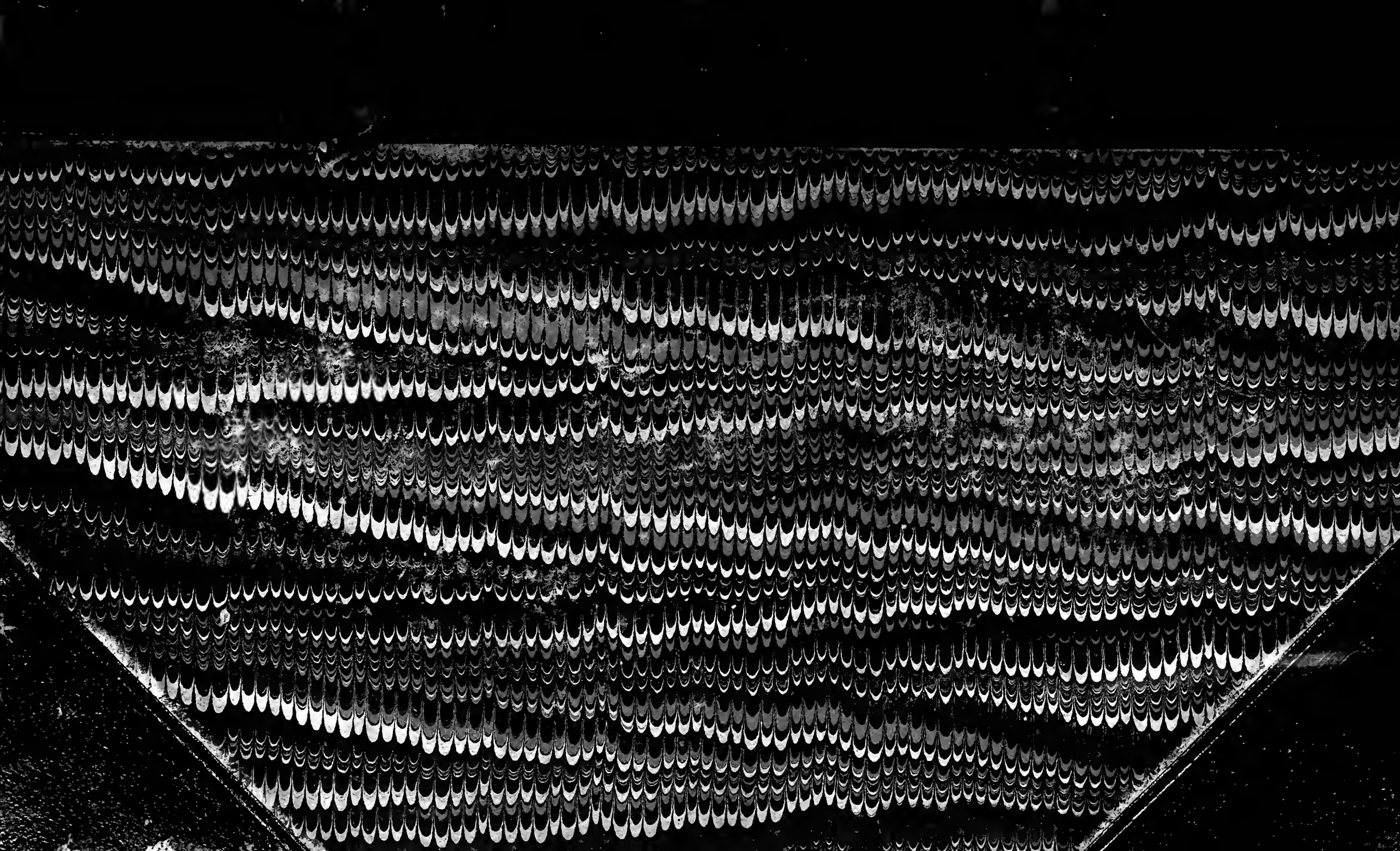

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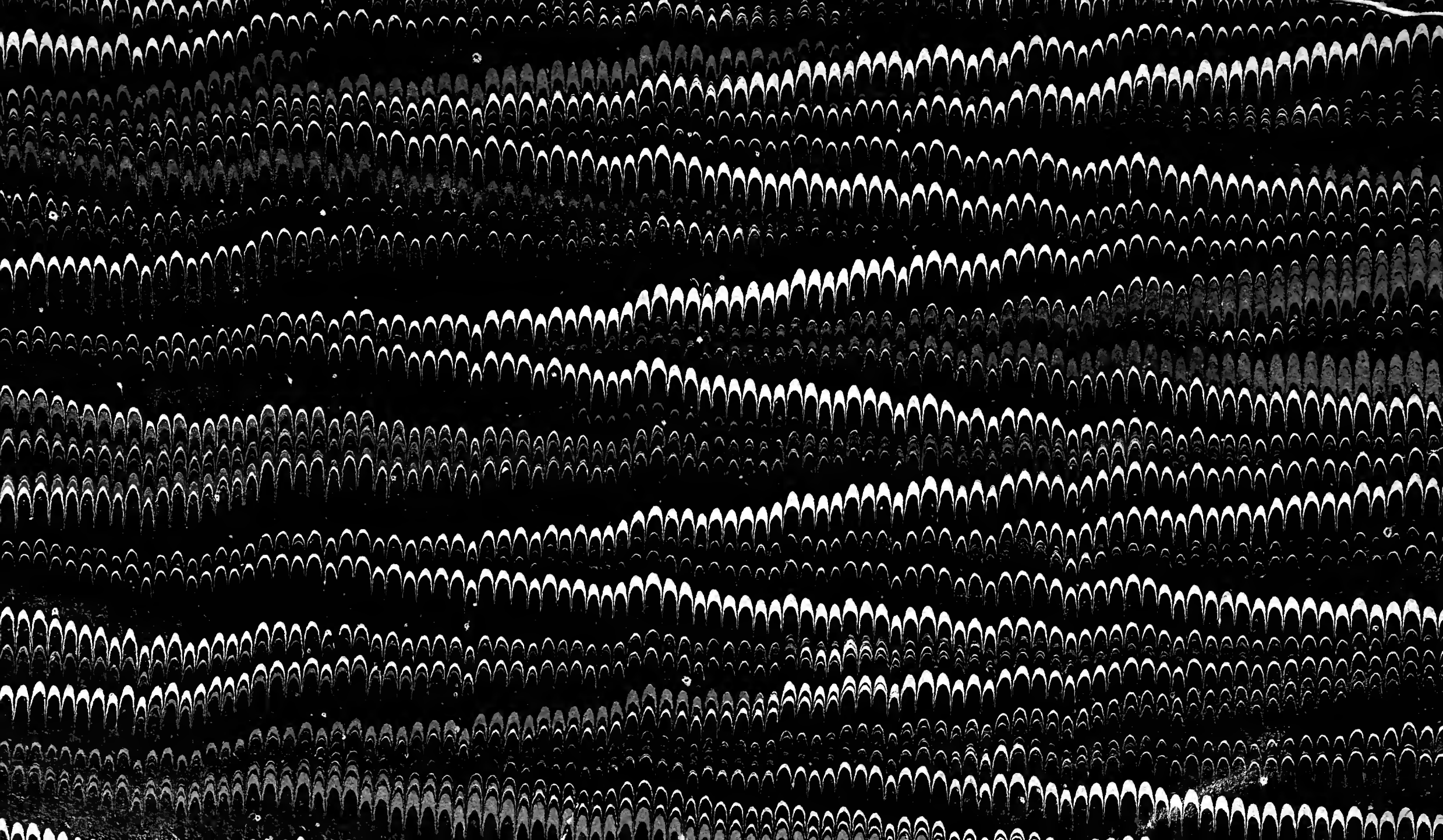

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THE

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Communications and Cases.

PHYSIOLOGICAL AND PATHOLOGICAL THERMOMETRY.

By G. Fleming, M.R.C.V.S., Royal Engineers.

The subject of thermometry appears to be attracting a considerable amount of attention among those veterinary surgeons who are anxious to avail themselves of any accessory means which may enable them to perfect their knowledge of diseased conditions, and the best mode of ascertaining when these conditions arise, on what they depend, and when their variations can be earliest noted. Within a somewhat brief period, the thermometer has become an important instrument in the hands of the scientific pathologist,—human and veterinary; but it must be confessed that the science of thermometry, if we can rank it as such at the present time, is yet in its infancy, so far as the latter is concerned at any rate.

Nevertheless, well-educated and observant veterinary surgeons are devoting themselves zealously to the task of accumulating facts and observations relative to this matter; and in the numerous Continental journals some valuable and interesting researches are from time to time published which will eventually go a long way in not only placing this science on a reliable basis, but indicate to what extent, and under what circumstances, the practitioner may resort to it with advantage in the prevention or treatment of disease.

One of the latest contributors to this department of clinical medicine, or rather to the physiological aspects of thermo-

metry, is Dr. H. Krabbe, of the Copenhagen Veterinary School; whose extensive and able investigations have been translated from the Danish *Tidsskrift for Veterinærer* by my friend M. Déle, of Antwerp, to whose analysis of Dr. Krabbe's paper I am indebted for the following remarks on the physiological temperature of the domesticated animals.

Some idea may be formed of our Danish *confrère's* zeal in investigation, when we find that he took the temperature of seventy-one horses, pigs, oxen, sheep, dogs, and cats no fewer than 1728 times.

His paper commences with a summary of the works of Traube, Bærensprung, and Wunderlich relative to the normal temperature of man, the average of which is from 36·3° to 37·5° Centigrade (97·1° to 99·5° Fahrenheit). Dr. Alvarenga, of Lisbon, however, gives it as 37·27° Cent. (*circa* 99·25° Fahr.).* He then cites the researches made in England by Dr. Sanderson (1866) during the cattle plague invasion, and in Germany in 1867 by Gerlach, with regard to the temperature of cattle labouring under that malady, as well as those of the Veterinary Professor Stockfleth, on that of animals affected with aphthous fever. The latter remarked that the temperature of those cattle which had recovered from the disease was 38·5° (Cent.); and Krabbe observes that this register differs considerably from that given as the normal temperature by Fleming, which was 39·3°.† He also adds that, though the temperature has been frequently indicated in animals suffering from disease, only isolated observations have been published with regard to creatures in physiological conditions, notably those by Prevost and Dumas, Sonnenberg, Davy, Fleming, &c.

Dr. Krabbe's aim has, therefore, been to determine in an exact manner, by repeated thermometrical observations, what this physiological temperature really is. The details of his labours are shown in a series of tables, which are not given in the translation for lack of space, only the general results being presented. In all cases the temperature appears to have been taken in the rectum. Before giving his own observations, Krabbe gives those of other writers. According to these, the normal temperature of the HORSE is, according to—

Prevost and Dumas . . .	36·8°.
Sonnenberg	37° to 38°.
Davy	37·5°.
Fleming	38·8°.

* 'Annales de la de Société de Méd. d'Anvers,' 1871.
† *The Veterinarian*, 1868. Page 78.

The average obtained by Krabbe, after 570 observations on 19 horses, was 38·1° (*circa* 100·8° Fahr.).

In PIGS the normal temperature is, according to—

Fleming	40·5°.
Gurlt	40° to 41·2°.

Krabbe gives it as 39·1° (*circa* 102·4° Fahr.).

In CATTLE the normal temperature is, after—

Hunter	37·5°.
Sanderson	37·9° to 39·2°.
Fleming	38·5° to 39·3°.
Davy	38·9°.

By 446 thermometrical observations on twenty-four cattle, Krabbe found it to be on the average 38·8° (102° Fahr.).

In SHEEP the normal temperature is, according to—

Davy	37·3° to 40·5°.
Prevost and Dumas	38°.
Fleming	40·3°.

Krabbe obtained, by 173 observations on 8 sheep, a mean of 39·8° (*circa* 103·4° Fahr.).

In DOGS the normal temperature is, according to—

Prevost and Dumas	37·4°.
Falck	37·6° to 38·4°.
Mendel	37·8° to 39·3°.
Billroth	38° to 39·4°.
Binz	38·2° to 40°.
Becquerel and Breschet	38·30°.
Fleming	38·5°.
Senator	38·7° to 39·3°.
Davy	39° to 39·6°.
Ruge	39·4° to 40·6°.
Despretz	39·5°.

In 443 observations on sixteen dogs, Krabbe registered an average of 38·7° (102° Fahr.).

The normal temperature of CATS is, after—

Fleming	38°.
Davy	38·3° to 38·9°.
Prevost and Dumas	38·5°.
Senator	38·7° to 39·4°.
Despretz	39·7°.

On 3 cats, after 95 observations, Krabbe notes the temperature to be 38·9° (102·4° Fahr.).

The majority of the observations on HORSES were taken in the morning and evening. In the evening the temperature was always found to be most elevated.

Among a group of 13 horses, 7 from five to eight years old

gave an average of 38·2°; and 6, from ten to eighteen years, gave 37·9°.

In another group of 4: 2, from six to eight years, gave an average of 38·2°; 2, from fifteen to seventeen years, gave 37·8°.

In January—from the 15th to the 28th—4 horses, on which observations were made twice a day, showed an average temperature of 38·2°. In May the same observations continued throughout the month, gave an average of 38°.

In 6 horses placed on the deck of a steamboat going from Iceland to Scotland, and examined from the 31st July to the 7th August, Krabbe obtained a mean temperature of 38·2°.

In two lots of Cows at pasture, this observer found the average temperature to be 39° and 38·6°. Several cows kept in the stable, and fed on hay and green food, exhibited an average of 38·6°. In a calf of five months, and a heifer of fifteen months, fed in the open air with hay and green forage, he obtained a temperature of 38·8° and 38·9°.

The advantages to be derived from these physiological studies of temperature in the domesticated animals are undoubtedly very great, as before thermometry can be profitably applied in clinical medicine, we must first determine the normal standard of animal heat, note the oscillations which the temperature undergoes at different periods without any perceptible change being perceived in the general health, and ascertain on what these oscillations depend. Otherwise, our observations during disease will be less valuable and trustworthy as aids in diagnosis or prognosis.

Since my observations were published in the *Veterinarian* for February, 1868, there have been several interesting notices in Continental veterinary periodicals on the temperature of animals in different diseases, and particularly in influenza. One of these notices, by Veterinary Surgeon Johne,* of Saxony, is worthy of mention for the summary of the results obtained during an outbreak of that malady: though Johne's experience will, in some respects, coincide with that of many others who have studied influenza thermometrically.

His conclusions are as follows:

1. In the cases observed, the variations in temperature have not offered a typical course.

2. A rapid rise of temperature, even to 43·2° (110·1° Fahr.), could not be considered as an unfavorable omen,—not

* 'Bericht über d. Veterinærwesen in Sachsen.,' 1870; 'Annales de Méd. Vétér. de Bruxelles,' 1872.

even when there were excessively grave local manifestations,—if the temperature in these cases soon descended to 40·5° and 41°.

