequently its influence would be seen on the mucous membrane of the intestines; yet in small doses it may be admissible, its effects being very carefully watched: there were, however, safer, and consequently better, sedatives that might be employed, particularly the extract of belladonna.

As to the contagious or non-contagious nature of the disease, members differed. Most of those, however, who spoke on the subject were of opinion that it was not contagious. Mr. Bass and Mr. Dexter alluded to the circumstance of healthy animals having been frequently placed with others labouring under this epizootic, and yet escaped its attack; they, therefore, did not consider it to be contagious.

Mr. Bass, in commenting on the post-mortem appearances, said, that he had generally found the interlobular tissue infiltrated with sero-albuminous fluid. He also thought that young animals were generally exempt from it; and had seen many instances in which calves were left with their mothers during the existence of the disease, and they were not afterwards themselves affected. He differed with the author of the Essay as to the primary symptoms of the malady; for instance, he had noticed the fact of animals having the whole of one lung solidified, and yet lactation had continued. As to treatment, blood-letting, he stated, should be always had recourse to with great caution, and it should not be employed at all when much debility was present. He knew many practitioners whose plan of treating this disease consisted in the administration of stimulants, a mode quite opposite to that they had formerly adopted. For his part, when pleuro-pneumonia epizootica was well established, he commonly recommended the animals to be destroyed, as he considered it useless to attempt to treat such cases.

Mr. Mannington believed the disease to be generally referrible to a debilitated state of the system, and that effusion into the lungs was the consequence. It is true that active inflammation might be present at a later stage; but even this, he thought, was produced by the effusion. As remedial means, he advocated the

free use of stimulants, so as to rouse the vital powers, and enable the system to resist the influence of this fatal malady.

Mr. Pearson Ferguson spoke at some length on the pathology, symptomatic phenomena, and treatment of this disease, and stated that his opinions on these points were the same, generally, as those advanced by him in his Essay on the Bovine Epizootic of 1842, read at the Association, and published, with the discussion to which it gave rise, in *The Transactions of the Veterinary Medical Association* for that period. There was one point, however, relative to which his opinion was altered, and that was as to its being contagious or not. He might be permitted to say, that in consequence of having since 1842 had much experience in the treatment of the disease in question, both in Great Britain and Ireland, and also on the continent, he was now inclined to believe in its contagious or infectious nature.

[We regret exceedingly that we are unable to continue our Report of the Proceedings of the Association. Much interesting and important matter is in reserve. We feel we owe an apology to our friends for its non-introduction in the present volume; and the only excuse we have to offer them is, want of room. By future arrangements this will be obviated: till these are made we crave indulgence.—*Editors.*]

The closing meeting of the Association for the Session was a

CONVERSAZIONE,

Held, as heretofore, at the Freemasons' Tavern, May 12th, 1846.

The attendance of members and their friends was large.

On the tables were placed the several morbid specimens that had been received during the session which were preservable, others being added from the Museum of the College, to complete the different series as far as possible; also the various new forms of instruments, &c.

In addition, Mr. Joseph Sewell, V.S., presented a new material for stopping of horses' feet, made of caoutchouc, or elastic gum, and cork-cuttings. It is very elastic, and resistant of moisture; but what will be the effects of pressure on it remains to be ascertained.

Mr. Gowing also forwarded a splendid specimen of two calculi existing in the parotid duct of a horse; and a portion of the spinal marrow of a cow, beautifully shewing the lesions that take place in it during parturient apoplexy. Several microscopes were likewise brought to the meeting by Messrs. Braby, Simonds, and Varley, in which living objects were shewn, or such as are elucidative of science, as muscular fibre, the minute structure of bone, &c.

The Secretary stated that he had anticipated Dr. Silvestri would have been present to exhibit some of his valuable preparations; but he was suddenly and unexpectedly required to appear before the French Institute, to explain his mode of preserving organic substances. The Secretary having seen some of these specimens, expressed his surprise that the transformations could be effected in so short a time as was stated, and yet be so perfect in appearance; a few months only being required to change the human body into a material resembling stone. Still, while he confessed his firm conviction that preparations thus made would be uninfluenced by the ordinary external agents, he nevertheless had his doubts if *structure* was so effectually preserved as *form*.

The following extract from *The Lancet* of May 9th must compensate for the loss sustained by the non-appearance of Dr. Silvestri:—

New Method of Preserving Organic Matters.

At a late soirée, held by the Marquis of Northampton, Dr. Silvestri, physician to the Royal Hospital at Naples, and chief physician of his Majesty's guard of honour, exhibited several preparations made according to a method discovered by him. By this process, organic matters are perfectly preserved, being converted into a substance possessing the hardness of stone, and admitting of being polished. Among the preparations shewn, were a portion of human liver, a section of a kidney, a section of a testis, and some hands and heads. In these specimens the texture was perfectly apparent when examined with a magnifying-glass, but the substances themselves had acquired the hardness and resonance of stone. The head of a ram possessed the stony hardness peculiar to these preparations, while the ears and hairs

retained their natural softness and pliability. Birds submitted to this process retain their feathers uninjured either in colour or pliancy; fishes are coated by a kind of transparent varnish; and the cornea retains the transparency of life. Dr. Silvestri has also succeeded in preserving flowers in the same manner, and petals retaining their natural hues, and the stem and leaves their pliancy and verdure. He gives the following statement of the application of his discovery:—

"An entire corpse, without being injured in the slightest degree, can be brought to a consistency approaching to petrifaction, and preserved for an indefinite period in full perfection of form, with the hair, nails, &c. Like a statue, it can also be placed in any given position, as illustrative of individual character or station.

"Animals of every species, from the elephant to the insect, are susceptible of being reduced to the same state of consistency and preservation. The plumage, fur, wool, and all other adjuncts of nature, remain entire, retaining the same colour, firmness, and flexibility, that they had at the moment of death.

"The same result can be produced in the single parts, organs, &c., of any organic animal body, without undergoing any alteration whatever, even though injected previously to the operation.

"All the objects in question may be petrified in such various degrees of intensity as may be judged necessary for the purposes of dissection, observation, examination, &c., with perfect freedom from stench, and all else of an objectionable nature, either when handled, or preserved as objects of curiosity.

"Flowers and plants can be preserved unchangeable, with their colours, form, leaves, and stems, as if just gathered.

"*The Advantages of the New Discovery are,*

"That the processes hitherto practised for the embalming and temporary preservation of human bodies become needless, as under the circumstances every one would have recourse to the discovery in question, which would also foster the natural desire to rescue from corruption the remains of illustrious men, and of individuals dear to their respective families.

"That zoological societies may provide specimens of animals

preserved in full integrity by the new process, which also renders further trouble unnecessary, as they emit neither bad odour nor injurious exhalations, too often the case in the common method.

"That such persons as have enjoyed the companionship of domestic animals, or have received services from them, will be able to preserve and display them after death, as monuments of their sensibility and gratitude.

"That for the convenience of students in natural history, glass cases, with double fronts, may be formed, to facilitate the exhibition and knowledge of the various classes and species of animals, for the furtherance of the verification of facts.

"That schools, theatres, and cabinets of anatomy, will be able to secure in abundance objects prepared by the above method, for the observation of nature itself in the various branches of descriptive, comparative, and pathological anatomy—studies prosecuted hitherto with the aid of decaying corpses, inappropriate or imperfect specimens modelled in wax or pasteboard, or preserved in spirits of wine, which invariably operates injuriously on such objects as are placed in it.

"Instructors and scientific men will not fail to provide themselves with specimens of the operation of this new discovery, which will enable them to study, for the first time, the internal construction and tissue complete and unchanged. A more interesting contemplation can scarcely be conceived.

"In the preservation of flowers and plants, botanical societies and collectors will profit by the new discovery."

Dr. Silvestri has also discovered a fluid for preserving animal matters, and which he considers will be found a complete substitute for alcohol.

The following papers were read. During the period that intervened between them, refreshments were partaken of by the company; and afterwards groups were seen in conversation awakened by the objects on the tables, or in the interchange of those sentiments that always ought to obtain between the members of a profession.

On the Physiology of the Contraction of Muscular Fibre.