3. The persistence of an extraordinary high temperature, whether it had become suddenly or gradually elevated, was always an indication of an unfavorable termination.

4. A low temperature was always a good sign, even when accompanied by tumultuous local manifestations and considerable frequency of pulse.

THE ETIQUETTE OF VETERINARY AUTHORSHIP.

By George Fleming, M.R.C.V.S., Royal Engineers.

The tone and subject-matter of Mr. Williams' communication in the last number of the *Veterinarian* almost precludes me from noticing it; for it would appear that the same spirit which presided in the dictation of the chapter on Horse-Shoeing, and in some other parts of his recently published work, yet animates him in a still stronger degree. If any one, however, thinks I have brought an unfounded charge against Mr. Williams, he has but to read those portions of the chapter to which my attention was drawn by independent authorities—and especially those referring to "Calkins," and the necessity for the horse's sole sustaining some weight—to find that I am quite correct in what I have stated, and that I was justified in condemning what is generally looked upon as an infraction of etiquette and a very marked piece of unfairness.

Placed side by side, it will be seen that what I published in 1869 and the commencement of 1872 is but little different, literally, from what Mr. Williams has offered in his work, and is certainly exactly the same in purport. It would be demanding too much space to exhibit this strange identity or similarity in parallel columns; so I must be content to refer those who care to discover another instance of the spontaneous originality which forms so conspicuous a feature in "Horse-Shoes and Horse-Shoeing" to the passages in the three works alluded to. Mr. Williams says: "As to the desirability of pressure on the sole, *my views* are borne out by many practical men," &c. It will be seen that these views, which are put forward as novel and claimed as *his own*

by Mr. Williams, were published by me in the two works referred to, and insisted upon in the strongest manner. Surely this is one proof of the justness of my complaint.

With regard to the shoe introduced by Mr. Thacker and that invented by Mr. Williams, the average of similarities runs again very close: both shoes are plane on the foot-surface, concave on the ground surface, and are narrow at the heels; the differential details are unimportant and insignificant. This must be, if we are to accept Mr. Williams' statement, one more example of the independent originality pertaining to the invention of horse-shoes. I can perceive no analogy in Mr. Williams' shoe to the Charlier shoe; in form, and in the method of application, there is not the remotest resemblance.

Mr. Williams, alluding to his having read, as an adjudicator, forty-two essays on shoeing, asks "Does Mr. Fleming suppose that he alone out of the forty-two essayists advocated the concave shoe, sole-pressure, non-paring of the foot, or all and every idea upon an enlightened system of horse-shoeing?"

I suppose nothing at all. I only know that my work on "Horse-Shoes and Horse-Shoeing" was published several months before the advertisement appeared offering prizes for essays on the subject; and from the extensive and favorable manner in which the book was reviewed, it was brought largely before the public. This placed me at an obvious disadvantage in the essay competition, as my opinions on the subject were then well known; and I should not have ventured to compete had those who knew I had not said all that I could say on the subject persuaded me to do so. It is just possible that but for this circumstance we should not have heard quite so much about "concave shoes, sole-pressure, non-paring of the foot, or all and every idea upon an enlightened system of horse-shoeing."

From the perusal of so large a number of essays—of which one appears to have been the most practical and original Mr. Williams ever read—one would have expected some indication of originality and interest in his remarks on the subject; but I and others have looked in vain for anything that had not appeared in the book and the essay to which I have referred. Mr. Williams probably found that it is not such an easy matter to be original as second-hand, even in such a subject as horse-shoeing.

I have to thank Mr. Williams for his extreme courtesy in admitting that I have given a very full and accurate account of what has been written on the subject up to the date of my

publications; though, as might be expected, he adds that he is "nevertheless not aware that they contain any original matter." It must be some satisfaction to me to find that I have done anything in the way of writing an account of horse-shoeing, and even that it should be designated as "full and accurate." I suppose at this period of our existence one must be content with small mercies in certain quarters. Having extorted such a confession from Mr. Williams, I am well content to leave the unfortunate subject of "originality" in the hands of competent and impartial judges.

I am supposed to be wroth with Mr. Williams for alluding to Mr. Broad, "who only gained the second prize." Even in this matter Mr. Williams cannot trust himself to do me justice; for so far from being "wroth" I sympathise most deeply with him in the disappointment he evidently suffers from. I would have been as pleased had Mr. Broad been the successful competitor, as Mr. Williams appears to be chagrined that he was not. It seems to have been my misfortune, not my fault, that the fates decreed it otherwise; but I must also leave that subject to be decided between Mr. Williams and the other gentlemen who acted with him as judges, and whose views as to originality and practical and interesting writing may be quite as advanced as his own.

I know Mr. Broad too well ever to suspect for a moment that he is vexed with me because I chanced to be adjudged the most successful of the competitors. On the contrary, months before the award was known, and when he was told I had entered the list of competitors, he predicted what really was the issue of the competition, and he was one of the first—if not *the* first—to offer his congratulations. Certainly, this is no more than what gentlemen who are moved by a spirit of fairness and honest emulation would do. If I refer to it here, it is not because it was an exceptional incident in Mr. Broad's behaviour towards me, but to show how unjust is Mr. Williams' assertion that the mention of his name should annoy me. I should have rejoiced at the tidings that Mr. Broad's essay had been considered the best, and would have eagerly awaited its publication, in the expectation of being informed on a subject to which he, like myself, has devoted years of attentive observation. Those who know me will give me credit for sincerity in what I now say; and this knowledge enables me to disregard the wrong which Mr. Williams perpetrates when he insinuates that I think no one should write or publish their ideas on the subject but myself.

I certainly accused Mr. Williams of specially attributing

to Mr. Broad what I had written more than three years ago: what I had taken every pains to elucidate, and make public; and what I am pleased to observe Mr. Williams has adopted, *viz.*, "sole-pressure,"—if it is to be so styled.

He now says that he knows for a fact that Mr. Broad advocated this so long ago as 1838. Where is the proof? I am certainly utterly ignorant of such a fact, and cannot find it anywhere. What I do know is that I have no recollection of Mr. Broad, in our conversations on the subject before my work was published, ever mentioning this; on the contrary, he generously presented me with patterns of the shoes he uses in Bath, and though these were all of unexceptionable workmanship, not one of them was adapted for resting on the sole; all were bevelled like the ordinary shoes, with the exception of a hunting-shoe, which of course is narrow, and has never been bevelled.

And even the laminitis shoe, which, one would imagine, should be, *par excellence*, a sole-pressing shoe, is wider in the cover than ordinary shoes, and is perhaps even more bevelled towards the foot surface. Indeed to this cause, and to the manner in which it throws the animal's weight on the heels—thus producing a most inordinate degree of tension of the flexor tendon of the foot—must be attributed the disastrous effects which have been constantly produced in the cases of laminitis treated on Mr. Broad's system in the vicinity of Chatham and Rochester. Surely this is no evidence that Mr. Broad, previously to 1869, advocated the necessity of resting the shoe on the sole!

Will Mr. Williams indicate any authority in this country who, before that year, published anything resembling what I have written on the subject of calkins and sole-pressure by means of the shoe? Private and unpublished opinions are seldom, if ever, quoted; published opinions always take precedence. I had published my opinion on this matter unhesitatingly, and have had to stand the consequences. I am not aware of any other who has; and if Mr. Williams wished to share the responsibility by adopting it without acknowledgment, he might at least have done so without involving Mr. Broad.

As Mr. Williams says, I might have included myself, had I wished, among the other "practical" men (where is their published evidence to be found?) who it appears bear out his views in this matter; but this would indeed be a strange way of solacing oneself for an injustice done. At any rate, it was not the way to prevent a repetition of a breach of etiquette; and knowing besides the very different interpre-

tations put upon the much-used and much-abused term, I may be allowed to question the compliment of being designated "practical" sometimes.

It is not many years since, in a discussion on "laminitis," I had the misfortune to be excluded from the charmed circle of "practical men," because I was rather slow in believing in the efficacy of heavy masses of iron on horses' feet in preventing concussion on paved roads—or even on turf. Indeed I could not bring myself to think otherwise than that enforced movement in acute laminitis was pernicious, and that a peculiar-shaped shoe might not be altogether a specific remedy for that formidable disease. Mr. Williams thought fit to "rush into print," and do what he could to condemn the "theorists" who were opposed to heavy shoes, throwing the weight on the heels, off the soles, and compelling the horse to walk for a certain period, even though the hoofs were bursting and the anterior border of the os pedis protruding through the sole. One writer at that time condemned the treatment as cruel. Having read Mr. Williams' book, I observe that he gives Mr. Broad's treatment of laminitis *in extenso,* comments on the undeserved opposition it encountered, praises it, and concludes with remarking that Mr. Broad would be even more successful if he abstained from compelling horses with inflamed laminæ to be moved. Mr. Williams has probably found, after a little more experience, that Mr. Broad's treatment is not infallible, and that if carried out in acute cases of laminitis* will be more likely to lead to destruction than to recovery. At least this has been the result in this locality; every time the treatment has been tried in cases of *real laminitis*—though carried out to the very letter—the animals have either died or had to be destroyed.

Mr. Williams' recommendation appears to be a half-hearted condemnation of enforced movement, and certainly now looks like a justification for the reproaches which were launched against it by the theorists. At any rate, to suggest that Broad's treatment be carried out, *minus* the compulsory exercise, is liking asking to have the tragedy of Hamlet *minus* the King of Denmark.

Some of the effects of movement in laminitis on feet shod with the heavy-rocking bar-shoe will be shown at an early meeting of the Central Veterinary Medical Society; and I shall be glad if Mr. Williams, or anybody else in favour of the treatment, will

* I do not here speak of "congestion" of the laminæ, which is more frequent, perhaps, than *laminitis:* simulates it closely, and is often mistaken for it. This condition will be quickly relieved by exercise, with or without shoes, and may not be followed by any serious results.

attend and explain why a proceeding which is diametrically opposed to every principle of surgery, and contra-indicated by everything we know of pathological processes, could be expected to be successful in the case of acutely inflamed laminæ, accompanied by exudation and effusion.

I do not wish, however, to discuss this malady in the pages of the *Veterinarian*, and if I allude to it now, it is merely to show that I have no reason to class myself among Mr. Williams' "practical" men, as he says I might do in the case of sole-pressure.

I have now done with the subject of professional etiquette, so far as regards its literature; and see no reason to modify, in any way, the opinion I expressed in my first communication on the subject. My object was not so much to complain that Mr. Williams had transferred to his book, without acknowledgment, or debited to the credit of others, certain statements, or the basis of certain statements, which had not appeared in a published form in any work previous to 1869; but rather to point out such a proceeding was not according to what I have understood to be a recognised code in literature. The charge was not lightly made, though it has been lightly replied to, so far as facts are concerned.

True, Mr. Williams tries to excuse himself by saying that the great mass of our information is at least professional, if not even public property, and that it is unreasonable for any author to claim credit for what belongs to all. The same language might be applied to literature of any kind, and Mr. Williams, beyond our own professional sphere, might do as he has done in this instance, but the chances are he would not do it with impunity. Though a man's writings are the property of all, nevertheless it is universally recognised that he deserves credit for what he has done; and to deprive him of that credit by taking his work without acknowledgment, or to attempt to give the credit to another through a morbid excess of partisanship, cannot be conducive to the interests of justice or the maintenance of literary morality. Though I preferred this complaint, and see every reason for maintaining it, I nevertheless, in the interest of the equine speeies, no less than of their owners, gladly see in Mr. Williams' chapter on "Horse-Shoeing" opinions on the subject which I have insisted upon for years, and which are doubtless none the worse for being repeated and endorsed by him. I only regret he has not given us, from his large experience, something more than was already known, especially as his book was intended for the profession; while my humble efforts were directed only towards the

general public, the antiquaries, and those essentially "practical men," the farriers.

THE PRINCIPLES OF BOTANY.

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

(*Continued from p.* 925, *vol.* xlv.)

WE have now arrived at the *Cucurbitales*, in which will be found an alliance of plants at once beautiful, curious, interesting, and useful. They are diagnosed as follows:

ALLIANCE XXIV.—CUCURBITALES.

THE CUCURBITAL ALLIANCE.

Diclinous exogens, with monodichlamydeous flowers, inferior fruit, parietal placentæ, and embryo without a trace of albumen.

"The plants of this alliance," says Dr. Lindley, "differ from all others in their declinous flowers, combined with an inferior ovary, whose placentæ are more or less manifestly parietal. They approach Menispermads in their scrambling habits, and Passionworts in their placentation. In the greater part the stigmas are horseshoe shaped. They differ from Papayals in their inferior ovary and exalbuminous seeds, and from the scrambling genera of Euphorbials in the same circumstances." This alliance contains three natural orders, namely—

1. CUCURBITACEÆ, *fruit pulpy, flowers monopetalous.*
2. DATISCACEÆ, *fruit dry, flowers apetalous.*
3. BEGONIACEÆ, *fruit dry, flowers monodichlamydeous.*

These characters are sufficiently simple to enable us to make out alliances and divergences, and we shall now, therefore, leave these more technical details for a more pleasing general description of the Cucurbits and Begonias. The beautiful climbing plant of our hedges known as the *Bryonia dioica*, white bryony, with its deeply lobed vine-like leaves, twisted tendrils, delicate yellowish flowers, which are succeeded by bunches of scarlet berries, is, as stated by Mr. Bentham, "common in hedges and thickets, in Central and Southern Europe to the Caucasus. Occurs in most English counties, and common in some, but rare in the north and in Wales, and does not extend into Scotland or Ireland. It must not

be confounded with the so-called *black bryony*, which is the common *Tamus*, a very different plant, with entire shining leaves." The white bryony is our only native species of this fine order, whose most conspicuous examples are mostly tropical, and such delicate plants as cucumbers, melons, gourds, pumpkins, &c., some of which may be transferred to open borders in summer, sufficiently attest to the variety and grace of the whole order. Besides a large variety of edible cucumbers, melons, &c., it yields two most powerful medicines, namely—

1. MOMORDICA ELATERIUM, *wild or squirting Cucumber.*
2. CITRULLUS (*Cucumis*, Linn.).

COLOCYNTHIS.—*The bitter Cucumber, or Colocynth.* The drug known as Elaterium is prepared from the wild cucumber, which, according to Pereira, gets the name now given to the medicine from ἐλατηριον (from ἐλανω, I impel or urge forward); the term was employed by the Greeks to signify not merely a medicine prepared from the σίκυς αγριος, or wild cucumber (*Memordica elaterium*), but also any purgative substance. Whether or not it was first employed as a medicine upon the principle of signatures is uncertain, but it is highly probable that the peculiar squirting action of the fruit suggested its use; but be this as it may, the manner in which the seed is expelled from the fruit (called a *pepo*) is sufficiently interesting to deserve description. It would appear that when the fruit is ripe its seeds are expelled with a semi-fluid substance from its interior with the force of water from a syringe, and hence the oame of *squirting* cucumber given to this wild species. Dr. Pereira describes this action as follows:

"The phenomenon of the expulsion of the seeds of this plant has acquired of late years increased interest from the circumstance of Detrochet having adduced it as one of the effects of *endosmosis.* It is well known that when two fluids of unequal density are separated from each other by membrane (animal or vegetable), a double permeation of fluids takes place; that is, each fluid passes through the membrane and mixes with the other fluid; the current in one direction is called *endosmosis*, and that in the opposite direction *exosmosis.*

"Now, to apply these facts to the phenomena of Elaterium apple. In the centre of this fruit and surrounding the seeds is a very singular variety of organic matter which appears like thick mucus. It is called by some botanists '*placentary matter.*' External to this—that is, in the tissue of the pericarp—there is another organic liquid, whose density is less than that of the placentary matter. These two fluids, being

separated from each other by membrane, are in a proper condition for the operation of endosmosis; consequently, the central cell gradually becomes very much distended (at the expense of the liquid in the tissue of the pericarp), and ultimately gives way at the weakest point, namely, where the peduncle is articulated with the fruit, and the contents of the cells are expelled with great violence from the sudden contraction of the distended tissues. Some few acres of this plant are annually cultivated at Mitcham for making the drug known as 'Extract of Elaterium,' which is prepared from the juice of the seeds in the following manner, as described by Dr. Clutterbuck:

"The cucumbers should be gathered when nearly as ripe as possible and without violence that might endanger their bursting. They should then be wetted by the affusion of cold water, that less of the juice when they are cut may adhere to the external surface. In this state they should be cut through longitudinally, and the juice allowed to strain through a fine sieve placed in a large earthenware vessel. The seeds and surrounding pulp should be scooped out upon the sieve and washed with repeated affusions of cold water, by which they will be freed from all adhering juice. Something will be saved also by afterwards rinsing the split cucumbers themselves in cold water, from which a portion of elaterium may be collected. After standing a few hours a sediment is formed, from which the clear liquor is to be poured off. It is then to be thinly spread on fine linen and exposed to the air to dry; a gentle warmth may be employed without injury, but the access of sunshine destroys the fine green colour which the substance otherwise acquires."

It is fortunate that no great mass of this is required, as it appears that from forty fruits Dr. Clutterbuck obtained only six grains of elaterium.

Different plans are followed for making this extract, but they are much the same in principle. It is, however, more than probable that the quantity of the extract will depend much upon the season and mode of culture. Its composition, according to Dr. Paris, is as follows:

Elatin, Bitter matter	1·2
Extractive	2·6
Fecula	2·8
Gluten	0·5
Woody matter	2·5
Water	0·4
	10·0

Now, it would appear that the activity of the drug depends mostly upon the bitter principle, seeing that so small a quantity as the eighth of a grain is often a powerful purgative.

Pereira tells us that "Hippocrates mentions that the milk of women and goats who have eaten elaterium or wild cucumber possesses purgative qualities. Furthermore, the accident which occurred to Dr. Robert Dickson, lecturer on botany at St. George's Hospital, seems to prove that absorption must have taken place by the skin. Dr. Dickson carried a specimen of the plant in his hat to his lodgings, in Paris, from the Jardin-du-Roi. In half an hour he experienced violent headache, which was followed by colicky pains, violent purging, vomiting, and fever." The learned author of the 'Materia Medica' further declares that, "considered with respect to other cathartics, we find it pre-eminently distinguished by the violence of its purgative effect. Castor oil alone approximates to it. Its hydragogue operation exceeds that of most, if not all other, ordinary used drastics." The cucumber fruits of the garden, so grateful to most of us, do not always agree with every one, and as some of these, curiously enough, take on a bitter taste, it is highly probable that they contain a small proportion of elaterium; at all events it is usually recommended that the bitter fruits should be avoided, and, doubtless, the advice is sound.

The colocynth of the shops is a kind of gourd which, as shown in the druggist's window, is unpeeled, while the gourds in use are usually divested of their outer tegument. They are exceedingly bitter, and a watery extract from them is much employed as a comparatively mild and safe purgative. The extent of their use may be gathered from the fact that in 1839 duty was paid on 10,417 lbs.

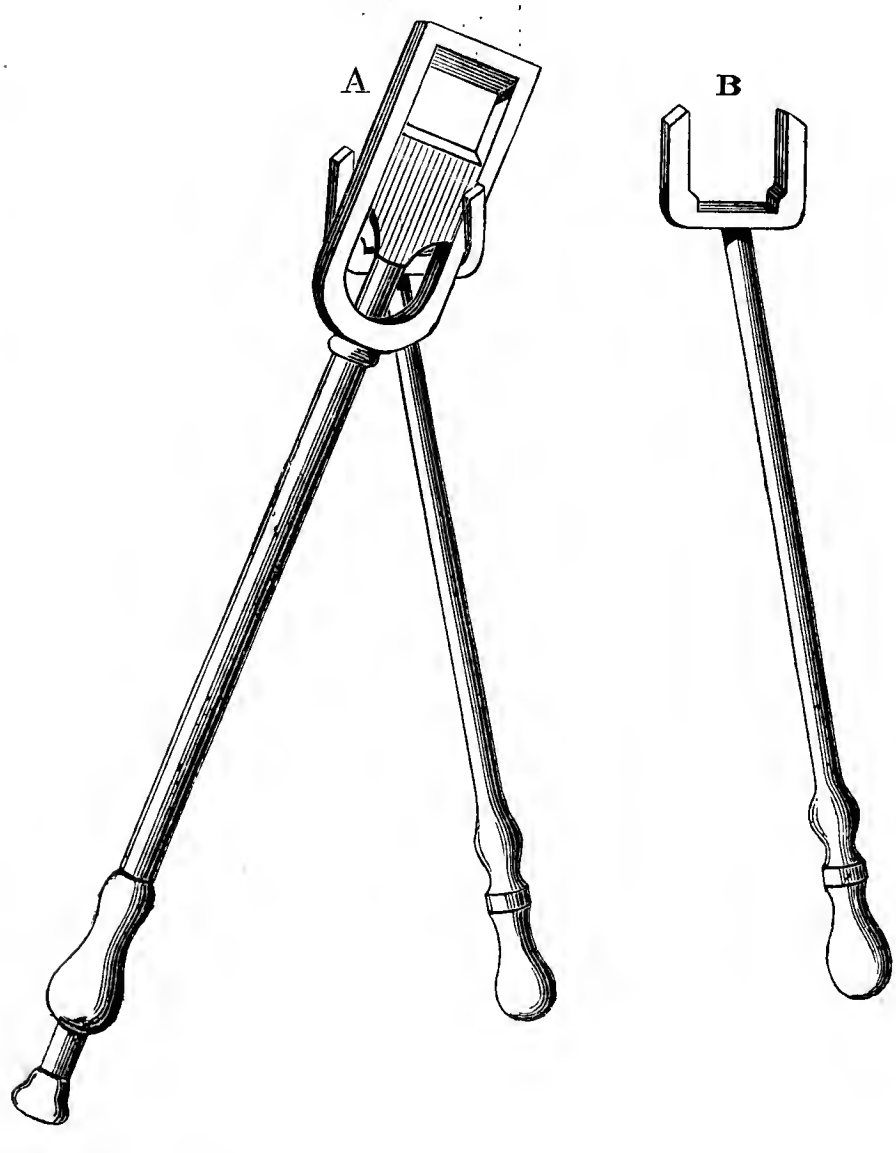
Several officinal preparations have this drug for their basis, notably the *Extract* and the *Pilula Colocynthidis composita* of the pharmacopœia. It is also used as an enema. It is, however, not a little curious to find that the powerful medicines derived from this family find no place in the veterinarian pharmacopœia. This probably arises from the statements of the uncertainty of its action upon the lower animals, for while it is stated by Pereira that its action upon dogs appears to be analogous to that on man, according to French authorities its operation on horses is comparatively slight; but be that as it may, in the bitter cucumber and the colocynth there is no doubt we possess plants with most active, aye, even amounting to poisonous qualities; but that the many hundreds of varieties of the order are wholesome and pleasant will be shown in a future article.

THE SLIDING TOOTH-CHISEL DIRECTOR.

By W. Brown, M.R.C.V.S., Grafton Street, Fitzroy Square.

On several occasions I have experienced considerable difficulty in applying Mr. Gowing's sliding tooth-chisel to the upper jaw for the removal of a projecting portion of a superior molar tooth. The instrument, so easily used on the lower teeth, tends to slip from its position when applied to the upper molars, unless the horse is cast and the head fixed in a convenient position. Desiring to avoid this unnecessary proceeding I made trial of several methods of holding the chisel firmly in its place, and at length succeeded in constructing an apparatus which answers the purpose admirably. The drawing will indicate exactly the form of the instrument, which I propose to call the sliding tooth-chisel director, and its mode of application.

Fig. A indicates the portion of the chisel in the claw of the director when it is employed for the purpose of cutting off a projecting upper molar.



The fig. B represents the director, which consists of a claw

capable of receiving the chisel; a long handle is attached to the bottom of the claw by a swivel joint, which permits the necessary adjustment to be readily made.

Having myself tested the instrument and found it to be practically valuable, I am induced to offer it to the notice of the profession.

In performing the operation of cutting off a superior molar the chisel is first placed in the claw of the director, and then fixed on the tooth in the usual manner. An assistant is required to hold the director, and by its aid to keep the chisel firmly in its proper place, while the operator, holding the handle of the chisel in his left hand, strikes with the hammer in his right hand a smart blow, which is generally sufficient to cut off the projecting tooth level with the rest, leaving but little to be done with the rasp afterwards to render the operation perfect.

QUERIES ON THE HYPODERMIC METHOD OF TREATING DISEASE.

By B. H. Russel (*Captain*), M.R.C.V.S., Grantham.

I am anxious to ascertain in what diseases of the lower animals the hypodermic method of treatment has been employed, and with what success? Also, what medicinal preparations have been used, and in what quantities, and how often they have been repeated in the same case? The maximum dose which can be safely repeated is also an important question.

We so constantly read of the success attending the employment of the hypodermic method of combating disease by our medical *confrères*, that I am at a loss to know how it is veterinary practitioners do not embrace like opportunities of giving similar information.

I hope this letter will have the desired effect of eliciting replies to my questions, and of obtaining, through your pages, a free discussion on the use of so valuable an instrument as the hypodermic syringe. I have been endeavouring for some time past to procure a treatise on the subject, but to the present have been unsuccessful. In my college days the subject of injecting medicinal agents under the skin was not entertained; but I doubt not under the present *régime* both it and the use of the clinical thermometer will obtain a proper share of attention.

I have been offered an old pony for experimental purposes, and am the more anxious on this account to get the requisite information with the view of testing, so far as practicable, the action of the different preparations now in use.

BURSATIE.

By R. Spooner Hart, V.S., Calcutta.

Bursatie is very peculiar in the fact of its periodicity and the development of the circular papillated ulcers; but so long as the disease continues to occur periodically, and to be characterised only by the formation of the circular papillated ulcers, the subjects are enabled to maintain their condition. As the disease advances, however, it increases in virulence, and the papillated ulcers are followed by the "medium," which occur on the body and face. It is at this period also, when a visible defect in the health first appears, and phagedænic or sloughing ulcers ensuing on the medium, soon reduce old bursatied subjects to mere cases of bones, as in them the ulcers are continually occurring, independently of season or circumstance. I repeat that the first onset of the malady is about the months of May and June. Should a simple sore or gall be in existence at the time mentioned, and particularly if neglected, it will be very liable to assume malignant or bursatic action. I described in the last communication the appearance of a sore having taken place on this action. After assuming the bursatic character it may be treated and healed, showing more or less obstinacy in closing. After this you will see no more of the disease until about the same period of the next year, and then you must not be surprised if the spot which had originally been the seat of the bursatic ulcer reopens, or, if any sore be present, for it to take on the same action. As to the length of time the disease may continue to recur only periodically, I cannot speak positively, for that will depend upon certain external conditions, and predisposition on the part of the subject. In the first year of the malady there may be but one attack; in the second year the disease may recur once, twice, or three times during the rains, and so on, until at last the periodical feature of the malady is effaced by a continual existence of the ulceration. I have said that the disease first shows itself in the shape of circular papillated ulcers, which occur on the legs, and afterwards on the body and face. Now, although I have observed this in many subjects, I would intimate that there are exceptions. In some subjects the disease will appear from the first in the form of the

medium ulcer. This is particularly the case amongst the hackney ponies, in which it is rare to see the circular papillated variety, and in whom the medium ulcers are of the commonest occurrence from the first. The activity of the disease is very variable. In some years the ulcers will recur with great rapidity, whilst other periodical outbreaks are less active, the disease appearing dormant, perhaps only showing itself in the form of a discharge from a central opening on the top of an old bursatic cicatrix. Bursatic sites, although healed, are liable at any time to become irritable and to be gnawed by the horse, this act showing beyond dispute that some irritative action is going on. In *The Field* of March 23rd, 1872, a correspondent who signs himself a "Patriarch" states that bursatie consists of sores, and is called bursatie because it attacks subjects in the rainy season. However, my experience of the malady enables me to contradict this statement. I admit that there may be some outbreaks during the actual rainy season, but I assert that most of them take place before the actual rainy season sets in. The tubercles are formed prior to the rainy season, and remain *in statu quo* until about the month of May, when the skin covering them gives way, forming large ulcers, which, if allowed to go unhealed, as the majority of them are until the rains are well set in, are stimulated by the almost constant downfall of rain, and hence the popular error that bursatie attacks subjects only in the rainy season. The same author further states that bursatie sores are not confined to any particular sites (this is totally incorrect), and that there are distinct symptoms of fever ascribable to the sore alone (this I have failed to observe). He remarks that the sores are obstinate to a degree quite unknown in Europe; to this I would reply by saying that the neglected circular ulcers, when they become papillated, are rather obstinate to heal, in consequence of their circular form and position on the legs. But in "Patriarch"'s case, as with many others, the obstinacy of the sore is attributable to the ignorance of the would-be "Æsculapius" in attempting to cover an egg-shaped growth by skin, with the application of carbolised oil, &c. I perfectly agree with him that during the rains all sores are obstinate, and that wounds are very liable to take on an unhealthy character; and further, I would add that all sores in India, without reference to season, require a large amount of experience and tact for their successful treatment. "Patriarch" asserts correctly that the disease is peculiar to horses. I have carefully observed varieties of the ass species, but have never yet seen "bursatie" among them, although I learn from

the *Indian Public Opinion* that the disease does attack the "equus secundas."