By James Part, *Esq.*, *M.R.C.S.*

It is my wish to lay before you a cursory view of the intimate structure of muscle, the active agent in the movements of animals, and man among the rest, and therefore a powerful contributor to his enjoyments, together with some of the phenomena attending on its action. I cannot but regret that so little time is allowed me; the subject being so comprehensive that I fear I shall not be able to do common justice to it. In what I shall have to advance respecting the intimate structure of this tissue, I shall be obliged to draw very largely on the facts adduced by Mr. Bowman, of King's College School of Anatomy, who has made the subject completely his own by the value and correctness of his microscopical observations; and I cannot do better than recommend those of my younger hearers who are anxious to gain more complete information on this very important subject to the articles "muscle" and "muscular contraction," in the "Cyclopædia of Anatomy and Physiology," of both which he is the author; or to the more recently published work by Todd and Bowman on the "Physiological Anatomy of Man."

The active agents in the movements of all animal bodies—whether those which are concerned in the performance of some of the vital functions, or those of locomotion—are the muscles, familiarly known as the flesh of animals.

Muscles possess a property inherent in their tissue and peculiar to it—that of shortening or contracting their fibres, named contractility, which is capable of being called into action by appropriate stimuli. They are of two kinds—*voluntary*, or those which are called into action by the will; and *involuntary*, or those whose actions are either wholly independent of the will, or only partially affected by its mandates. They differ, also, in their physical characters; the former, when examined under the microscope, being marked by transverse stripes; the latter having a more homogeneous texture, and being destitute of them.

Involuntary muscles, being more simple in their texture than the voluntary, will first engage our attention. The fibres consist of flattened bands, usually of a pale colour, bulged at intervals by elongated corpuscles, and having, to all appearance, a homogeneous texture. By transmitted light, under the microscope, they present a finely mottled aspect without a darkly shaded border. Sometimes this mottling amounts to an appearance of granules, which Mr. Bowman supposes may be an approach to the structure of voluntary muscle, from the linear arrangement of the granules.

Unstriped fibres treated with acetic acid, and shewing the corpuscles.

It is doubtful whether the fibres of involuntary muscles have any special investment or sarcolemma, as none has yet been discovered. Their mode of termination is still involved in obscurity; and it is uncertain whether, for instance in the intestines, they surround the canal, or are attached to cellular tissue by their extremities. In the gizzards of birds they are united to white fibrous tissue.

The unstriped fibre is met with in the alimentary tube, of which it forms the double investing layer; also in the muscular coat of the bladder, the uterus, and the middle coats of arteries.

The excretory ducts of all the larger glands are said to be furnished with apparatus having the characters of this tissue. The bronchial tubes, the ductus communis in birds and mammalia, and the ureters and vasa deferentia, afford us examples.

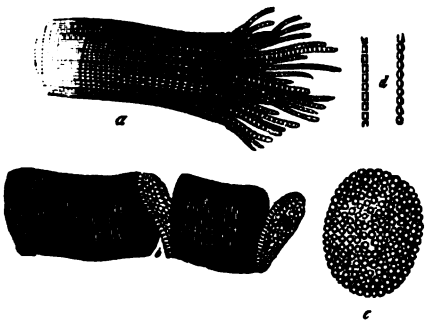
Voluntary Muscle.—The fibres of voluntary muscles are collected into distinct masses, each muscle being composed of a number of packets or bundles of muscular fibres. These bundles are called fasciculi; they are connected together by prolongations of areolar or cellular tissue, which forms a sheath to the fasciculi, and serves to connect them to one another, as well as the individual fibres. These latter have, however, a special investing sheath, called sarcolemma, presently to be noticed.

The ultimate fibres of muscles run parallel, and although they converge to each other with different degrees of inclination, yet they never interlace. They are attached at their extremities, through the medium of tendon, to the parts they are intended to move, and are supplied with bloodvessels and nerves, which lie in the intervals between them, embedded in the investing cellular tissue.

The diameter of the ultimate fibres varies from $\frac{1}{60}$th to $\frac{1}{1500}$th part of an inch, being greatest in crustacea, fishes, and reptiles, the irritability of which is most enduring; and smallest in birds, in which it is most evanescent. In man, the average width is $\frac{1}{400}$th of an inch, being somewhat less in females. The individual fibres are more or less flattened, from being packed together. When examined by high magnifying power, the fibre always presents upon, and within it, longitudinal dark lines, along which it will generally split into fibrillæ (*a, fig.* 1); but it is by a fracture alone that such fibrillæ are obtained. They do not exist, as such, in the fibre, and it occasionally happens that no disposition whatever is shewn to this longitudinal cleavage, but, on the contrary, violence causes a separation along the transverse dark lines, which always intersect a fibre in a plane perpendicular to its axis. By such a cleavage, discs (*b, fig.* 1) and not fibrillæ are obtained. "Hence (observe Todd and Bowman) it is as proper to say that the fibre is a pile of discs, as that it is a bundle of fibrillæ; but, in fact, it is neither one nor the other, but a mass, in the structure of which there is an intimation of the existence of both, and a tendency to cleave in two directions." If there were a general disintegration of particles along the lines in both directions, there would result a series of particles which may be termed *primitive particles* or *sarcous elements*, the union of which constitutes the mass of the fibre.

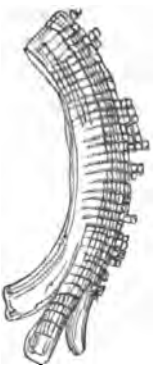
Separated in a longitudinal direction, the fibre is resolved into a row of minute particles connected together like a string of beads, which, when closely examined under a microscope magnifying 400 or 600 diameters, and having a good defining power, present the appearance of rounded or square quadrangular bodies, separated by dark lines (*d, fig.* 1); and it is to the co-aptation of these lines, and consequently of the sarcous elements, that the dark stripes are owing.

Fig. 1.



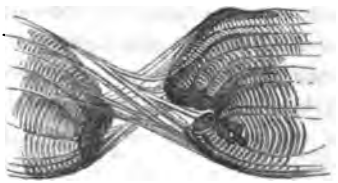
Fragments of striped elementary fibre.

a. Shews the longitudinal cleavage, with both the transverse and longitudinal dark lines; to the right the fibrillæ are separated from one another by violence.
b. The transverse cleavage along the dark lines.
c. The surface of a separated disc.
d. The appearance of separated single fibrillæ.



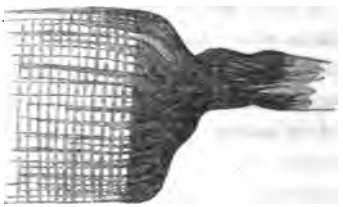
In the figure to which I now direct your attention, several of the sarcous elements have been removed by maceration in weak spirit; those which remain shew their lateral deposition, and overturn the idea of a spiral arrangement of the particles, as advanced by some authors.

Sarcolemma is the name given by its discoverer, Mr. Bowman, to the tubular sheath of the ultimate fibre, which it isolates from all surrounding fibres. It is, to all appearance, a transparent, homogeneous membrane, possessing great toughness and elasticity. It may be shewn by immersing the fibre in water before its irritability is destroyed, or it may be seen between the separated fragments of a fibre which has been broken within it. By maceration the fluid is imbibed, and causes contraction of the fibre, by which the water is squeezed from its substance; and, collecting between the fibre and its sheath, raises the latter into vesicles or bladders. Its existence in the *heart* is doubtful.



A fragment of elementary fibre held together by the untorn sarcolemma, which is twisted. The dark portion represents the contracted portion of the fibre and the sarcolemma raised by imbibed water.

The attachment of muscular fibre to tendon is by the junction of each fibrillæ of the disc to a corresponding portion of tendinous tissue, as represented in the annexed cut.



Attachment of tendon to an elementary fibre, from the skate.

Development.—Muscle, in its earliest stage of development, consists of a series of nucleated cells arranged in linear series, which afterwards unite to form the elementary fibre. While this union of the cells is going on, a deposition of contractile material gradually takes place within them, in granules, disposed in the two directions beforementioned, being of the same size as the sarcous elements of the perfect muscle, and, by their co-aptation, causing the transverse stripes to be of the same width.

The longitudinal lines usually become well defined before the transverse, and, when both are strongly marked, the nuclei of the cells disappear from view.