This paper states, in a paragraph upon the sale of the "Lahore" stud horses, that one of the occupants of the stud premises was a very fine donkey, kept for the purpose of propagating mules, for which there is always a great demand in the Punjab, and that on a recent visit to the stud we found this donkey tied up in one of the stalls, and suffering from bursatie in the fore legs. He was a most miserable object from above the knee down to the hoofs; there was nothing but one great raw bleeding mass, without protection or a trace of dressing, and covered by clustering myriads of flies. Until I see a case of bursatie in the horse's less illustrious friend, I shall consider the case quoted in the *Indian Public Opinion* as a doubtful one of bursatie. Natives often speak of bursatie on the neck of working bullocks, which is no more than a gall produced by the fore part of the truck to which they are yoked. I again must disagree with "Patriarch's" statement that bursatie is allied to a disease common among men in the Delhi vicinity, and known as "arunzebe" or Delhi boils. Although I am aware that the disease arunzebe is said to have been seen in the horse in the Delhi boil districts, the annexed table will show several points in which the two diseases differ:

Delhi Boils.	Bursatie.
Said to be a species of anthrax . .	Bursatie possesses no such character.
Pustules mark one stage	Bursatie not so.
General health said to be good . .	Not so in "bursatie."
Occurs more frequently after the rains.	Bursatie occurs both before and during the rains.
Said to be inoculable	Bursatie not so.
As a rule the disease lasts for a few months.	Permanent immunity rare in bursatie.
Said to be painless	Both painful and irritable.

I think these facts sufficient to show that the two diseases are distinct. Many yagers possess supposed panaceas for the healing of bursatic ulcers and preventing a return of the disease, but I have generally found that these nostrums do little or no good. You cannot select any agent in particular for the treatment of these ulcers. Apply some stimulant for three or four days and the sore will answer bravely to your call; this will in all probability be followed by a torpid state of the ulcer, and you will require a fresh application every few days. In a case selected for illustration, a large bursatic sore occupied the anterior angle of each eye. The tuberculous matter had been deposited partly under the skin of the eye-

lid, and also under the conjunctiva, and in the substance of the cartilage nictitans, filling the whole anterior angle of the eye. The tumours in their ulcerative state and growth had almost led to displacement of the eyes, rendering the sight obscure. What little could be seen of the visual organs was only from a backward position, the sight of the eye being in that direction. The case is an exception, for the deposit of tuberculous matter rarely occurs under any other structure than true epidermis. I have seen a few instances in which the angles of the mouth have been the site of bursatic ulceration which extended a short way on to the buccal membrane. When occurring in such positions there can be but little doubt that the primary deposition took place under the skin. Bursatic ulcers obtain a far greater size upon the face than I have ever seen them in any other site, and, being in very close proximity to the eyes, the ulceration frequently robs those organs of their function; in many cases, in fact, the structures of the eyes are broken down. Medium ulcers in this position are of so common occurrence among the hackney ponies that if I were in a position to go into figures the result would be positively incredible to those unacquainted with the subject; and it needs scarcely to be observed that, in consequence of the frequency of the bursatic ulceration in this position, enormous numbers of these ponies are blind, some of one eye and many of both. The same form of ulcer, the medium, occurs in horses, but does not show a special tendency to form more particularly under the eyes, as is the case with the hackney ponies, for in the case of the horse the medium ulcers show fancies for particular sites, but not one in common. This I assert is one of the almost innumerable and remarkable features of bursatie, namely, in these ponies, the almost entire absence of circular papillated ulcers, and the disease showing itself so frequently in one position only. "Ophthalmia" is a disease from which vast numbers of these ponies suffer, and I believe, from daily observation, that if I were to examine the first twelve ponies which I saw attached to native hackney carriages, I should find at least eight or nine out of the dozen presenting the following appearances:—No. 1, a large cicatrix on one or both sides of the face a little below the eyes. No. 2, bursatic ulceration in the same position; and so on. In each of these cases I should find the eyes red and irritable, eyelids swollen and projecting, with more or less opacity of the cornea and intolerance to the rays of light. It is even not unlikely that the animals would be blind of one or both eyes. Why is this common occurrence of "ophthalmia?" Simply in consequence of

the ponies being kept in stables in which the earth forms the floor. As there is no drainage, the earth becomes a complete puddle of mud, mixed with urine and feculent matter. These causes, associated with hard work, starving diet, crowded stabling, exposure to the sun, and a total absence of all hygienic rules, are, undoubtedly, sufficient to account for the disease of the eyes. In consequence of this persistent pathological state of the eyes, and the continued annoyance to which they are subjected by flies, which exist in myriads in the hackney stables, and also from the effects of an ammoniated atmosphere greatly vitiated, as well as tropical exposure, a continued discharge from them takes place, which irritates and excoriates the skin over which it passes, leading to the part being rubbed by the horse, thus producing an abraded surface, in which state it becomes a fitting seat for future bursatic disease. Our hackney stables are as so many laboratories in which the active and virulent contagium of glanders is continually being manufactured and kept spreading. Natives maintain that bursatie, to use their own words, is "brother to farcy," because bursatied subjects frequently die of farcy or glanders.

NEMATODA IN NEW-BORN WHELPS.

By the Same.

In the October number of the *Veterinarian* (p. 741) a unique case is recorded of tænia in a new-born infant. My object in directing attention to this case is for the purpose of stating that whelps born in India, especially during the rains, are so very liable to the attacks of nematode worms, and that, unless special care is taken to prevent their development in the stomach and bowels, the young animals are almost certain to die. Now, these entozoa can be derived from no other source than that of the milk of the mother, for most of the cases occur shortly after the pups gain their sight, or have received no other nutritive matter than that furnished by their dams. The first symptom shown by the affected animal is a continual crying as from pain, stretching out all four legs and lying on the belly; presently colicy symptoms show themselves, and the animal becomes much dejected and loses its appetite. These symptoms are quickly succeeded by wasting, blanched membranes, and distension of the abdomen. The emaciation is often accompanied with convulsive fits, which soon lead to death.

Not unfrequently it happens that just before death the entozoa will commence to migrate and make their escape by the bowels and mouth of the puppy, often entangled in a quantity of frothy matter. The nematodes are found of all sizes, the largest being about one and a half to two inches in length, and about the circumference of ordinary bell wire.

Preventive measures.—In India to keep imported dogs in health is no easy task, but I know of no measure so effective as the giving of Ol. Ricini Tinct. Rhei, Spt. Æther Nit. et Ol. Tereb. once a week, in an aperient dose. In the case of pups, if they have administered once weekly a small quantity of Ol. Ricini. with a few minims of Ol. Tereb., there will be little or no fear of their digestive system becoming filled with these entozoa.

The early existence of nematodes in animals, conjoined to the case of tænia in the new-born infant, is a scientific nut to crack; but I think the fact becomes greatly simplified by Dr. R. T. Lewis's discovery of nematoda in the blood of man, which, through the great kindness of that gentleman, I have had the pleasure of witnessing the existence of under the microscope. The young nematodes were making giratory movements in a field of blood which had been obtained by pricking the finger of a hospital patient. Since the actual nematode worm has been demonstrated in the blood, it leaves but little doubt but that ova may also be carried into the blood channels, and be deposited in certain parts and there developed. I hope to show from certain premises that in my opinion the *Filaria oculi* of the horse is developed in the eye from ova.

[The facts observed with regard to the early existence of nematode entozoa in puppies in India have their counterpart in England. We cannot, however, so readily determine, as our correspondent has done, upon their true source of origin. With regard to nematodes within the blood-vessels, they also are common enough in the young ass and colt and some other animals. The museum of the Royal Veterinary College is rich in such specimens; and it may now be said to contain—by the addition of Dr. Cobbold's splendid collection—the largest number of entozoa of any similar institution in Europe.—Eds.]

VETERINARY TOXICOLOGY.—YEW POISONING.

By John Gerrard, M.R.C.V.S., Market Deeping.

Under the above heading I venture to send you a few notes on some cases of poisoning which have occurred in this district, and also some remarks on poisonous agents. The circumstance that scarcely a month passes without some cases being recorded, or statements made at variance with each other and with what we have been accustomed to regard as ascertained facts, induces me to do so; not, however, for the purpose of reconciling conflicting statements, but with the view of furnishing data on which to found definite conclusions on such an important subject. This, I am persuaded, can only be attained by the relating of cases occurring in actual practice.

Yew poisoning.—Professor Buckman, in his "Principles of Botany," as published in the March number of the *Veterinarian* for 1872, p. 179, says, *inter aliâ*, that "he is still in great doubt about the poisonous nature of this plant; and that though the yew belongs to an active section of plants, yet the stories asserted of its powers are to a great extent fabulous; and the ill effects ascribed to it may be due to the effects of dry food becoming impacted in the stomach instead of being properly digested." These statements seemed strange to me at the time, as they were at variance with the opinions generally entertained, but not being in a position to challenge them they passed away into forgetfulness until the occurrence of some cases lately aroused my attention to the subject.

An extensive farmer and grazier in this district hired an old pasture field from a clergyman at a little distance from his residence, and placed some cattle therem. The field was adjacent to the rectory, and surrounded by a number of small plantations on different sides, from which it was divided by a hedge, which in some places was rather thin. About a week before the animals were removed from the field it was observed that some of them occasionally passed through the hedge into the plantation—probably on account of the grass getting scarce in the field—but as they seemed to have soon passed back again, no notice was taken of the occurrence until the day they were to be removed, viz. the 14th of October last. On the morning of that day the farmer sent his shepherd to fetch them home. They were three-year-old animals, and most of them in very good condition—indeed, fit for the market. On reaching the field the shepherd found two of them in the plantations, but took no notice of it until, having to drive

them about three quarters of a mile to the station where they were to be trucked, three of them tumbled down on the road, trembled violently, and were with much difficulty got up again. In consequence of an insufficient supply of trucks to remove them at once, they were kept at the station nearly six hours, during which time no farther symptoms were observed until they were got into the trucks, when one of them again got down and did not get up until they reached their destination. About 6 p.m. he was got out of the truck and walked home, a distance of about half a mile.

They were all (fifty in number) put into a small grass paddock adjoining the farm buildings; and when seen at 10 p.m. nothing particular was noticed in any of them, excepting that the one which had got down in the truck looked very dull. At 4 o'clock next morning this animal was dead, but not cold; indeed, it bled pretty well when the vessels in the neck were severed.

I was called, and before I got there, about 8 a.m., another one was dead, he having showed such alarming symptoms that they cut his throat. None of the rest, at that time, seemed at all amiss; but during the time the two carcasses were being dressed another animal was observed to refuse his food and to be inclined to lie down. I administered an ethereal stimulant, and shortly after an oleaginous purge, following it up every two hours by ʒij doses of Amm. Sesquicarb. in water, until four doses had been given. He now appeared more cheerful and inclined to eat; next day he seemed better, but still dull, and did not eat much. In the afternoon of the second day another showed symptoms of drowsiness, and the owner administered a pint of gin in water at twice. On the third day scarcely any difference was observable in these animals from the rest, and all did well afterwards.

Post-mortem appearances—On going to the place along with the owner he expressed his belief that the animals were poisoned by yew, and mentioned the fact of their getting into the plantation where there were a number of yew trees; so that I commenced the examination with preconceived opinions as to the cause of death, but had not long to wait before these opinions were abundantly confirmed. The skin being removed, a number of large dark spots were to be seen about the neck, shoulders, and abdomen of the first one, evidently the result of its having been trampled on while down in the truck. The flesh was very dark in colour, as also the fat, which in the omentum weighed 60 lbs. The contents of the abdomen generally had a darkish hue; the liver was gorged with blood; the kidneys bore no trace

of abnormal action; the bladder was empty but slightly congested in its inner coat. In the rumen—which was moderately full—the distichous leaves and small branches of yew were at once apparent and formed more than half the bulk of the ingesta. A few of the naked seeds of the yew were present, and also a few fragments of leaves of the common laurel (*Cerasus laurocerasus*) very much etiolated. A few twigs of some of the *suborders* of Rosaceæ with the Gramineæ formed the solid contents of the organ. In the reticulum the yew could be seen, but in a finer form, while in the omasum it was very apparent, and even in the abomasum and duodenum the shining tints of the partly digested leaves were easily recognised. The cuticular lining of the first, second, and third compartments of the stomach was easily detached; indeed, it seemed to have more affinity for the ingesta than for the mucous tissue, which bore distinct traces of irritation, but no extravasation was observable. The redness was most marked in the rumen, principally in large patches, visible even before the cuticular lining was removed.

In the abomasum the redness was more intense and extended into the duodenum in a uniform tinge, and throughout the whole of the small intestines—which were almost devoid of any solid ingesta—the effects of an irritant were more or less visible. The cæcum contained a small quantity of fluid fœces, but no trace of the yew In the colon was a quantity of solid ingesta of a normal consistence and character, and in the rectum no abnormal appearances were observable. The heart and lungs were gorged with blood, dark in colour, and of fluid consistence; it did not coagulate readily on exposure. The spinal cord, which I had an opportunity of examining entire throughout its whole length, presented nothing peculiar to the unaided eye, but the membranes were congested. The meninges of the brain were highly injected, and the ventricles contained a quantity of straw-coloured fluid.

In the second animal, the one which was bled, the appearances of poisoning were less observable. The yew leaves and branches were very abundant in the stomach, and the epithelium could be easily detached, although not quite so readily as in the first animal; indeed, had it not been for the presence of the yew in such large quantities, and the absence of any other lesions, it would have been extremely difficult to assign the cause of death.

All the circumstances being considered and the facts stated, forced me to the conclusion that the animals were poisoned by yew, and I returned a verdict to that effect. The clergy-

man—*a magistrate on the Boston bench*—acquiesced in the finding, admitted his liability, and indemnified the farmer for his loss, as he had undertaken to keep the fences in repair.

A scientific question of some importance arose regarding the disposal of the second carcass, and on which an expression of your opinion would, doubtless, be of interest to the readers of this Journal.

The question was whether the carcass of an animal killed while in the agonies of death from poisoning by yew could be safely used as human food?

The carcass looked well; no inspector, however astute, could have detected anything wrong in it, and it was expected to realise £30, but the fact remained that the animal was suffering from a poisonous dose of yew, and if he had not been killed would have very soon died. Under these circumstances I was at a loss whether to authorise its being sent to London or condemn it, and the subject being new to me I recommended the owner to have the opinion of another and more experienced practitioner. A neighbouring practitioner, of long and extensive experience, was consulted by letter, and replied that *it could be used with impunity*. It was despatched accordingly.

On reviewing the facts as stated above, and from having seen a few similar cases as well as heard the reports of others, I think it may be conclusively affirmed that *yew is* a poison if eaten in large doses, and that, too, in the green state, and probably more so than in the withered, notwithstanding the popular notion to the contrary. If these two oxen did not come by their death from the yew leaves they took into their stomachs I am altogether at a loss to account for it, unless by referring it to the few laurel leaves which were found with the yew.

Taylor, in his 'Medical Jurisprudence,' page 199, says, "There is a vulgar but erroneous notion that the yew leaves are not poisonous when fresh, and that in any case they act only mechanically. A case related above shows the fallacy of the opinion, and the other cases prove that there is a specific poison in the yew, since it exists in the berries as well as in the leaves. If cattle recover from the primary effects on the nervous system they are liable to die, after several days, from inflammation of the bowels. On one occasion I examined the viscera of an ox which obviously died from the effects of yew leaves. In some parts of the intestines gangrene had taken place."

He says also, page 198, "It has long been known that

the berries and leaves of the yew tree (*Taxus Baccata*) are poisonous to cattle; they act very energetically and produce death in a few hours, sometimes without vomiting or purging. It is stated by Dr. Percival that a tablespoonful of the *fresh leaves* was administered to three children of five, four, and three years of age, as a vermifuge; yawning and listlessness soon succeeded; the eldest vomited a little, and complained of pain in the abdomen, but the other two suffered no pain. They all died within a few hours of each other. An interesting case of poisoning by the *berries* of this tree was published a few years since by Mr. Hurt, of Mansfield. A child, aged three years and a half, ate a quantity of yew berries about eleven o'clock. In an hour afterwards the child appeared ill, but did not complain of any pain. It vomited part of its dinner, mixed with some of the berries. A medical man was sent for, but the child died of convulsions before he arrived. On inspection the stomach was found filled with mucos and the half-digested pulp of the berries and seeds. There were patches of redness in the mucous membrane, and this was so much softened that it could be detached with the slightest friction. The small intestines were also inflamed. The symptoms produced by *yew leaves* and berries are pretty uniform in character; convulsions, insensibility, coma, dilated pupils, pale countenance, small pulse, and cold extremities, are the most prominent."

The appearances I have recorded agree with those quoted, as observed by Mr. Hurt, and also the symptoms so far as I was permitted to observe and as far as analogy can go. Cases of yew poisoning in quadrupeds are rarely seen until the poison has done its fatal work, so that we are unable to observe the peculiar train of symptoms occurring in bipeds, who can usually inform the inquirer as to the time, nature, and amount of the poison swallowed. It is only by the presence of the plant in the stomach—and that too in large quantity, at least in all cases I have seen—the lesions observed and the absence of other causes, that we are enabled to form an opinion.

The symptoms observed by the shepherd in these cases, viz. trembling violently, convulsions, falling down, and inability to get up for some time, agree pretty closely with those recorded in the human subject.

Pathological Contributions.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of November, 1872, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	Number of Animals affected.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered at place of landing.
Bremen .	Hull . .	Sheep-scab .	...	55	...	...	55	55
Cherbourg	Southampton . .	Foot-and-Mouth	...	...	...	18	18	18
Coruña .	Portsmouth .	"	10	...	...	...	10	10
Hamburg .	Hartlepool	"	1	...	...	...	1	1
"	Hull . .	"	4	18	...	...	22	22
"	London .	"	2	369	...	...	371	371
"	Middlesborough	"	10	7	...	...	17	17
"	Newcastle-on-Tyne	"	2	...	...	...	2	2
Tonning .	London .	"	6	8	...	...	14	14
Total . . .		Foot-and-Mouth	35	402	...	18	455	455
		Sheep-scab .	...	55	...	...	55	55
Total			35	457	...	18	510	510

"Privy Council Office, "ALEXANDER WILLIAMS,
"Veterinary Department, 12th December, 1872." Secretary.

CATTLE PLAGUE.

Cattle plague is spreading in Hungary in spite of all the efforts which have been made to arrest its progress. The disease has also increased in the Austrian dominions. Since the November report, from St. Petersburgh we learn that cattle plague occurs in a sporadic form; the last return reports fifty-four cases of the disease, of which twenty were fatal. The rest of the diseased animals were destroyed.

It is expected that the ports will soon be closed for the winter.

In Russo-Poland cattle plague continues in the same state of prevalence as indicated in the last report.

From Trieste and Scutari the reports are favorable.

A case of cattle plague was reported from Düsseldorf in the early part of December, in an animal imported from Germany to Austria. All precautions were immediately taken, and no further outbreak has been reported.

FOOT-AND-MOUTH DISEASE.

This malady still continues to prevail in the country, but generally in a mitgated form, and in a large number of places a considerable decrease in the attacks has been recorded.

Owing to the introduction of the disease into the Australian colonies a commission of inquiry has been held at Victoria, and the result has been the issue of regulations for the quarantine of imported stock.

THE AMERICAN HORSE DISTEMPER.

The reports from New York are very satisfactory; the disease, in fact, has almost disappeared, but it is prevailing extensively in New Orleans.

We have still to notice occasionally concise but somewhat alarming reports of the introduction of the new disease into this country. We can but reiterate our previous statement that influenza is not new to us, and that it existed here in a modified form long before we heard of it in America.

Facts and Observations.

THE PHYSIOLOGICAL ACTION OF TOBACCO has been very carefully studied by Herren Vogl and Eulenberg. They investigated the physiological action of (1) those bases volatile below 160°, and (2) of those volatile between 160° and 250°. Both portions act like nicotine, producing contraction of the pupil, difficult respiration, general convulsions and death. They act more quickly by the stomach than when subcutaneously injected, but even then are not as prompt as nicotine. On *post-mortem* examination the lungs and air-passages were found to be highly congested. They think that the disagreeable symptoms produced in the incipient smoker, and the chronic affections which excessive smoking produces, as well as the poisonous effects of tobacco-juice when swallowed, are due to the pyridine and picoline bases, and not to nicotine. They explain the fact that stronger tobacco can be smoked in cigars than in a pipe, by finding that more of the volatile bases are present in the smoke of a pipe; more especially of the very volatile and stupefying pyridine; while in a cigar, little pyridine and much collidine are formed. The authors compared this action with that of the bases obtained from other plants used for smoking; with those from dandelion, willow-wood and stramonium, and with pure picoline from Boghead coal. The action was entirely similar, but, with the exception of willow-wood bases, they produced no contraction of the pupil. Picoline in vapour is extremely poisonous, producing great irritation of the air-passages, convulsions and death. From these results the authors believe that the different effects of smoking opium are due simply to a difference in the proportion of the bases produced by its combustion.—*Arch. Pharm.*, II, cxlvii., 130.

COLOURLESS BILE.—In the *Comptes Rendus*, March 18, M. E. Ritter quotes the results of a series of analyses made by him on colourless bile, taken from the gall-bladders of men and animals submitted to autopsy. As an instance of the composition of such bile (as yet hardly ever analysed, since the colourless fluid has been taken to be mucus) we mention here the following, in 1000 parts:—Water, 923·5; salts, 12·4; fat and cholesterine, 6·8; organic matter, 2·1; salts of the bile acids, 55·2. It appears that colourless bile and fatty degeneration of the liver are somehow connected together.—*The Popular Science Review.*

How to Destroy Lice.—All kinds of lice and their nits may be got rid of *tuto, cito, et jucunde,* by washing with a simple decoction of staves-acre (*Delphinium staphisagria*), or with a lotion made with the bruised seeds in vinegar, or with the tincture, or by rubbing in a salve made with the seeds and four times their weight of lard very carefully beat together. The acetic solution or the tincture are the cleanliest and most agreeable preparations, but all are equally efficacious in destroying both the creatures and their eggs, and even in relieving the intolerable itching which their casual presence leaves behind on many sensitive skins. The alkaloid delphinia may be also employed—but possesses no advantage except in the preparation of an ointment when for any reason that form of application should be desired.—*Medical News.*

Termination of the Nerves of the Peritoneum.—The *Lyon Médical.* of Nov. 10th contains the relation of a series of experiments on the histology of the peritoneum, conducted by M. Louis Jullien. As respects the nerves of the membrane and their termination, the author has stated the following:—The fibrilla, or extreme division of the nervous fibre, ends in a pyriform swelling, beyond which are to be seen one or several very thin nervous filaments, ending themselves in a last enlargement, which is the ultimate termination of the nervous element.—*Lancet.*

Voice of Fishes.—At the last meeting of the Académie des Sciences, M. Charles Robin read a report on the investigations of M. Dufossé relating to the production of voice in certain fishes. The swimming-bladder appears to be the principal agent in producing voice, at least in those fishes in which that organ has an opening into the œsophagus; and even in those in which it is a shut sac it acts as a sounding-board in augmenting the sound produced by other parts. That it is not exclusively the cause of vocal sounds is shown by the circumstance that some fish are destitute of a swimming-bladder, and are yet capable of producing distinct musical sounds.—*Lancet.*

Hospital Sunday.—We are glad to be able to announce that active steps are being at length taken for the institution of "Hospital Sunday" in London. A brief report of a meeting of London hospital authorities, held on Thursday afternoon, will be found in another column, and we heartily wish success to the movement.—*Ibid.*

Sir Wm. Jenner is to be the new President of the Pathological Society.

THE VETERINARIAN, JANUARY 1, 1873.

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

THE SMITHFIELD CLUB CATTLE SHOW.

WARNED by past experience, the authorities of the Smithfield Club made preparations this year to meet an emergency which fortunately did not arise. On the occasion of the last exhibition a considerable number of cattle affected with foot-and-mouth disease were detected by the veterinary surgeons, and instead of being put in the places allotted to them in the show were detained in an extemporised hospital outside the Hall. At the conclusion of the show the animals which had been placed in durance, with those which had been attacked subsequently, were removed by licence to slaughter houses in the metropolis, while the healthy animals were left free to move in any direction.

This year the Smithfield Club Show was held, for the first time since the outbreak of cattle plague in 1865, without restriction; no licence was required, and no cordon round the metropolis interfered with the free passage of animals. The animals in the exhibition were, as the cattle in a London dairy, subject to no law so long as they remained in health, but under the 57th section of the Contagious Diseases (Animals) Act were prevented from moving in any direction if they became the subjects of an infectious or contagious disease.

The precise position of the Smithfield Club in the matter may be thus stated. Animals admitted to the Agricultural Hall for the purpose of being exhibited would be under the charge of the club. Infectiously diseased animals could not be moved out of the hall without contravening the Act; but if prevented from entering they might be seized or taken in charge by the Local Authority, and detained in some convenient place, for as long a time as might be deemed necessary. Obviously, therefore, the first care of the Council of the Society

was to prevent the admission of diseased animals. For this purpose exceptional precautions were adopted.

The entries were, by a resolution of Council, restricted to animals which had not been exhibited at other shows shortly before being sent to the Smithfield Show.

Exhibitors were requested to send their animals in horse-boxes or by private conveyance.

A certificate was demanded from each exhibitor to the effect that his animals had not, for a fortnight previously to being sent to the show, been in contact with any animal suffering from a contagious or infectious disease.

Owners of stock were doubtless very desirous of avoiding the inconvenience and loss which would attend the rejection of their animals from the show and their detention by the local authority, and altogether it may be safely affirmed that the risk of infection was reduced to a minimum.

Arrangements were made for the examination of every animal outside the Agricultural Hall, and proper places were provided by the Local Authority for the reception of any which the veterinary inspectors certified to be the subjects of infectious disease.

It is a matter for congratulation that no occasion arose for the use of the sanatorium which had been provided; all the animals were found to be free from indications of infectious or contagious disease, nor were any such indications observed during the week of the show; but, on the contrary, it was generally remarked that the stock looked unusually fresh and healthy. There were no vacant places, as all the entries, or nearly all, had been duly filled up.

No special provisions were made to meet the difficulty which would have arisen had an outbreak of foot-and-mouth disease occurred during the show, and under the circumstances the society wisely avoided complicating the matter by asking for additional legislation, which, as the event proved, was not necessary. In the present state of the law it would have been the duty of the society to give notice to the police of an outbreak of infectious disease among the animals, and, further, to keep such diseased animals apart

from other animals. These necessary things could easily have been done, and nothing more would have been necessary until the conclusion of the show, when the owner of the diseased animal would have become the responsible person. If he moved the beast in contravention of the Act he would be liable to penalties; but it should be clearly understood that no official of the Smithfield Club nor officer of the local authority had power to interfere to prevent the removal of a diseased animal from the Hall if the owner had chosen to commit an illegal act, and take the consequences; but, in fact, this difficulty would have been anticipated had circumstances rendered further action necessary. The exhibitors would have been informed of the outbreak of disease, and the Smithfield Club would have given every assistance towards the obtainment of a licence for the removal of the diseased animals to the nearest slaughterhouse, or to some convenient place where they might be kept, if the owners desired, until they had recovered from the disease. One of the courses must have been adopted. It is quite clear that the animals could not be detained for an indefinite period in the Hall; and, according to the terms of the Act, it is equally clear that they could not be moved out of it. The knot which could not be untied would necessarily have been cut in the most convenient and expeditious manner. Whether or not the Smithfield Club intend to perpetuate the exclusive system which they have this year adopted, we have no right to conjecture, but on sanitary grounds they have every reason to be satisfied with the results of the experiment.

Extracts from British and Foreign Journals.

CATTLE DISEASE IN CHINA—RINDERPEST.

We have received the *Customs Gazette* of Shanghai, January to March, 1872, from which we extract the following report on Steppe Murrain in Shanghai, by Dr. Edward Henderson:

My attention was first directed to disease among horned cattle in Shanghai in the autumn of 1868. At that time many animals stalled within the municipal limits died, and considerable apprehension was felt lest the public health should suffer from the diseased meat which might find its way into the shops of native butchers. Dr. Thin, in a letter addressed to the *North China Daily News*, gave the particulars of a visit which he paid to the slaughter-houses in the neighbourhood of the New Cemetery, on the 21st of October in that year. His visit was made with a view to the examination of some diseased beef regarding which he had received special information. The peculiar characters of the meat being fully detailed, Dr. Thin went on to describe the morbid appearances which he noted in the body of a sick cow, slaughtered at his request, when apparently in the first stage of the disease:

"The heart and lungs were healthy. The stomach was distended with fluid and a quantity of food that had been there for some time. Its internal surface was congested and perfectly black throughout. The outer covering of the intestines was in the first stage of inflammation, that is to say, peritoneal inflammation was setting in."