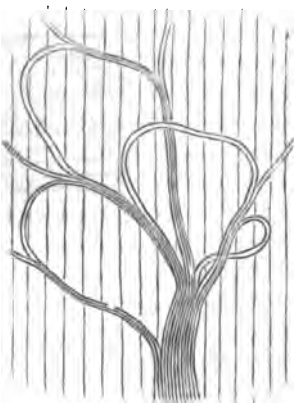
The growth of the muscles takes place by increase in the bulk of the elementary fibres, and not their number. Mr. Bowman believes that the number of the fibres remains the same through life, and that the square or muscular build of an individual is determined by the mould in which he was originally cast.

Muscles are very largely supplied with bloodvessels, which divide and subdivide in their substance until the ultimate recognisable capillary tubes correspond with the fibres of the muscles, along the intervals of which they lie, sending cross vessels trans-

This cut shews that the ultimate ramifications of the artery are continuous with the venous capillaries.

versely under or over the fibre. The length of the longitudinal vessel seldom exceeds one-twentieth of an inch, while the transverse one is much shorter.

Nerves.—The muscles of all the larger animals have nerves distributed to them, which appears to be a necessary consequence, from the fact of their being the usual stimulus by which this peculiar action is excited. Their ultimate distribution in the substance of the muscle is in the form of loops. The larger trunks of the nerves first divide into sets, then into twos and threes, and ultimately into single fibrillæ. They pass along the fibres of the muscle, touching the sarcolemma as they pass, but have not been found to enter it. They form arches, and then return, either to the point whence they set out, or to some adjacent filament.

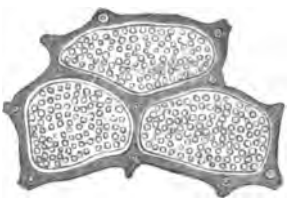


Having taking a rapid survey of the texture of muscle, we proceed to a consideration of its function, which is essentially that of moving the body from place to place, and the different parts thereof on one another, all which actions are effected by shortening the tissue, or contraction.

It has been well observed, that the power of contracting is not merely that mechanical power, by which elastic substances shorten themselves, when the power which stretched them has been removed, but it is a property which responds to appropriate stimuli, and ceases or diminishes with the healthy state of the tissues.

As the voluntary muscles are usually attached to bone which is of much smaller caliber than the muscle, a medium of communication becomes necessary; and this we have, in the form of tendons of various shapes, modified according to the place of attachment, and eminently calculated to produce beauty and symmetry of form. The points of attachment have acquired the terms of origin and

insertion, the former having been given to that supposed to be most fixed, the latter to the more moveable.



The dark portion of the cut shews the cellular tissue separating, while it unites the fibre, of which the mottled portion shews a section, while the spots in the angles mark the vessels.

The *areolar tissue* of muscles is much more largely supplied to the voluntary than the involuntary description. To the former it affords an external investment, sending prolongations into its substance which collect its fibres into bundles, large and small, and ultimately separate and connect the individual fibres to those in immediate proximity to them.

The uses of this tissue appear to be, 1, to collect the fibres into bundles; 2, to afford protection to them; and, 3, to limit the motions of the different fasciculi upon one another. The principal use, however, is that of forming a nidus for the delicate vessels and nerves which traverse the intervals between the fibres; in which, during the contraction of the muscle, they are protected from injury.

Muscles are usually arranged in sets on the body, all the muscles in a set having similar actions, and acting mostly together, and all having antagonists in action and situation, without which there could be no movements in opposed directions. Thus, the biceps of the arm is the antagonist in situation and use to the triceps. This antagonism is further required by the necessity there is for elongating muscles, when they have become contracted, and for straightening the bended joints.

The locomotive framework is justly regarded as a series of levers, in which, usually, the fulcrum is at the joint or extremity, the resistance at the opposite end, and the moving power or muscle in the intermediate position. In most cases the muscles are attached very near the fulcrum, as in the biceps, which is inserted in the tubercle of the radius. By this arrangement a contraction of the muscle of a single inch moves the hand, in the same time, through the extent of a foot, but manifestly with only

$\frac{1}{12}$th of the power; so that what is lost in power is gained in velocity, while the beauty of the limb is retained, instead of having the great inconvenience of muscles extended between distant ends of the bones, which would obviously render the limbs heavy and uncouth in their appearance.

Muscular contraction may be considered as of two kinds, *passive* and *active*.

Passive contraction is that inherent property which every muscle possesses, while its integrity of vitality and situation are maintained, of shortening itself. It has been variously designated as *tonicity* and *retractility*, and is well shewn by the contracted state of muscles which follow paralysis of their antagonists in the face, when the features are drawn towards the healthy side.

This passive contraction is continually opposed to the elongation of muscles by the contraction of antagonist muscles. During sleep, when there is no active contraction, it is the passive which remains; and the bent position of the limb is assumed from the greater power of the flexor than the extensor muscles. It is this passive contraction which keeps the sphincters closed until they are overcome by the distending force of their natural stimuli.

Active contraction is peculiarly attended by manifestation of power and motion, which are the special characteristics of muscle. It is exerted against an opposing force, either in the shape of the passive contraction of antagonist muscles, or the weight and resistance of some part on which the muscle directly acts, and which it usually overcomes. It is sometimes, however, exerted to oppose an antagonist force, in order to maintain a fixed posture. Active contraction is partial and interrupted, and, being attended with a sense of fatigue, requires intervals of repose.

The immediate stimuli to contraction of muscles in the living body are, doubtless, the nerves distributed among them. Of the condition of the nerves which enables them to produce these effects nothing is known, nor of its mode of production. The agents, however, by which they are produced, are volition, emotion, and impressions, conveyed along the afferent nerves to the nervous centres, and thence returned by the efferent or motor nerves; impressions arising from diseases or injuries of the motor

nerves, pressure, heat, chemical substances, and electricity. These are the agents which excite the nervous power.

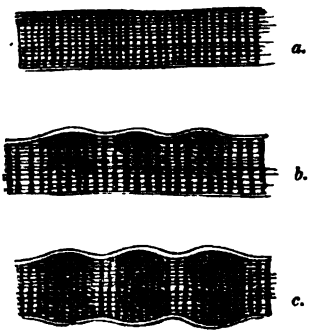
Some muscles are also stimulated to contraction by the force of distention, as is evidently the case, to a certain extent, in the muscular coat of the alimentary canal, and in the heart. Muscles have not the capacity for elongating themselves when they are once contracted, unless their ends are drawn apart by some extraneous force, as that of distention, or the contraction of antagonists. Thus, an empty intestine is reduced to the size of a tobacco-pipe, and the sphincters of the bladder and anus are kept contracted without any tetanic spasm, or permanent expenditure of contractile force.

It is asserted by Todd and Bowman, that muscular contraction may be produced by any irritating substance applied to the fibre when *isolated* from all connexion; as by a hair or piece of dust, which may be included within the field of the microscope. But I am inclined to doubt whether the nervous connexions of these fibres seen in their experiments could have been entirely taken away. When contracted, a muscle is firmer than before, this firmness depending in some degree on the amount of contractile force applied to it. It is shorter; but what it loses in length it gains in thickness; a fact which may be seen in a small portion of the sarcous element under the microscope.

When a piece of muscle, retaining its contractility, is torn up into its elementary fibres, and placed in water, the fragments are seen, under the microscope, to undergo a slow movement at certain points, especially where they have suffered violence, as at their broken extremities. This movement consists of a shortening and thickening of the material composing the fibre. The transverse stripes become longer and thinner: as the discs flatten they expand in circumference, and approximate to one another, and the fibrillæ become, consequently, shorter.

Passive contraction, which may be observed by placing the decorticated tail of a frog, in the tadpole stage, under the microscope, is found to be quite uniform throughout the tissue, the transverse stripes being stationary and equidistant, and attended with a movement absolutely uniform throughout the whole mass of fibre.

Active contraction, on the contrary, is observed to be attended with very different appearances. Contractions take place at isolated spots, which they cause to bulge. At first, only a small portion of the mass is engaged; they then spread gradually into the interior in every direction, being attended by a close approximation of the transverse stripes. These contractions are not persistent, but relax, and give way to others in their immediate vicinity. When, however, the ends of the fibres are loosened, the contractions become general throughout the mass, and the fibre is reduced to one-third its original length.



a The fibre under the microscope in its state of passive contraction.
b The condition under partial contraction.
c The state under active contraction.

The conclusions drawn by Todd and Bowman on this subject are,

1. That active contraction never occurs in the entire mass of a muscle at once, nor in the whole of one elementary fibre, but is always partial at any precise instant of time.