Dr. Thin further stated that the disease was considered by the natives to be "ma ping" (blood disease), and that it was recognised by them as of common occurrence at that time. "They (the Chinese) say that the appetite fails for several days, and then the animal droops and would soon die, but that as soon as the disease is unmistakable it is slaughtered for food." It was not at that time specially my duty to

investigate such matters, but I nevertheless felt sufficiently interested in them to prosecute the inquiry commenced by Dr. Thin, so far as time and opportunity permitted. On the 4th of December, 1868, I published the result of my investigations. I had altogether under observation three animals suffering from the disease, two bulls of the common breed of small native cattle, and a buffalo. Of these three cases two obviously resulted from contagion. The symptoms presented by all three were similar; I quote from my published narrative:

"1st. An appearance of great lassitude and increasing weakness, evidenced by listless movements, low carriage of the head, and depression of the ears. 2nd. A staring condition of the coat. 3rd. Refusal to take food, and chewing of the cud discontinued. 4th. An accelerated pulse. 5th. Diarrhœa. 6th. As the disease progressed an uneasy restlessness indicative of pain, probably abdominal, and laboured breathing."

Post-mortem examinations were made in each case as soon as possible after death; I give the particulars as they were recorded at the time:

"The first stomach in all cases was found distended with the food last taken, the process of digestion having been, I suppose, arrested by the onset of the malady. The spleen was somewhat softened in all cases. The gall-bladder was distended in the first two cases with a brownish-yellow fluid differing widely from the clear green liquid which ordinarily occupies that viscus; in the third case it contained, but was not distended by, similarly altered bile. The condition of the intestines in the three cases deserves a separate description. In the first the rectum and lower part of the descending colon had scattered here and there over their internal surface a number of raised points of a dark blue colour about the size of a large pin's head; there was little or no congestion, but the summits of one or two of these points were ulcerated. In the second precisely similar blue points were present in much greater numbers, again occupying the rectum and descending colon, while the entire extent of the lining membrane of the large bowel was intensely congested, more markedly so in the regions of the cæcum and lower part of rectum. Many of the blue points were the seat of minute ulcerations. In the third, a large water buffalo, the blue points were absent, but intense congestion of the mucous membrane extended up to and included the last stomach, while in some places sloughing had occurred. The brains and spinal cords were not examined. The other organs

not named were found to have a natural and healthy appearance."

The last statement made in this record requires correction; not suspecting the existence of Steppe murrain in Shanghai, I omitted in these *post-mortems* to examine the mucous surface of the nostrils and windpipe.

Before the beginning of 1869 the disease seemed to have entirely disappeared from Shanghai and its neighbourhood; and although I am now informed that it has been of yearly occurrence since, the first fresh cases which I myself saw were brought under my notice in March of the present year. My informants, who assert the regularity of its return, are not able to confirm their statements by records of examinations after death, but I am assured by them that a form of disease presenting precisely similar symptoms to those which I have now daily opportunity of observing, occurs annually in Shanghai, extends variably, and has proved in past years as now almost certainly fatal to all the animals which it has attacked.

On the 25th of March, 1872, Mr. Keele, municipal market inspector and dairyman, informed me that disease had broken out among his cattle, and that from the symptoms and the rapid failure of strength exhibited by the animals attacked he feared he was likely to lose a large number. Already two had died. He was anxious to know whether the disease was contagious, and whether anything could be done in the way of treatment. He had separated those already affected from the rest of his stock. On the morning of the 26th I visited the paddock in which the sick cattle were confined, and saw there some 12 or 15 animals in various stages of what appeared to be a malignant specific fever.

Mr. Keele's stock consisted on the 14th of March of 38 head of cattle, viz. 17 cows, 14 heifers, 2 calves, 2 bulls, and 3 buffaloes. The following tabular statement gives, without reference to pathology, some of the main features of the epidemic as it affected those animals, showing a sequence of events which I am anxious to lay clearly before my readers, but which I find difficult to arrange distinctly in a continuous narrative :

Description of animal.	Date of sickening.	Date of death.	Remarks.
1. French heifer ex *Hoogly* *	March 13th	March 18th	
2. „ „ *Provence*	„ 19th	„ 24th	
3. „ „ *Alphée* .	„ 20th	„ 26th	
4. „ „ *Donnai* .	„ 23rd	„ 26th	
5. English cow	„ 23rd	„ 28th	
6. Australian cow.....	„ 23rd	„ 28th	
7. Calf	„ 23rd	„ 27th	3 months old. Killed.
8. „	„ 23rd	„ 24th	6 or 7 weeks old. Killed.
9. Shanghai heifer	„ 24th	„ 27th	
10. „ „	„ 24th	„ 26th	
11. „ bull	„ 24th	„ 26th	
12. Buffalo	„ 24th	„ 27th	
13. „	„ 24th	„ 27th	
14. Australian cow.....	„ 24th	„ 28th	
15. French heifer ex *Hoogly*...	„ 24th	„ 27th	Killed.
16. Calf	„ 24th	„ 24th	1 month old. Killed.
17. Shanghai heifer calf	„ 24th	„ 26th	6 or 7 months old.
18. French heifer ex *Meikong*	„ 26th	„ 27th	Killed.
19. Australian cow.....	„ 26th	„ 28th	
20. English bull	„ 26th	—	Recovered.
21. French heifer ex *Alphée*	„ 28th	April 1st	
22. Australian cow.....	„ 28th	„ 3rd	
23. Shanghai cow	„ 28th	„ 4th	
24. Australian cow.....	„ 29th	„ 4th	
25. Shanghai cow	„ 31st	„ 2nd	
26. „ „	„ 31st	„ 4th	

On the 1st of April Mr. Keele removed the 13 animals which the disease had spared, to sheds situated at a distance from their old quarters, and by this precaution fortunately succeeded in preserving a remnant of his stock. Of all the 26 animals attacked, but one, an old English bull, recovered; the 5 killed were all evidently hopelessly sick.

Among the sick cattle visited on the morning of the 26th March the following symptoms specially attracted my attention. Pyrexia, indicated by a quickened pulse, and by the eagerness with which those animals in what appeared to be the earlier stages of the disease sought to cool their bodies in a pond which occupied the centre of the paddock; cessation of rumination, not confined to those apparently most seriously affected; depression of vital energy, shown by low carriage of the head, drooping of the ears, coldness of the extremities, and the indifference with which the greater number regarded the approach of strangers; a profuse watery quasi-dysenteric discharge from the bowels in what appeared to be an advanced

* These are the names of the vessels from which Mr. Keele obtained the animals in Shanghai. It will be seen that they all belong to the French mail service, hence the common but erroneous impression that the disease was introduced from France.

stage of the disease; a muco-purulent, in some cases blood-stained, discharge from the nostrils; a watery discharge from the eyes and mouth; in a few a restlessness indicating pain, probably abdominal. In effect, I then observed all the principal symptoms which distinguish that particular form of murrain commonly denominated rinderpest, and indeed only required the evidence furnished by the bodies after death to render the diagnosis complete. This evidence was not immediately forthcoming, however, for, although 3 of the 15 animals visited by me on the morning of the 26th were dead by the afternoon of the same day, the hurried and incomplete *post-mortem* examinations which I then witnessed, in which the lungs and intestines were alone examined, left me still undecided as to the exact nature of the disease. Two of the three seemed to have died without a struggle, their attitudes indicating natural sleep rather than death; in the third the limbs appeared to have been slightly convulsed. One, a cow, was within a few weeks of calving; she had not miscarried. The lungs and pleuræ were free from inflammation in all three. I noted, when the abdominal cavity was opened, an appearance as of commencing peritonitis. There were marked congestion of the mucous lining of the intestines, and a viscid muco-purulent secretion adherent to its surface, with blood extravasations in the submucous tissue. I observed also superficial ulceration in the neighbourhood of some of the solitary glands, the situation of which was indicated by a congested circle of mucous membrane—a raised blue or purple spot.

During the week which followed I had ample opportunities for extending and verifying my observations. Of the *post-mortem* examinations made among Mr. Keele's cattle, at which I assisted, I select one as a fair example of many. I quote almost verbatim from the original record:

"An Australian milch cow, marked No. 22 in Table. First refused to feed on Friday, March 29th; died on Wednesday, April 3rd, the fifth day. Secretion of milk markedly diminished from the first. Before her seizure she yielded some twelve bottles a day, but on Monday, the third day of her illness, only three quarters of a bottle could be obtained, and that with difficulty. Mr. Keele tells me that there has been no discharge from the nostrils. (See below.)*

"*Examination of carcase 4 hours after death.—Post mortem* rigidity well marked, position indicating some degree of convulsive struggle in death. Cavity of nostrils filled with a

* In all the cases seen after this date discharge from the eyes and nose was a marked symptom.

thin purulent and very offensive fluid; nearly a pint of this in each nostril. Mucous lining dirty red and leaden coloured; on its surface one or two patches of yellow muco-purulent somewhat adherent exudation or deposit, covering portions of the membrane which appear finely granular—superficial ulceration—denuded of epithelium. Mucous membrane covering epiglottis and arytenoid cartilages deeply injected, dirty red in colour and mottled over with blue points as of blood extravasated somewhat deeply in submucous tissue; more superficial extravasations on free edges of these cartilages. Laryngeal mucous lining similarly altered in colour, blood extravasations in submucous tissue. Much muco-purulent quasi-diphtheritic or croupous exudation situated on patches of superficially ulcerated mucous membrane, most abundant at base of epiglottis and on under surface of vocal cords. Tracheal lining much reddened and the seat of numerous blood extravasations; the tube itself filled with abundant white or pinkish froth. Lungs and pleuræ free from inflammation; from the former much dark venous blood ran out on section—mechanical hyperæmia. The froth noticed as occupying the trachea extended into and occupied the larger divisions of the bronchi. No ulcerations seen on mucous lining of mouth. Tongue covered with scattered raised bright red papillæ, here and there the seat of commencing ulcerations; these were confined to the anterior third. On opening the abdominal cavity the intestines, especially the small gut, appeared pink or reddish and purple as in the first stage of peritonitis, but the glossy smoothness of the membrane was unaltered, and there was no exudation of lymph. The mucous lining was much congested and variously discoloured, generally of a dirty red or purplish colour. Numerous submucous blood extravasations were observed. The surface of the membrane was widely covered with an adherent viscid muco-purulent secretion or deposit. The special glandular lesions noted in so many of the other cases were not observed in this instance. The stomachs were not examined."

While engaged in these investigations among Mr. Keele's stock, rumours reached me from all sides of the prevalence of the disease among the native cattle in or near Shanghai, and accordingly, feeling it my duty to bring the matter fully before the members of the Council, I published my first official Memorandum on the 3rd of April:

"MEMORANDUM No. 1.

"Horned cattle are at present suffering in Shanghai from epidemic disease. One foreign owner has lost during the

past ten days 22 cows out of 35, and 2 buffaloes out of 3. The disease is true rinderpest or Steppe murrain. It is highly contagious; rapidly and almost certainly fatal. Treatment appears to be useless, and no reliance can be placed upon any special drugs or combinations of drugs. Affected cattle should be slaughtered at once, and the bodies buried. The flesh of animals suffering from this disease is unfit for food; and milk yielded by sick cows ought not to be drunk.

"The symptoms observed in this epidemic are briefly as follow:

"In the first stage of the disease the animal eats badly or altogether refuses to feed; the bowels are usually constipated; the coat stares; the ears droop, and the movements of the body are sluggish. Thirst is not a marked symptom at first. If a milch cow suffers, the milk is markedly diminished in quantity, and soon ceases altogether to be secreted.

"In the more advanced stages the animal lies down, breathing hurriedly and laboriously. A thin purulent discharge escapes from the eyes, nose and mouth, in greater or less quantity. Thirst is great. A profuse watery dysenteric diarrhœa sets in.

"The average duration of the disease, from the onset till the fatal termination, is six days.

"The appearances after death are briefly as follow:

"The most marked lesions are found in the respiratory passages. The mucous membrane lining the nostrils and windpipe is dirty red or leaden coloured, exhibiting here and there patches of a yellow muco-purulent deposit adherent to its surface, and covering portions which appear finely granular—denuded of epithelium. These patches of deposit are most abundant in the larynx. The lungs are frequently congested throughout; the divisions of the bronchi filled with an abundant white froth. The intestines were more or less inflamed in every case examined. The mucous lining was congested, and exhibited in some cases appearances similar to those observed in the air-passages. The small intestines appear to be chiefly affected.

"There is great difficulty in tracing the extension of this disease among cattle owned by natives. Mr. Keele, the Council's Market Inspector, is actively engaged in making inquiries.

"SHANGHAI, *3rd April*, 1872."

Up to the 16th of April my opportunities for observation

were linited to the animals attacked in Mr. Keele's sheds, and, feeling certain that the disease was not confined to his stock, I was surprised that so long a time should have elapsed before other cases from outside came under notice. A strict watch was kept over the sheds of the native cattle dealers, but nothing definite was discovered.

Mr. Warden, of Messrs. Russell and Co., kept at this time three milch cows and a calf, stalled on Messrs. Russell and Co.'s premises, but led out daily to pasture in the suburbs. Of one of these cows, Mr. Keele told me that she was in the habit of coming about his premises, sometimes coming quite inside his compound, and that not many days before his cattle were attacked he had had her driven out of his paddock. Since the disease had first appeared he had seen her and the other cows belonging to Mr. Warden feeding on the Old Race Course on part of the pasture where his cows had been. On the 3rd of April I learned that this cow was ill; she died on the 8th with, report said, symptoms similar to those exhibited by Mr. Keele's cows. On the 16th the calf died, and along with Dr. Little I witnessed a hurried examination of the carcase. We were told by Mr. Warden's coachman that the animal had been ill for three days; had been running at the eyes and nose, and had had diarrhœa; that the ears had been cold and drooping. The mucous membrane of the nostrils, larynx and trachea was discoloured and congested, the bowels appeared externally as if in the first stage of peritonitis, but were naturally glossy and free from deposit of lymph. The lungs and pleuræ were healthy.

On the 22nd of April the mother of the calf was taken ill, and I visited her in her stall. She had been sick and refusing food for three days. She was very listless and stupid looking. The secretion of milk had almost ceased. The nostrils were discharging, although not profusely. There was a little dysenteric purging. Her ears were cold and drooped. Her pulse was quickened. She was removed at my request to a stall in Hongkew and closely watched. She died on the 25th, her life apparently prolonged by the use of porter, several bottles of which were daily poured down her throat. The *post-mortem* examination was made 7½ hours after death, in presence of Drs. Johnston and Macgowan. The morbid appearances were peculiarly well marked in this case. Mr. Warden's third cow was removed to other quarters, and escaped the contagion. Evidence now began to accumulate on all sides, proving that the disease was not confined to

foreign cattle or limited to particular sheds. Referring to my notebook I find the following entries:

"April 10th.—I learn that a cow died on board the P. M. S. S. New York between Shanghai and Yokohama. She was shipped in good health on the 26th March and died on the 29th. She was taken from one of Mr. Keele's sheds to which the disease had not extended, but in which it subsequently appeared. Along with her stable companions she was carefully separated from the affected cattle. A sheep stalled on board ship in the same pen with this animal died also at sea.

"April 24th.—The larynx and about two inches of the trachea of a buffalo which was being cut up in a knacker's yard was brought to me by the market inspector. Mucous lining intensely congested, œdematous, throughout of a bright pink colour save at the attached margin of the vocal cords, where it was purple or leaden coloured, in this situation denuded of epithelium and in two points quite destroyed by uceration. Between the arytenoid cartilages a patch of quasi-diphtheritic exudation or deposit adhering to a surface denuded of epithelium.

"May 13th.—Saw larynx of a buffalo killed beyond the Sinza village, it was said in consequence of injuries received from a fall. Mucous lining much congested, a superficial but distinct patch of ulceration at base of epiglottis.

"May 21st.—Inspected larynx and part of the great gut of a bullock, one of two said by the owners to have come from Ningpo. Said also to have died on board the boat in which it was conveyed to Shanghai. Laryngeal and tracheal mucous surfaces intensely congested and in patches denuded of epithelium. Much venous congestion of epiglottis. Bowel lining membrane also much congested, the longitudinal folds in the large gut appearing as red lines on the surface of the membrane.

"June 12th.—Inspected the windpipe of a bullock taken from a butcher's shop in Passinkew. This is characteristically inflamed, the mucous lining coloured pink and purple and appearing granular.

"June 26th.—Larynx and trachea of an animal just slaughtered, brought to me by the Market Inspector. Tracheal mucous membrane streaked red and purple, generally of light vermilion tint, here and there patches of adherent exudation. Laryngeal lining less markedly congested, surface finely granular.

"June 27th.—A sick bullock, taken from the same shed in which the windpipe was found on the 26th, was stalled in

Hongkew in the morning, and died at one p.m. *Post-mortem examination* 2 hours after death, Drs. Johnston and Macgowan present. Mucous lining of nostrils leaden coloured. Laryngeal mucous membrane much congested. Epiglottis much venous congestion. Tracheal lining streaked with red lines, much congested. Lungs and pleuræ healthy. Peritoneal investment of stomach and bowels as in first stage of acute inflammation, without roughening or exudation. Mucous lining of bowel congested throughout, studded here and there with livid spots on mucous membrane marking the situation of solitary glands. Here and there patches of superficial ulceration. I am informed that the dysenteric purging was unusually severe before death; coldness of the extremities a very prominent symptom.

"June 29th.—Visited the cattle sheds and slaughter-houses opposite the Ningpo Joss House with M. Charrier, the Market Inspector for the French Concession. There witnessed the *post-mortem examination* of the carcase of a bull dead after six days' illness. The lungs and pleuræ were healthy. Characteristic appearances were noted on the mucous surfaces, including exudation, discolouration and superficial ulceration. The bowels had, on opening the peritoneal cavity, the usual appearance as of commencing peritonitis. I observed two blue or rather purple raised spots on the surface of the intestinal mucous lining—enlarged glands. At the same visit I was shown two foreign Shanghai bred milch cows which require some special description; they occupied the same shed:—

"*A.*—A grey cow. Looks listless and ill. Ears drooping. I thought the natural secretion from the nostril increased, but there was no appearance of either pus or blood.

"*B.*—A white cow. Lying down. Ears cold and drooping. Breathing very laborious, the expiration a short grunt. As I watched her she laid her head down and seemed dying. I thought she would scarcely live till morning. I thought the secretion from the nostrils in this case increased.

"June 30th.—Visited M. Charrier's stable to which cow *A* had been removed. She was lying down and looking very sick. Ears cold and drooping. Secretion from nostrils increased, but simply watery. Breathing laborious, the expiration a grunt. The vaginal mucous membrane inflamed, of a bright red colour, superficially ulcerated and covered with patches of muco-purulent secretion. At this visit I was shown parts of cow *B*, which had died, as was anticipated, on the night of the 29th. The mucous lining of the nostril appeared nearly natural, but there was one patch of about

the size of half a dollar leaden coloured and roughened. The laryngeal and tracheal linings were congested, discoloured leaden and purple. The mucous lining of the bowel throughout seemed softened and œdematous, was dirty red in colour and covered with an adherent viscid scanty secretion. It was in this case that for the first and only time I thought I could detect indication of pneumonic mischief; my examination was, however, very superficial, as I did not handle the specimens.

"July 1st.—Cow *A* died this morning at M. Charrier's stable. *Post-mortem examination* an hour after death, Dr. Johnston present. The characteristic appearances on the mucous surfaces were all well marked, and included congestion, exudation and superficial ulceration. In this case the lesions of the intestinal glands were peculiarly well marked, their cavities were filled with a cheesy looking exudation which protruded from the mouth of the gland on the surface of the mucous membrane. The peculiar appearance as of commencing peritonitis was well marked. The ulceration and congestion of the lining of the fourth stomach were extensive.

"July 10th.—Visited with Mr. Keele a shed in Hupeh Road which contained two bullocks. Three animals were originally stalled there, but one had died a day or two before, Mr. Keeley believed, of rinderpest. One of the two remaining appeared to be ill, he was refusing food, the ears were cold and drooping, discharge from the nostrils natural.*

"July 11th.—The sick bullock seen on the 10th is worse. The nostrils discharge much watery mucous tinged with blood. He refuses to eat, the ears are warm but still droop.

* The following paragraph appeared in the *North-China Daily News* of August 2nd:

"A case now being prosecuted at the Mixed Court shows that rinderpest is not the only danger to which cattle are liable. Two coolies, in the employ of a mill-owner who uses bullock power to drive his mills, are charged with causing the death of four of the animals by forcing them to eat broken nails in beancake. Spite prompted the outrage, the master having had occasion to reprimand the men. The cause of death was discovered by examining the animals after death."

The coolies admitted the offence and were punished accordingly. The owner was asked privately to state the symptoms of illness which he observed among his bullocks, and gave the following:—The animals ate at first a little grass, but afterwards refused all food; at first they made little dung, but afterwards passed watery motions mixed with blood; their ears drooped as the illness progressed; they died on the fifth day. A native butcher examined the carcases and discovered the cause of death. The mill in which this occurred is situated in the immediate neighbourhood of the shed in the Hupeh Road where the three animals referred to in my diary on the 10th of July were stalled.

Pulse 70, bowels constipated. Drs. Jamieson and Little visited him with me.

"July 12th.—The disease is still progressing in the case of the animal just referred to. Constipation is now exchanged for diarrhœa; the motions, when I visited him, were profuse, very watery and dysenteric. The Chinese owners say he is getting better as he is now able to feed, the truth being that the animal is only sucking the water out of a liquid mash which they have given him.

"July 14th.—The bullock died on the night of the 13th. *Post-mortem examination*, at which Drs. Jamieson and Little were present. The lesions were characteristic and confined to the mucous surfaces. The lungs and pleuræ were healthy.

"July 16th.—Shown to me by Mr. Keele, the larynx, trachea and a portion of the bowel taken from a bullock slaughtered at Passinkew. Tracheal mucous lining much congested, purple and pink discoloration. Laryngeal lining livid. Purplish discoloration of mucous membrane of bowel. Situation of intestinal glands indicated here and there by raised points of congested membrane. Here and there dark coloured particles adhering to the surface of the membrane, apparently the expelled contents of the solitary glands. I advised Mr. Keele to seize the carcase from which these specimens were taken, and the case, in consequence of this seizure, was brought before the Supreme Court. The owner of the bullock pleaded that the beef was illegally confiscated, being sound and in good condition, he and his friends affirming, after the usual caution, that the animal was in perfect health when slaughtered. I stated that in my opinion the animal was suffering from rinderpest when slaughtered, that it was scarcely possible for the cattle dealer to have overlooked the fact of its being unwell, and that the beef taken from the carcase was quite unfit for human consumption.

"July 18th.—Visited the cattle shed in the Hupeh Road with Dr. Mackenzie (P. M. S. S. New York). The black bull, the companion of the one which died on the night of the 13th instant, is now showing marked signs of the disease. He was lying down when we visited him, and appeared very dull and listless. Breathing laboured. Profuse watery mucopurulent discharge from the nostrils, and a scanty watery discharge from the eyes. Had been purging a good deal.

"July 19th.—*Post-mortem examination* of the black bull some six hours after death. Drs. Jamieson and Mackenzie present. Appearances on the mucous surfaces characteristic as in the other cases. The diphtheritic or croupous exudation

in the larynx and trachea was unusually abundant. Lungs and pleuræ healthy.

"July 31st.—Visited a rice mill at Passinkew, separated only by a bamboo fence from the shed in which the bullock was slaughtered on the 16th inst. Saw there a sick bullock which was said to have refused food for three days; the animal is evidently affected with the disease, and cannot live long; the nostrils and eyes are discharging a greenish yellow matter; dysenteric purging is going on; he has ceased ruminating; his ears are cold and drooping, and his head depressed; he is very listless and allows me to handle him freely. There is another bullock in the same shed which is evidently sick, but he is still feeding and ruminating.

"August 1st.—The first bullock seen yesterday died this morning at 6 o'clock. The body was opened in my presence at half-past nine. All the characteristic signs of cattle plague were found. The ulceration of the mouth and the lesions of the fourth stomach were unusually well marked and extensive. All the mucous surfaces in the body were affected. There was the usual appearance as of commencing peritonitis.

"August 3rd.—Visited the cattle sheds at Passinkew. The second bullock belonging to the rice mill, and noted on July 30th as showing signs of illness, is now very sick; he has not eaten for three days, his eyes and nostrils are discharging a green purulent mucus, his ears are cold and drooping, dysenteric purging has commenced. A large number of fine bullocks have just been driven in from the country, and are waiting in a dealer's yard to be bought up by the butchers; there are three among these which appear to be out of health, certainly none of the three should be slaughtered in their present condition.

"August 4th.—The sick bullock seen on the 3rd inst. died this afternoon. I was not able to be present at the examination of the carcase. The usual signs of catarrhal inflammation of the mucous surfaces were observed."

I do not wish the reader to believe that in these extracts from my notebook he has before him all the evidence upon which I based my opinion of the extensive prevalence of the disease. Many other proofs of this came directly or indirectly to my knowledge, but were not specially recorded, either because they possessed no particular interest or because my time was otherwise occupied, and leisure for note taking was wanting.

On the 3rd of July I published my second official memorandum, being fully convinced that the prevalence of

the disease must seriously affect the quality of beef sold by native butchers:

"MEMORANDUM No. 2.

"The disease which made its appearance in April last among horned cattle in Shanghai has as yet received no decided check. It is, at the present date, prevalent in the sheds where the animals intended for the Shanghai foreign market are stalled. During the past two months I have had ample opportunities of verifying and extending the observations, as to symptoms and *post-mortem* appearances, which I recorded briefly in my first memorandum. I am aware that a general impression exists that the disease was introduced from abroad, and probably through cattle imported from France. In this I do not concur, believing that further research will demonstrate the important fact that rinderpest has been for many years past as truly endemic in the Great Plain of China as in the Steppes of Russia. Medical testimony varies as to the presence or absence of danger to man, arising from the consumption of the flesh of animals slaughtered while suffering from this disease. But it is at least certain that, while no one would knowingly eat such meat, the foreign community generally will require the governing body to use all possible diligence to prevent its introduction into the public markets. The experience of the past three months has convinced me that it is practically impossible to distinguish the beef taken from the carcases of diseased animals from that furnished by those in perfect health, and this appears to be true even in the case of cattle slaughtered in an advanced stage of this particular form of murrain. It is, therefore, my duty to recommend that, in future, all cattle the flesh of which is intended for the use of foreigners, should be carefully inspected and pronounced free from disease before being slaughtered.

As adding to or modifying the statements made in my first memorandum, I am anxious to place the following facts on record:

"The period of incubation of the poison is probably under ten days. The average duration of the disease, from the date of manifest infection to the time of death, is probably not more than four days. Running at the eyes and nose, so generally observed in the epidemic which visited England in 1865, has not been a specially prominent symptom among the cattle dying in Shanghai. Many animals have exhibited this discharge in a marked degree, but in others it has been entirely

absent. It is probable that, in every different epidemic, some specially distinguishing feature will be found among the symptoms or *post-mortem* appearances, and climate will of course modify these different manifestations. *A priori,* one would expect that, in a disease which affects all the mucous surfaces of the body, the respiratory passages would suffer most severely in England, and the intestinal canal in Shanghai, and, as a consequence, that discharge from the nostrils should be a marked feature in the first case and diarrhœa or dysentery in the second. The special lesions of the mucous lining of the nostrils of which this discharge is symptomatic, have been found in a more or less marked degree in all the completed *post-mortem* examinations at which I have assisted. I have not observed redness between the toes, with scaling of the epithelium.

"All the *post-mortem* appearances which are recognised by the best authorities as specially characteristic of Steppe murrain have been observed among the cattle at present dying in Shanghai, and I have on a recent occasion been able to demonstrate the greater number of these to the members of the Council.

* * * *

"SHANGHAI, *July* 1*st*, 1872."

[As these morbid changes are fully discussed in the general summary, I have thought it unnecessary to reprint the concluding paragraphs of the memorandum.]

GENERAL SUMMARY.—Not the least marked feature of this particular epidemic has been the high death-rate. With the single exception of an old Ayrshire bull, marked No. 20 in the table on page 67, I have not seen a single animal recover; those of Mr. Keele's stock which were slaughtered were all, as already stated, hopelessly sick. All plans of treatment failed signally, but possibly the use of stimulants delayed the fatal termination in one case. It was held by many as a strong argument against the supposed specific character of the disease, that it extended less widely and showed in a less marked degree its contagious character than during the European epidemic of 1865; while the fact that it did not affect a herd stalled in sheds in the neighbourhood of those occupied by Mr. Keele's cattle* was considered

* I refer to the cattle kept by Seujee, and stalled at the Horse Bazaar. I do not know what precautions were taken to guard against the introduction of disease among these animals; but I can speak positively as to the care taken by Mr. Keele to prevent extension from his sheds. The affected

by some as an almost conclusive proof that the diagnosis was incorrect. Of its contagious character I was myself fully satisfied during the rapid extension of the disease in Mr. Keele's sheds. The history of Mr. Warden's losses, and the deaths in the Hupeh Road, will probably be sufficiently convincing for my readers. That this particular feature of cattle plague has been less marked in Shanghai than in England cannot be regarded as an argument of much importance when viewed along with the pathological facts which can be adduced to prove the correctness of the diagnosis. For my own part I prefer to regard it rather as bearing favourably upon the opinion which I have elsewhere expressed, that the disease is probably at the present date as truly endemic in China as in Russia. If this can be proved, modifications in intensity, &c., follow nearly as a matter of course.*

Quoting from Memorandum No. 2, I note that the period of incubation in this disease is probably under 10 days; this was inferred but not distinctly proved. The average duration from the date of manifest infection to the time of death varies, so far as my observations go, between 3 and 7 days; the average is probably correctly stated at 4 days. The symptoms exhibited vary within certain limits, differing in the early and advanced stages of the disease. With the onset of the malady there is loss of appetite, cessation of rumination, more or less distinctly marked pyrexia, depression of the vital energies, constipation, and a watery discharge from the eyes and nostrils. In the advanced stages constipation is exchanged for dysenteric purging, the discharge from the nostrils becomes purulent or blood stained, there is often an uneasy restlessness indicative of abdominal pain, the breathing is laboured, and with a further depression of the powers of life the extremities become cold. In milch cows the lacteal secretion is diminished from the first, and soon becomes entirely suppressed. I give one example from among many which I have had an opportunity of observing:

cattle were closely confined to a paddock, which was afterwards ploughed, the old sheds were all pulled down and rebuilt, any timber employed a second time being first thoroughly charred; the yard was refilled with earth; disinfectants, especially carbolic acid, were freely used from first to last.