2. That it is not more than instantaneous in any one of its particles; and that, consequently, the sustained active contraction of any muscle is an act compounded of an infinite number of partial and momentary contractions, necessarily changing their place, and engaging new parts in succession.

Muscular contraction is attended with a sound, compared by its discoverer, Dr. Wollaston, to the distant rumbling of carriage wheels. It is also ascertained by MM. Becquerel and Breschet that its temperature is increased. Both these phenomena are attributed to friction of the contiguous fibres on one another. And the experiments of M. Matteucci have shewn that some modification of an electrical current passes from the centre to the circumference during the contraction of muscles without its artificial application to the part.

Active contraction appears to consist in a disturbance of the state of rest by the application of a special stimulus to certain

portions only of each fibre, by which, first these portions, then others in succession, are made to pull strongly on the ends of the fibre, through the medium of the parts *not* so contracted. The contractions undulate along the fibre from the point stimulated; and there is always a considerable part of each fibre uncontracted, which will at once account for the fact of voluntary fibre contracting to one-third its natural length; while an entire muscle, *in situ*, can shorten only one-third its length.

These facts are gathered from observations made on the striped fibre; but there appears nothing in the other variety at variance with them, except, perhaps, the mode of exercise. In whatever the mysterious power of contraction consists, the modifications of the two kinds of fibre are intimately connected with the manner of exertion. With the striated variety there is an evident aptitude for quick, energetic, and rapidly repeated movements, while in the other variety they are slow but more enduring.

Messrs. Todd and Bowman draw the conclusion, that contractility is a property residing in the sarcous tissue by virtue of its chemical composition; and that, from the chemical and physical relations subsisting between it and fibrine, there is little doubt that muscle is formed by the direct deposition in the solid form of the fibrin of the blood. That it departs with life, is a proof that those actions of waste and nutrition concomitant with life are essential for its integrity. The degree of contractility may be said to be intimately dependent on, if not proportioned to, the activity and perfection of the nutrient function; for it is destroyed by all causes which affect the nutrition of the organs, as disease, over-stimulation, cutting off the supply of blood to the part; and its activity and evanescence, or sluggishness and endurance, correspond very accurately with the condition of that function, or, in other words, with the quantity of oxygen carried by it into the tissues.

The quick and lively motions of insects and birds whose circulation is rapid, as well as the slow movements of the crustacea, whose circulation is comparatively sluggish, furnish examples of both conditions.

We proceed now to notice some of the uses and effects of muscular motion in the animal economy. Commencing, then, with

the involuntary or unstriped muscle, we find it performing many of the offices necessary to the preservation of animal life. The function of deglutition, as soon as the food is passed beyond the mouth, is the first instance of it. The pellet of food, distending the wall of the œsophagus, causes the characteristic contraction of its fibres, and acts as the exciting cause to its own propulsion. The same series of actions takes place along the whole line of the alimentary canal, and the name of vermicular motion has been given to it, from the resemblance it bears to the motions of worms. Deglutition, however, in the earlier stages, is manifestly a voluntary process, and hence we are usually aware of the presence of a morsel at its first entrance into the œsophagus.

The contraction of the muscles of the bladder is evidently also the result of distention, as is also that of the uterus.

Rythmical contractions are those which occur after regular intervals of repose. Their importance is infinite, for, if they were intermitted for a time, life would cease. The muscles of respiration, and the heart, afford us examples.

The heart beats *independently* of our controul; but its action is sometimes affected by impulses and emotions.

The muscles of respiration, although we can suspend their action for a time, are also beyond our influence.

Associated movements are, perhaps, among the most wonderful phenomena of that curious subject we are now contemplating.

The various attitudes of the body, for instance, when assumed, require the simultaneous action of many different and antagonist muscles, which must all conspire to produce one particular end.

In the animation of the features under passion, in articulation, indeed, in many instances, the same consentaneous action is required.

Many muscles are symmetrical in their action, that is to say, the corresponding muscles of both sides act at the same time: this is well remarked in the motions of the hands in young children. A singular exception, however, happens in the movements of the eyes, in which, if symmetrical movements took place, a squint would result.

The strength of the muscular system is enormous in some ani-

mals; the tiger, for instance, has been known to carry away an ox of large size on its back.

Look at the power in the tail of a whale, which is able to overturn a large boat.

What must be the strength of muscle which can propel the race-horse, which clears ninety feet per second? How many contractions of how many muscles must here take place?

The following anecdote from "Mr. Martin's History of the Horse," while it furnishes us with an extraordinary instance of nerve and presence of mind in both horse and rider, shews the enormous force of muscular action, coupled with extraordinary precision.

In the winter of 1812, the harriers of Mr. Thomas Comport, of Malmains Hall, Stoke, near Rochester, came upon a buck which had escaped out of the Earl of Darnley's park, at Cobham, and ran it upwards of twenty miles right out. It is not my object, however, to describe this chase, which was a most surprising one, but to relate an incident which occurred in the course of it. Mr. Comport's horse, a gelding, upwards of seventeen hands high, equal to eighteen stone, which was about the weight Mr. Comport rode, in the course of this remarkable chase, came to a fence which was unknown to Mr. Comport, consisting of what Mr. Comport thought to be merely a hedge and ditch, the hedge being upon a high bank, and the ditch, about six feet wide, coming first. Mr. Comport rode the horse at the fence, and the horse took it in grand style, and was in the act of covering the fence, when to Mr. Comport's surprise, and apparently that of his horse, he discovered a wide ditch also on the other side of the hedge. The plunging into the second ditch appeared inevitable, but, to Mr. Compart's astonishment, the horse checked his leap, and, doubling his fore legs under him, came on the bank on the opposite side of the hedge, and, taking another spring, cleared the second ditch safe and wide. Mr. Comport, who is lately dead, and who had followed the hounds for more than forty years, has often been heard to declare that this leap was the most extraordinary he had ever seen or heard of.

The flight of the swallow, the martin, carrier-pigeon, the hawk, and the eagle, affords us ample food for wonder, if we will only contemplate the mechanism which effects it.

The muscular system of insects has always excited the wonder and astonishment of the naturalist, in whatever point of view he examines this portion of their economy; whether he considers the perfection of their movements, the inconceivable minuteness of the parts moved, or the strength, persistence, or velocity of their contractions.

Professor Rymer Jones tells us that the flea or the grasshopper will spring 200 times the length of its own body; that the dragon-fly possesses such indomitable strength of wing, that for a day together it will sustain itself in the air, and fly with equal facility and swiftness backwards and forwards, to the right hand or to the left, without turning. Neither is the velocity of the movements of insects inferior to their prodigious muscular power. An anonymous writer in Nicholson's Journal (observe Kirby and Spence) calculates, that in its ordinary flight, the common house fly makes with its wings every second, about 600 strokes, which carry it five feet; but if alarmed, he states their velocity can be increased six or seven fold, or to thirty-five feet in the same period. In this space of time a race-horse could clear only ninety feet, which is at the rate of more than a mile a minute. Our little fly will in her swiftest flight, go more than one-third of a mile in the same period of time. Now compare the infinite difference in the size of the two animals—ten millions of the fly would hardly counterpoise one racer—and how wonderful will the velocity of this minute creature appear.

The agile Gibbon *(hylobates agilis)* is said by M. Duvaucel to possess extraordinary activity. The velocity of its movements, says he, is wonderful: it escapes like a bird on the wing; scarcely does it perceive danger, but it is already far away. Ascending rapidly to the top of a tree, it there seizes a flexible branch, swings itself two or three times to gain the requisite impetus, and then launches itself forward, repeatedly clearing in succession, without effort and without fatigue, spaces of forty feet.

The following account of one of these animals, exhibited in London some years ago, from the pen of Mr. Martin, will be interesting, as shewing at once the power, velocity, and precision of movement, which the creature possessed.

"It is almost impossible to convey in words an idea of the quick-

ness and graceful address of her movements; they may, indeed, be termed aerial, as she seems merely to touch in her progress the branches among which she exhibits her evolutions. In these feats her hands and arms are the sole organs of locomotion: her body hanging as if suspended by a rope, sustained by one hand (the right, for example), she launches herself by an energetic movement to a distant branch, which she catches with her left hand. But her hold is less than momentary; the impulse for the next launch is acquired: the branch then aimed at is attained by the right hand again, and quitted instantaneously, and so on in alternate successions. In this manner spaces of twelve and eighteen feet are cleared with the greatest ease, and uninterruptedly, for hours together, without the slightest appearance of fatigue being manifested. And it is evident that, if more space could be allowed, distances very greatly exceeding eighteen feet would be as easily cleared: so that Duvaucel's assertion, that he has seen these animals launch themselves from one branch to another forty feet asunder, startling as it is, may be well credited. Sometimes, on seizing a branch in her progress, she will throw herself, by the power of one arm only, completely round it, making a revolution with such rapidity as almost to deceive the eye, and continue her progress with undiminished velocity. It is singular to observe how suddenly this Gibbon can stop, when the impetus given by the rapidity and distance of her swinging leaps would seem to require a gradual abatement of her movements. In the very midst of her flight a branch is seized, the body raised, and she is seen, as if by magic, quickly seated on it, grasping it with her feet. As suddenly she again throws herself into action.

"The following facts will convey some notion of her dexterity and quickness:—

"A live bird was let loose in her apartment; she marked its flight, made a long swing to a distant branch, caught the bird with one hand in her passage, and attained the branch with her other hand; her aim, both at the bird and the branch, being as successful as if one object only had engaged her attention. It may be added, that she instantly bit off the head of the bird, picked its feathers, and then threw it down, without attempting to eat it. On another occasion this animal swung herself from a perch across

a passage, at least twelve feet wide, against a window, which it was thought would be immediately broken; but not so: to the surprise, of all she caught the narrow framework between two panes with her hand, in an instant attained the proper impetus, and sprang back again to the cage she left,—a feat requiring not only great strength, but the nicest precision. She is fond of fruit, and often displays her dexterity in catching apples or plums purposely thrown at her, however quickly they may be propelled by a vigorous arm; and although pretended throws may be made to deceive or balk her, she never fails to catch the fruit, and that almost without an effort."

We have heard something of the precision of muscular action; but we shall find the most beautiful instance in that most complete instrument, the human hand. Pause, my friends, for a moment, and consider the varied and beautiful works which it has formed; and then reflect how many muscles, how many fasciculi, how many fibres, were put in motion, and how minute some of those motions must have been, and how nicely adapted to produce *just* so much and no more effect; and I think you will agree with me that it presents to our notice one of the grandest and most sublime instances of foreknowledge, power, and beneficence, anywhere presented to our senses.

PHILOSOPHIC SKETCH OF ARISTOTLE AND HIS WRITINGS*, &c.

By ALFRED TULK, *Esq.*, *M.R.C.S.E.*

MOST fully impressed with the truth of that which has been written, not simply (as has been observed by a profound and living philosopher of our time†), "that God thought, and it was—but God spake, and it was;" or, in the creation of the world, gave utterance to his divine ideas, that man might read them, and, isntructed, bow before the shrine of the Being who gave him birth, I at once avail myself of the thoughts and reflections suggested by the present season of the year as a fitting introduction to the present discourse; and, seeing how wakened by a brighter sunlight and the warm breath of spring, Nature doffs the shroud of her winter sleep and starts into a new life, would earnestly call your attention to one great principle, universal in its application to us and the sphere we have been destined to inhabit, that of Genesis or Development. And here I would advance a step further than that which rests in the consideration of this word as expressing the stages or degrees, from lowest to highest, undergone by material objects in their production, and bid you recall to memory the fact that the spiritual no less than the physical world, mind not less than matter, equally obeys the same law. The phases of childhood, youth, and manhood, through which all here present have already passed, bring home to your thoughts, now matured, a practical illustration of the course that has been run between the evolving powers of your body and those to which the body is subservient,—the moral and intellectual faculties of your nature. Upon this truth, then, it were needless for me to tarry and insist, did it not, beacon-like, guide us to the conception or mental haven of other higher and more universal truths; that even as from the particular growth of some one plant upwards from the

* In preparing the present discourse, use has been made of the edition of Aristotle's works, in 4 volumes folio, by Duval, Paris, 1654; also that of his "Historia Animalium," by Camus; and the admirable account of the Stagyrite's life and writings given by De Blainville in his "Histoire des Sciences de l'Organization:" Paris, 1845.

† Ludwig Oken, at p. 13 of his "Lehrbuch der Naturphilosophie," 3d Ed., Zürich, 1843; now translated, but not yet published, into English.

seed, or of animal from the ovum, we may rise to trace the development of the vegetable and animal kingdoms throughout time, or from their first appearance upon our planet through a vast succession of changes down to the present age; so, also, may we turn from solving the problem of our own mind's growth to look back upon the long still lengthening vista of departed time, to contrast with the past the present, and set before ourselves questions such as these. What has been the evolution of the mind of the Grand or Average man, of our species collectively, through the cycle of revolving years? Here, as our province is more immediately the study of organization or the phenomena of animated beings, let us limit our inquiry to one point of the historical progress of anatomy as a science, and ask, from whom and whence did it take its rise?

Before we enter, however, upon this ground, I would further advert to other analogies that subsist between the worlds of matter and mind, as indicative of the harmony of order and correspondence which prevails between their respective laws. It is true that, in observing the changes which occur in the development of any organic being, a gradual progressive advance may be followed from the simple to the more complex, and that parts are either superadded which were not visible before, or become increased in elaborateness of structure the nearer the being approaches to maturity; but when it is attempted to draw an inference from this, the history of a particular creature, in regard to the totality of plants and animals that have ever existed upon the earth, Geology at once declares its unsoundness, and in the stony fossilized records of her bygone epochs proves that a similarly gradual and progressive rise, from the lowest to the highest organized forms throughout the different strata, is far (if partially evidenced by the remains of the Vertebrata) from being a correct representation of the truth; but that, on the contrary, successive systems, composed of various grades of organic life, in place of merely successive species, have alternately arisen and been swept away, and that whatever relation the extinct beings may bear to those that exist at the present day. In like manner, whatever views we may entertain of the first distribution or parcelling of the human species into nations over the globe, whether we suppose them to have all sprung and subsequently migrated from one common stock to the

regions they now occupy, or to have been there originally placed, History affords no examples of parallel and coeval progress unto civilization; but, so far back as her written archives extend, we find one people, having attained the zenith of their power, decline, as did the Jews, the Greeks, and the Romans, and the seat of intellectual and political superiority reappear in some hitherto barbaric and uncultivated soil. Nor does the conquest of a nation of savages by one more civilized, or the reverse, help to explain the latter fact. Our own countrymen may have borrowed much from the invasion of Julius Cæsar or the Saxons, the Goths from their incursions into Italy or upon ancient Rome; but to this we can ascribe but a small influence upon the future progressive power of England and Germany, and what these countries at present possess must be referred to some general law of development higher than and differing from that which governs the individual man. To work out all the details of this most important subject, toiling onwards to grasp fully and express the universal governing the particulars, remains yet to be clearly fulfilled.

The mind of man, when it would essay to penetrate and discuss the actual state of science or knowledge sunk in the depths of remote time, falls inevitably into a state which may be aptly compared with he who gazes upon a far-off landscape into the realms of distant space. As a mist enveloping the latter masks or shrouds to a certain extent its outline, enabling the gazer to form but an approximate conception of its beauties as a whole; so, also, is the dawn of any particular science clothed in the twilight of mysticism common to the times in which this was a predominant feature of the human mind. Thus, during a period of more than 600 years before the Christian era, there flourished in Asiatic Greece seven wise men, or sages, as they were called: of the details of their life we know but little, and that little involved in considerable doubt and contradiction; of their writings, also, none have escaped the wreck of time, and what knowledge we at present possess must be drawn from the records and extracts handed down to us in the works of Aristotle and Cicero. Still, though our sketch of their opinions must be necessarily brief, there is much that is interesting and instructive to be derived from them in reference to the dawn or infancy of the human mind. While it is not uncommon for children at a very early age to set questions to their

parents as to the nature of God or of Heaven, which they only who are in full possession of the reasoning faculty, when educated and matured, are in any way prepared to answer; so did our first philosopher, Thales of Miletus, amid the darkness of his times, resulting from the absence of an inductive process of inquiry into he nature of things, seek refuge in some universal and primordial principle to govern the world; and this he held to be water, for all life appeared to him to commence in a fluid state, such as seeds which were full of moisture. The next who followed Anaximander added an infinite and material principle to the primitive chaos of water, and taught that the Divinity which issued from this Infinite perished in the changes that concurred to produce every thing, but that the essence of the absolute material remained uninjured. Anaxoragas pentrated more in advance, and sought to explain the reason of the formation of different substances from one primitive one, by admitting the existence of as many primitive molecules as there were diverse substances, and that the divine spirit, by separating and arranging in order these mixed and confused molecules, thus laid the groundwork for the generation of all things. To Pythagoras we owe the important doctrine that form and number lie at the root of all our knowledge; for that through geometry and arithmetic, as being the most certain and self-evident of the sciences, we can alone understand and comprehend the laws of harmony that pervade and govern the material world. Reverting again to the search after primordial principles, Empedocles started the famous theory of the four elements, fire, air, earth, and water; while, of these, Heraclitus considered fire to be the generator of the other three. With Democritus, who denied God, yet was the first to attempt the application of sufficiently general principles to the multiplicity of phenomena, we close this rapid summary of the first germs of science in Greece, and now open a new chapter of history and enter upon a brighter phase in its development.

Renewing once again our comparison between the evolution of mind, and of matter as pourtrayed in the organic ovum, while in the latter we are able to discern particular stages characterized by the appearance of some new organ, or system of organs, tending to alter materially the general aspect of the same being, Science, during the lapse of ages, has had also her conspicuous epochs or

times signalized by the birth, life, and writings of some great man. Thus, Galileo and Newton in astronomy, Guttemberg and the art of printing, more recently Watt with the giant power of steam, mark so many brilliant and important eras, never to be forgotten by us through all subsequent change and improvement. We are but too apt, living at the present day amid all the pomp of what is called modern science and modern art, to employ these terms as misnomers, whereby the present may become in our estimation falsely antagonized to the past. The present is but the outgrowth, the expansion of the past: each succeeding hour, each day, each year, derives and reflects whatever lustre it possess from that which has gone before; and even as the flower includes all the earlier developed parts of the plant, or as our own bodies, when matured, bear about with them the remnants of former fœtal structures, the recollection of by-gone years must still abide within our hearts and memories, even as the venous duct or thymus gland arrest the eye of the anatomist as he dissects the adult human form. Bacon regarded antiquity as the childhood and youth of the world; but would we strive to anticipate and divine what the future might produce, inasmuch as this attempt must be necessarily based upon relation to the present, antiquity then will wear the visage of parent or instructor, and modernism of the child who, however, it may surpass, has yet repeated the father or mother's lessons, and been taught. Dismissing, then, all our pride of place in time, without, upon the other hand, seeking to unduly value or set a blind veneration upon antiquity, let us honestly inquire into what was done and writ by Aristotle, that he should have received the homage and title of the Father and Founder of the Natural Sciences. And, in proposing to myself this undertaking, it shall be less my aim to set before you a bare catalogue of the works of this great philosopher, than to convey a general notion of the mental epoch in which he arose among mankind, what was the influence it exercised upon his mind, and what, among the numerous and important subjects of art and science, was the scheme he proposed to himself and others for their most successful and philosophic study.

From the brief sketch already given of the seven wise men who flourished previous to the time of Aristotle, it is possible to draw important conclusions relative to the then existing state

of philosophy in Greece, and therefrom better enable us to appreciate the glory of that light which was destined to illume the misty and hitherto but very dimly-seen horizon of truth. If we but analyze the faculties of our own minds with a pure desire, actuated by no other motive, such as sectarian pride or self-conceit, of attaining unto Truth, and that for her sake alone, knowledge will be found to be indisputably the result of two processes,—of impressions conveyed to our mind from without inwards through the medium of the senses and of certain innate ideas, such as those of space and time, by which the information or experience thus received is submitted to the ordeal of judgment and reflection, the objects themselves are arranged, laws are discovered; in other words, the multiplicity of phenomena is resolved into an unity of plan, and thus we approximate, though not as being finite and imperfect creatures, to an absolute conception of the Divine and omniscient essence, to some comprehension of his attributes as displayed in the wondrous harmony and order stamped upon us and our planetary sphere of action. But, bearing in mind what has been said of Thales and his successors, without our stopping to comment upon and shew what essential differences exist in his and their opinions, one great principle actuated and pervades them all. It was the endeavour to arrive at general conclusions by what is termed *à priori* or deductive reasoning, to the neglect of the *à posteriori* or inductive process of thought, which should observe and gather facts that it may afterwards, as a final result, subject them to the former and higher faculty; or rather, setting aside scholastic refinement, it behoves both to keep company together. For what, I would ask, have the senses, and with them the power to obtain experience, been given us, if we neglect to make thereof practical use? and, wherefore possess we free will, but that, apprised by self-consciousness of our real condition as men, we may strive to steer from evil towards good—to discriminate the true from that which is false? To effect this it is necessary that we should not think only, nor indulge in abstract closet speculations; not put out our eyes, as it is recorded (if falsely, yet pregnant with instruction) of Democritus, that his reason might revel with greater freedom and undisturbed, but look abroad, and that with care and labour; that seeing, we may receive the light, and reflecting, feel that its splendor, though borrowed, has been increased; that, though un-

able to gaze directly upon the sun when in the full blaze of meridian splendour, we may yet think profoundly thereupon, and endeavour to grasp at an idea of its real nature and form.

And now let us enter, *in medias res*, or at once, to the object of this discourse. Greece was fast attaining the climax of intellectual power; her genius had passed through one of the most brilliant careers of poetry and art, "for no nation," says Schlegel, "has as yet been able to equal the charm and amenity of Homer, the elevation of Æschylus, and the noble beauty of a Sophocles;" nay, more, their writings infused a spirit of internal harmony and beauty which masked and clothed, though under an outward yet resplendent dress, the more or less sensual nature of the mythological belief which held sway over the minds and actions of this truly great people. In their attempts to create a science of philosophy we have seen that they were less successful; and that, by reason of a paralyzing tendency to relapse into the contemplation of their own thoughts, and turning too deaf an ear to the voice of experience in the world without, hope to build at their ease and in solitary life the structure of positive knowledge, while, as yet, the facts, materials, or bricks for such an edifice were wanting, or but too few in number to form a secure and lasting foundation. We may indeed exclaim, "their spirit was willing, but the flesh was weak;" they would reap the benefits, yet could not till the soil in a manner that would have insured a more ripe and abundant harvest. At such a period of Grecian history, two thousand years ago and three centuries and upwards before the birth of Christ, in the little town of Stagira, upon the coast of Thrace, was born the man of men destined by labour and research to dispel that fog which hitherto shrouded the steep thoroughfare to truth, and bequeath unto posterity this grand lesson, that there is no royal road to learning, or, would we borrow a home expression, no railway trams for getting expeditiously at the truth. Though a pupil of the celebrated Plato for twenty years, and entertaining, as is evidenced in his works, a proper feeling of respect and tenderness for his master, Aristotle yet failed to become his slave. Dissatisfied with the generally abstract or ideal character of Plato's writings and lectures, at his death Aristotle opened a new school in the Lyceum at Athens, in the garden of which it was his custom to discourse while promenading along with his disciples; and what, we have

now to inquire, did he teach this walking troop, or Peripatetics as they were then called? The reply to this question lies before us in the mass of valuable works, which, escaping time's wreck, have been handed down as a living monument of the hand that penned them. In a word, Plato disregarded observation, wrote concerning his thoughts, and based science upon his mental conceptions; but Aristotle sought in books, and, above all, in the study of Nature,—in the examination of facts to plant the fabric of truth,—to build up science upon a more deep and perfect basis. Time bids me be brief, and only select the most striking illustrations of what has been just now advanced. Aristotle commenced his encyclopædia of human learning by a rigid and minute analysis of the mind, strove to discover and express the laws which regulate its operations through the means of succinct formulas, and, actuated with this design, treated of the respective subjects of logic, metaphysics, grammar and rhetoric. Upon the merits of these it is not my business now to enter, but shall rest content with simply quoting a passage strikingly illustrative of the uses to which he conceived mental abstractions, when not brooded over in and by themselves apart from physics, might be applied. "Experience furnishes the principles of every science. If we omit nothing that observation can afford us respecting phenomena, we could easily furnish the demonstration of all that admits of being demonstrated, *and illustrate that which is not susceptible of demonstration.*" (*Metaphys.*, b. I.) In this assertion did the Stagyrite make a giant step in the advance of his age. He did not have recourse to the idle and unproductive dogmatism of Berkeley in modern times, and deny the independent existence of matter, because he became acquainted with it only through his mind; nor, with the sensualist school of metaphysicians, that all knowledge was to be referred to the experience gained by their eyes, ears, &c.; and that the mind, as if dead before or passive, was then gradually called into active operation, or began to be developed. No; with a truer and clearer insight into this difficulty, he fell into the bottomless abyss of neither extreme, but, guiding his path with caution between the two, set himself rather to understand the bearing of mind upon the world without, regarding the former as an instrument to be employed in arriving at a knowledge of the latter, and in ascertaining the truth of things,

which ever minister like food to the intellect, yet require it to penetrate and reveal the spiritual meaning by which they have been clothed as products of the divine power. Thus has he himself given the reason for the march pursued in his works:—"As in every doctrine the perception of principles, causes, and elements, constitutes the knowledge and science, since we think that we actually know a thing when we recognise the first causes and first principles, and even to the elements, it is evident that we must urge ourselves to determine first what belongs to the principles of the science of Nature. Now the natural method is, to set out from that which is best known and more clearly demonstrated. It behoves us, therefore, to proceed from the Catholic, or Universal, to Singulars, for the universal, from its comprehending many things as parts, is better known by the senses." (*Nat. Ausc.*, cap. I, lib. i.) Furthermore, was Aristotle led in his search after final causes to opinions of an atheistic or material character? "In all these causes the supreme cause must be always sought for, as in every thing else." (*Nat. Ausc.*, II, iii.) And in his treatise *De Mundo*, after pourtraying in a masterly manner the evidence of the Creator's existence, as displayed in the creation and preservation not only of our own but other worlds, he observes—"Such is the opinion it behoves us to have of the Deity, as being, in respect to power, omnipotent; to beauty, superlatively noble; to life, immortal; and to virtue, beyond all compare. Thus, although invisibly known unto us by reason of our finite nature, God is yet seen through the medium of his very works." Those, now, who are in any way acquainted with the principles of the Baconian philosophy, and the sentiments therein uttered of reproach and contempt of Aristotle's love for generalizing upon facts from observation, I would entreat to contrast these two great minds, and ask yourselves, though it be true that the Lord of Verulam laid down in a more methodical and lawyer-like manner the principles of his predecessor, he was justified in endeavouring to undervalue the source whence his own system was unquestionably derived? and, secondly, what did our countryman, with all his scheme for its acquirement, contribute himself to science? He has told us, and that admirably, how to attain thereto; the Stagyrite did the same before him; and, what is more, practised that which he taught.

Of this a brilliant example is afforded in the rich mass of facts embodied in his history of organized beings, concluding with that of man, viewed under the several states of the politician, moral and family agent.

Before, however, entering upon the details of these scientific records, let us take a glance at the birthplace, and circumstances under which the life of Aristotle was past. Stagira, though a small maritime town, was yet one which along with its little harbour played an important part in all the great events that agitated the Greeks from the wars of the Persians to those of Philip, the father of Alexander; with whose mighty conquests, signalized throughout by the most universal views and actions for enlarging the welfare of the human race (for he it was who built Alexandria to serve as a commercial capital for the then known habitable world), did Greece proclaim the culminating attainment of her political no less than scientific power. Yet, mark well the difference in the enduring influence of this physical and intellectual monarchy,—more than two thousand years have elapsed, not a trace is left of the ancient greatness of Macedon. The warlike deeds of Alexander may excite our wonder and admiration, but that which bids us reverence and respect the Greeks rests largely in the glorious step which, as a nation, they made in the production of the illustrious Father of the Inductive sciences and of philosophy.

Mr. De Blainville, who has examined with critical care all the different and often contradictory statements relative to the life and writings of Aristotle, has arrived, among other results, to some very important ones as to the sources whence he derived his information; and proves, by the very fact of the small number of land animals as compared with that of birds, fishes more especially, and the inferior articulate and molluscous tribes, of which mention is made in his works, that there is no ground whatever for supposing that Aristotle ever voyaged out of Greece; that Stagira was most admirably situated for capturing and observing the immense flocks of birds and shoals of fish which visited the Gulf of Strymon in the course of their migrations; and that there the greater part of his life was spent in active study and research, unto which an ample fortune and library, with the occasional import of the productions of foreign climes, contributed their

share of assistance. We will now proceed to sum up the principal facts upon which Aristotle laid the very groundwork of the science of organized beings; and here alone shall descry an utter refutation of Lord Bacon's remark, that "his philosophy had been barren of the production of works for the benefit of man."

To Aristotle science owes a large debt of gratitude, for he was the first to demonstrate the principles upon which a classification or natural system of organic beings was to be established. In other words, that we must endeavour to seize upon characters of the highest importance, or single out the most general and distinguishing from a host of minor particulars, regarding first the element in which animals live, whether that be water or earth, or both together, as is exemplified by the amphibia; then ascertaining their modes of locomotion, the nature of their food, susceptibility to domestication, habits and comparative structure. The result of this inquiry was his separation of animals and plants, as being endowed with life from the inorganic kingdom; applying to the former the term ψυχια, as expressive of the vital endowment; and to the latter αψυχια, indicating its absence or negation. The animal he distinguished from the vegetable, as a being capable of sensation and motion. Proceeding still more into detail, he has shewn us by what a gradation not only organized beings become elevated in their perfection, but even how the inorganic world passes into the organic; for, bearing in mind the peculiar passive conditions under which vegetables exist, he observes, "plants resemble animals in relation to bodies deprived of life, while, in relation to the animal, they appear inanimate in nature. Moreover, many beings live in the sea of whom we may doubt if they be animals or plants; for some attached to the soil, as the fixed pinnæ, perish; and again the whole genus of testaceous animals resemble plants, if we compare them with animals that are gifted with the power of free locomotion." Passing next to the consideration of the animal kingdom, we there find most distinctly laid down nearly all the principal classes and orders admitted by naturalists at the present day. Assuming the absence or presence of blood as a character of importance (though in this the Stagyrite might have erred), yet under the former category we find most properly associated the orders of insects, crustaceans, and mol-

lusca; while under the latter, fishes, birds, serpents, oviparous quadrupeds including the tortoises, and lastly, the viviparous quadrupeds, divided into the solipedia, bisulca, and fissipedia, with those of a doubtful position, as the cetaceans, seals and bats, are arranged. Among these quadrupeds I would more particularly call your attention to the fact of his having determined the solipedia, or single-hoofed animals, as a distinct order, since the horse, the most immediate object of your studies, the ass with the zebra, quagga and two other species, constitute a genus which stands, as it were, alone with this undivided kind of foot among the mammalia to which it belongs.

In concluding his chapter upon classification, before proceeding to treat of the individual parts composing the different genera or classes, and shewing how far they may differ or agree, "we must commence," he says, "by considering the parts in man, for man, of all animals, is necessarily best known unto us; and in contrasting him with all other animals, we shall readily discover that he surpasses all." The question may suggest itself to many here present, why, in accordance with the usual custom of biographers, I have not drawn up and exhibited in a tabular form the system of animals embodied in Aristotle's works. I have abstained from doing this precisely, because no such table, however much it may assist the reader in obtaining at a glance the general principles of his classification, is to be found in any edition of the Greek text; secondly, because there have been writers who, taking umbrage at that very liberty as likely to convey an erroneous impression of the mental capacities of our author, have striven, upon the other hand, to disprove and invalidate his claim, yet vainly, to be regarded as the pioneer and founder of the modern system of animals. That no doubt, however, may exist in your minds—not merely of the industry possessed by Aristotle in accumulating facts, but of his power of generalizing and reasoning from these facts in the most methodical and strictly philosophic manner—we will quote his masterly description of the ostrich. "Like the bats," which he has just before shewn present the characters of both the bird and quadruped, resembling the former by their powers of flight, "does the African ostrich, though in another way, resemble these two forms of animal life; for inasmuch as it is not a quadruped, it is provided with wings, and

as not a bird, it never soars aloft; nor are its wings adapted for flight, but clothed with feathers resembling hairs. Furthermore, as being a quadruped, the upper eyelid is provided with eyelashes, while the head and upper part of the neck are smooth and naked; its eyelids are therefore more garnished with hair. As being a bird, the inferior regions of the body are covered with feathers, and it has only two legs, but the foot is cleft into two, as if it were a quadruped; for it is not provided with toes, but with a bipartite hoof, the cause of which is its size not being that of a bird, but a quadruped: for, to speak generally, it is necessary for birds to be smaller in size, since it is by no means easy for a large and massive body, though otherwise organized for flight, to be raised up and propelled through the air." *(De Part. Anim.*, lib. iv.) In anatomy, we find that Aristotle fully appreciated the distinction to be made between general and special anatomy, if not with the nicety of modern research in limiting the former to that of the tissues, yet, at least, with sufficient clearness, by dividing the parts into solids and fluids. He has, under the head of special anatomy, spoken of the coagulation and formation of the blood, defined it as a red fluid existing only in the vessels, and divided the solids into nerves, ligaments, bones, and muscles. Speaking of man, he regards the very defenceless conditions under which he is born as the best proof of the superiority of his being: he was the first to contemplate the hand as the instrument of the human mind; for, by virtue of its very power of taking up and grasping all kind of arms, "it is at once both claw, hoof, horn, spear and sword; while animals have no power of varying or changing the defensive weapons with which they have been once by nature endowed." *(Part. Anim.*, iv, 10.) Again, contrasting the apes with man, he sees with singular penetration *(Hist. Anim.*, l. ii, cap. 8), that their very degradation from the type of our own species depends upon the feet being organized to resemble hands, and so subserve a double function. Upon the five organs of sense and their particular functions, observation led him to form a most complete conception; and even in the eye and ear, though the most complex in their structure to describe with considerable accuracy their component parts, and recognise their relation to the brain. The teeth also he distinguished, according to their several uses, as being sharp and pointed in those animals

which feed upon flesh, but flattened and like mill-stones in the horse and ox for grinding their vegetable food. Nor less was the stomachs of the carnivora and ruminant beasts an object of his investigation, and in the latter he has perfectly demonstrated the existence of the four stomachs, so characteristic of the entire group. From his labours in physiology I would in particular select what he has said concerning the circulation of the blood. Though it is true that he had examined very carefully the heart, had ascertained its situation in the body of animals, had detected the bone which is lodged in the partition separating the two ventricles in the bull and horse; had described the heart, though imperfectly, as consisting of three ventricles, and traced to some extent the great vessels entering and issuing from that organ, he yet failed to attain to a comprehension of the exact manner in which the blood was conveyed to and returned from all parts of the body; unless, indeed, and upon this remark I would lay particular stress, we may regard the following expressions as indicating some not very remote glimpse at that process, the mechanism of which was in after-times fully explained by the immortal Harvey:—"The heart is the origin and source of the blood; and as in watering gardens the water is conveyed in numerous rivulets from one origin or fountain, so has nature conducted the blood in streams throughout the whole body, for the blood is the elementary matter of all other parts." Referring again to other passages which occur in speaking of the vascular system, we read "that the heart is full of blood, because the vessels take their rise from it, and hollow, that it may contain that fluid. For in the heart alone of all the viscera and parts of the body, the blood is contained, when not within the veins; while each of the other parts are supplied with blood that is contained in the vessels, and that for a very good reason, since the blood is carried from the heart into the vessels, and from no other source than the latter returns into the heart, as being the fountain or receptacle of the blood;" by reason of which, he observes further on, "it is seen in the very first stage of the embryo to palpitate: its movement is continual; it is the first organ to live, the last to die." (*De Part. Anim.*, lib. viii, cap. 5.)

Lastly, Aristotle has treated of the different methods to be adopted in domesticating animals, and rendering them as useful

as possible to the human species: he has alluded to castration as a means of taming and fattening the males; and, in the eighth book of his History of Animals, enters into the diseases of the horse and ass, the dog, elephant, and pig, and the means to be employed in their cure. Born, as was Aristotle, from a family of physicians, educated to the study of the medical art, and deriving, doubtless, therefrom much of his subsequent taste for the sciences of organic nature, I regret exceedingly that time has not allowed me to do more than name this department of his inquiries; for interesting, indeed, would it have been to survey the notions entertained by the Stagyrite on the noble practice of the Veterinary art.

Thus, now, have we taken but a hasty glance into the rich mine of facts bequeathed to Greece and to posterity by him whom Plato glorified, while yet a youth, ardent in the pursuit of knowledge and of truth, with the prophetic title, "*Mind of my School.*" Let us hope that ere long not only we ourselves, but all who will to study and peruse his works, may find them at last in an English dress, and available, as befits this country's increasing desire for cheap information and instruction, at a reasonable price. I have earnestly, striven from the commencement of this discourse, less to gratify any feeling of curiosity that might previously exist, to know how much was done by the illustrious Stagyrite, than first to convey some idea of the general tendency or bent of this genius, and illustrate the same by a few samples of his goodly labours, appropriate to the objects for which the present meeting is convened. If I have in any way effected this—by instructing those who might possibly have been ignorant before of this great man, or stimulating those already familiar with him unto new veneration for the brilliant fabric of science and its founder—it has been, indeed, a source of heartfelt pleasure, my having had the honour to address you this day.

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DIRECTIONS TO THE BINDER.

The Engraving, with Explanation, to be placed at the end of the volume.

ERRATUM.

Page 346, *for* "efferent," *read* afferent.

DESCRIPTION OF PLATE I, VOL. II.

Fig. 1. Trichocephalus affinis, natural size; A, female; B, male.

Fig. 2. Body of the female trichocephalus magnified nineteen times, and viewed upon its right side.

a. Portion of the neck, exhibiting the moniliform character of the alimentary canal, with its ligamentous bands. *b.* The two cæcal sacs appended to the commencement of the intestine; the lighter coloured pyriform sac is probably the representative of a pancreas; the darker sac the representative of a liver. *c, c.* The intestine lying along the concave border of the abdomen, and terminating at *d*, the anus. *e.* The commencement of the ovary. *f, f.* The convoluted ovary taking its course forwards to *g*, where it makes a sudden bend on itself and returns to *h*, its second turn. *i.* Its third turn. *k.* Its fourth and last turn. *l, l.* The uterus. *m, m.* The excretory duct of the uterus. *n.* The vulva.

Fig. 3. Body of the male trichocephalus magnified nineteen times and viewed from the right side.

The references *a, b, c*, are the same as in the preceding figure. *d.* The commencement of the testis. *e, e.* The convoluted tubulus of the testis, extending forwards in the abdomen to *f*, where it makes a sudden bend on itself, and expands into *g, g*, the vesicula seminalis. *h.* The sphincter of the vesicula seminalis. *i, i.* The excretory or efferent duct of the vesicula, terminating at *k* in the rectum. *l.* The intromittent style in the position of retraction. *m.* The point of the style inclosed in its preputial sheath. *n.* The retractor muscle of the style. *o.* The proper sheath of the intromittent style. *p.* The intromittent style entering the rectum, and carrying with it a membranous or preputial sheath. *r.* The preputial sheath thrown into folds, in consequence of the retraction of the style. The style may be traced onwards to the extremity of the tail.

Fig. 4. The head of the trichocephalus, magnified 310 times.

a. The mouth. *b.* The transparent collar. *c.* The longitudinal muscles of the lips.

Fig. 5. A small portion of the anterior portion of the animal magnified 155 times, shewing the form of the mouth, the collar, and the alimentary canal, which latter is, here, almost free from sacculi.

Fig. 6. A portion of the neck taken from a point nearer to the body of the animal.

The alimentary canal is here sacculated, and the ligaments by which the sacculi are connected to the integument are shewn. *a.* A small portion of the tesselated granular organ.

Fig. 7. Incomplete ova from the anterior loop of the ovary, magnified 155 times.

Fig. 8. Complete ova from the uterus, magnified 155 times.

Fig. 9. This figure shews the position of the intestine when the intromittent style is protruded.

a, a. The intestine. *b.* The efferent duct of the vesicula seminalis opening into the intestine at *c.* *d.* The intromittent style enclosed in its thick proper sheath. *e.* The retractor muscle of the intromittent style. *f.* The point at which the intestine and sheath of the intromittent organ become united. *g.* The intromittent style surrounded by its membranous sheath, and lying within the intestine. *h.* The preputial sheath of the intromittent style. *i.* The style terminating by a sharp conical extremity. *k.* The commencement of the testis.

Fig. 10. The infundibular form which the preputial sheath of the intromittent style occasionally assumes. The figure is magnified thirty-eight times.

a. a. The intromittent style.