* I need scarcely remind my readers here of the uncertain power of those influences which determine the spread of an epidemic.

Date.	Amonnt of milk yielded.		Remarks.
	Morning.	Evening.	
1st day, being the day preceding that on which the cow was manifestly ill	$6\frac{1}{2}$ bottles	$4\frac{1}{4}$ bottles	
2nd day	6 „	$3\frac{1}{4}$ „	Her food was not finished at night.
3rd „	5 „	$2\frac{1}{4}$ „	Feeling badly; refused altogether at night.
4th „	$1\frac{3}{4}$ „	1 „	Has eaten very little.
5th „	Secretion arrested		Refuses altogether to feed. Diarrhœa commenced.
6th „	„	„	Worse in every way.
7th „	„	„	Died.

Loss of appetite and cessation of rumination are, generally speaking, the first symptoms which attract attention. In the advanced stages of the disease the animal refuses food absolutely. I have made as yet no thermometrical observations, but have inferred a heightened temperature from the accelerated pulse (varying between 70 and 90 according to my own observations) and from the eagerness with which animals in the earlier stages seek to cool their bodies in water when opportunity permits. There is more or less suffering from thirst, which in the advanced stages is often excessive. Depression of vital energy is shown by the listless movements, the drooping ears, the low carriage of the head, and by the lowered temperature of the extremities; the drooping ears give the animal suffering from the disease a very characteristic appearance. The discharge from the nostrils varies greatly both in quantity and quality, in some cases appearing simply as an increase of the natural secretion, in others being purulent, viscid and blood-stained. In the bull belonging to Mr. Keele, which recovered, it was very profuse, hanging from the muzzle in large tenacious masses of a greenish-yellow colour. Where this symptom has been absent the mucous lining after death shows in a less degree the characteristic morbid changes, but I have never seen the membrane free from disease.

(*To be continued.*)

THE NEWLY DISCOVERED HÆMATOZOON INHABITING HUMAN BLOOD.

The *Lancet* says that—"We announced in a few lines in the course of the summer the discovery by Mr. Timothy Richard Lewis, M.B., Assistant-Surgeon to H.M. British Forces, on special duty, attached to the Sanitary Commissioner with the Government of India, of a new worm found in the blood and in the urine of certain patients who had come under Mr. Lewis's notice in India. We have been favoured with an article describing this parasite and the cases in which it was found. The article is contained in the Report of the Sanitary Commissioner with the Government of India, just published, and will be read with much curious interest by all helminthologists. Certain limited portions of large vessels, as those of the portal system, have often been invaded by *Distomata*. But the condition described by Mr. Lewis is one in which the whole blood is infested with living active worms about $\frac{1}{75}$ of an inch in length, and with a transverse diameter of $\frac{1}{3500}$ of an inch—'a condition,' says the discoverer, 'in which they are persistently so ubiquitous as to be obtained day after day by simply pricking any portion of the body, even to the tips of the fingers and toes of both hands and both feet of one and the same person with a finely pointed needle. On one occasion six excellent specimens were obtained in a single drop of blood by merely pricking the lobule of the ear.'"

Filaria sanguinis hominis is the name first given to this hæmatozoon in *The Lancet*, and Mr. Lewis proposes to retain it. Its appearance on first being removed from the body is very characteristic. It moves about incessantly, coiling and uncoiling itself unceasingly, lashing the blood-corpuscles about in all directions, and insinuating itself between them. A young Bengalee compared it not inaptly to an incompletely developed snake. At first the worms look translucent, the larger specimens, however, frequently presenting an aggregation of granules towards the junction of the middle and lower half. Occasionally a bright spot is seen at the thicker extremity, suggestive of a mouth. They continue active from six to thirty hours. In the later period of their existence the movements of filariæ become much slower, and the plasma of their bodies more granular, until all signs of activity disappear. The hæmatozoon is enveloped in an extremely delicate tube, closed at both ends, within which it is capable

of elongating or shortening itself. Mr. Lewis infers, from the fact of its being so enclosed in a structureless membrane, that its home is the blood, and that it has no means of perforating the tissues.

The question arises as to the origin or morbid significance of these filariæ. Mr. Lewis first noticed them two years ago in the urine of a patient much emaciated, and passing chylous urine. In July of the present year, whilst examining the blood of a native suffering from diarrhœa, he observed nine minute nematoid worms in a state of great activity on a single slide. He and Dr. Douglas Cunningham agreed that the worms were of the same kind as had been observed in the patient with chylous urine. Mr. Lewis has examined the urine in from fifteen to twenty cases of chyluria, associated with more or less marked hæmaturia, chiefly, by the way, in women, and *the microscopic filariæ have been present on every occasion.* Of the persons thus affected, five were of pure European parentage, but three of them were born in India; the remainder were either East Indians or natives in about equal proportion. The patient in whose urine the filariæ were first detected in March, 1870, disappeared, but Mr. Lewis has lately seen him. The urine looks healthy, but the blood contains hæmatozoa. The following is the summary with which the author concludes the account of his interesting and important discovery:

"(1) It has been shown that the blood of persons who have lived in a tropical country is, and not rarely, invaded by living microscopic filariæ, hitherto not identified with any known species, which may continue in the system for months or years without any marked evil consequences being observed; but which may, on the contrary, give rise to serious disease and ultimately be the cause of death.

"(2) That the phenomena which may be induced by the blood being thus affected is probably due to the mechanical interruption offered (by the accidental aggregation, perhaps, of the hæmatozoa) to the flow of the nutritive fluids of the body in various channels, giving rise to the obstruction of the current within them or to rupture of their extremely delicate walls, thus causing the contents of the lacteals, lymphatics or capillaries, to escape into the most convenient excretory channel; such escaped fluid, as has been demonstrated in the case of the urinary and lachrymal or Meibomian secretion, may be the means of carrying some of the filariæ with it out of the circulation: these occurrences being liable to recur after long intervals—so long, in fact, as the filariæ continue to dwell in the blood.

"(3) That, as a rule, a chylous condition of the urine is only one of the *symptoms* of this state of the circulation, although it appears to be the most characteristic symptom which we are at present aware of.

"(4) And, lastly, that some of the hitherto inexplicable phenomena with which certain tropical diseases are characterised may eventually be traced to the same or to an allied condition; hence it becomes *imperative* to subject the blood of patients suffering from obscure diseases, in tropical countries at all events, to *thorough* microscopic examination." —*Lancet.*

CYST-AFFECTED MEAT.

Serious apprehensions arose a year or two ago in regard to the feeding of the European troops in India. The cattle slaughtered in various parts of that country, and notably in the Punjab, were very commonly found infected with cysts. The meat that should have been supplied to the troops was often condemned as unfit for food; indeed, the extent to which this was carried gave rise to no little embarrassment to the Government. This led to an official investigation, and the opinion of Dr. Muir, C.B., was eventually taken and acted upon in the matter. He pointed out that if attention were given to the thorough cooking of the meat in question, no harm would accrue to the troops from its consumption. The subject has since been taken up by Assistant-Surgeon T. R. Lewis, M.B., attached on special duty to the sanitary commissioner with the Government of India. A copy of his report on "the bladder-worms found in beef and pork" is before us. The report details the observations and experiments made by him, and is illustrated by numerous drawings and micro-photographs. *En passant* we may remark that these representations of minute structure by microscopic photography form, it is believed, the first attempt of the kind in India. In considering the most practical methods of reducing the risk of mischief arising from the consumption of the meat of measled animals, Mr. Lewis mentions that pigs under a year old cannot be infected, nor can grown-up cattle, and he alludes to the practical observation of Dr. Cobbold, that when a calf has been infected, and slaughtered some nine or ten months subsequently, the cysts will be found to have become degenerated, gritty calcareous spots alone remaining to mark the situation formerly occupied by the living parasite. In his experiments on the temperature of

meat subjected to ordinary cooking, Mr. Lewis found that no meat can be said to be "done" unless exposed to at least 150° Fahr. As regards the amount of heat required to destroy life in cysticerci he adds:—After being subjected to a temperature of 130° Fahr. for five minutes, they may be considered to have perished. After exposure to this and higher temperatures, in no instance was he able to satisfy himself that the slightest movements took place in their substance when examined under even a high power. After exposure for five minutes to a temperature of from 135° to 140° F., life in these parasites may be considered as absolutely extinct. In no case was he able to detect a single live bladder-worm in portions of measly meat which had been cooked in the usual way, and even in portions of it which had been rather under- than over-cooked. It may therefore be inferred that, with ordinary precautions on the part of the cook, the further development of cysticerci will be arrested. It is rarely that persons from preference partake of meat so much underdone as not to have been subjected in every part for five minutes to a temperature of from 135° to 140° F., after which exposure it may be confidently stated the entozoa will have succumbed.—*Lancet.*

HYDROPHOBIA IN BRITISH GUIANA.

Letter from Mr. W. F. B. Pollard.

[*To the Editor of the 'Medical Times and Gazette.'*]

Sir,—It may interest other subscribers to your journal besides myself to know that hydrophobia has appeared in a country supposed by its inhabitants to have been hitherto exempt from this scourge. From the statement, however, of Mosely that before 1783 it was not known in all the West India Islands, and from the remark of Larrey that it was unknown in Egypt, while Pruner found it there in 1847, it would perhaps be safer to infer that it has not visited this part of the South American continent for many years rather than accept the prevailing opinion that it is now seen here for the first time. It has undoubtedly been brought to this colony from Barbadoes. A few months ago some rabid dogs were observed in the country by a gentleman from that island, and the fact was made known in the newspapers. Unhappily, it was only read of by the majority to be ridiculed.

The first case occurring here in the human being I was

the first legally qualified practitioner to see. M. G., a black woman aged 19, received a bite from a dog on July 20, which after a while healed up. On September 7th she was beaten by some people in the street, and on the 8th aborted. About the 26th she felt pain in her ear and great irritation in the left or bitten leg. On the 29th she had a spasm after drinking a little water, and on the 30th she was brought to this institution, and referred all her symptoms to the beating she had received. She died on the 2nd instant.

I have not time to send, and perhaps you will not have space to receive, the details of the case. It has since been followed by three others. Four cases of rabies in man within a few weeks in a town of 36,000 inhabitants!

From the number of people bitten by mad dogs and mad cats we shall probably lose some more of our citizens by this awful malady. I am, &c.,

W. F. B. Pollard, F.R.C.P. Lond., M.R.C.S. Eng.,
Senior Resident Surgeon at the Public Hospital.
George Town, British Guiana, October 26.

—*Medical Times.*

CASE OF ASPHYXIA IN SMALLPOX.

The asphyxia was caused by exfoliation of the mucous membrane of the throat. The strips of membrane covered the pharynx, blocked up the passage, and prevented the entrance of air. Asphyxia was imminent, and tracheotomy was decided on, when a last effort to clean out the pharynx was successful. Several strips of membrane were brought out from behind the epiglottis, and respiration became possible. The patient soon recovered. There was no œdema of the glottis. The patient had brought up no fibrinous false membranes; no abscess in the larynx, as there had been no rise of temperature at the time the dyspnœa supervened. Lastly, the boils and abscesses which coincide habitually with phlegmons of the larynx appeared only ten days later.—*Lyon Médical.*

Analysis of Continental Journals.

By George Fleming, M.R.C.V.S., Royal Engineers.

CONTAGIOUS PLEURO-PNEUMONIA COMBATED IN THE NETHERLANDS BY OCCISION.

M. E. Déle, Government Veterinary Surgeon at Antwerp, has, in a recent number of *Annales*, referred to the Netherlands having organized a veterinary civil service (law of January 1st, 1871) and to the Government of that country undertaking the task of combating the contagious pleuro-pneumonia of cattle in an efficacious manner by slaughter.

In a circular, dated December 25th, 1871, the Netherlands Government publishes the reasons which have induced it to have recourse to this measure, and the resnlts obtained by the application of the royal decree of December 4th, 1870.

The occision of diseased cattle has met with numerous opponents in the Netherlands, and even in the Chambers of the States General. In the Chambers it has been alleged that the Government, misled by the results obtained by slaughter in cattle plague, had foolishly applied this measure to pleuro-pneumonia, the contagiousness of which is doubtful, and which is a disease native to the country; inoculation, it was asserted, was preferable.

The Government based its decree of slaughter chiefly on the almost unanimous declaration of the veterinary authorities attending the Zurich congress in 1867, to the effect that pleuro-pneumonia is propagated *exclusively*, in our climate, by contagion.* But occision will not be attended with any

* In a note Professor Thiernesse, director of the 'Annales' says: "The question of pleuro-pneumonia was not discussed at the Zurich Congress, for want of time, until towards the end, when it was limited to this practical conclusion—'*In a sanitary police point of view*, the epizöotic, pleuro-pneumonia of cattle *should be considered* as only propagated by contagion. This conclusion, which I voted in favour of, certainly does not imply that 'the almost unanimous declaration of the veterinary authorities collected in congress at Zurich in 1867, was to the effect that pleuro-pneumonia is propagated *exclusively* in our climate by contagion.' I am opposed to this exclusive and, in my opinion, unjustifiable 'declaration.'"

Our experience in this country would go to prove that there is no other cause in operation in producing the diffusion of this bovine scourge than the presence of a contaginm.

benefit, unless at the same time a rigorous *sequestration* of suspected animals be carried out for three months, as well as the *disinfection* of infected animals. Sequestration is rendered efficacious by *marking* suspected cattle and the announcement of the existence of foci of infection by means of *handbills*. Neither does the Government share the opinion of those who recommend that the disease should be exclusively combated by inoculation; for in admitting that this operation, when applied to every bovine, confers immunity upon them, it would be necessary to continue it in future generations of cattle and on all those imported. But it is hoped that the owners of stock would *voluntarily* inoculate their beasts; for with regard to *compulsory* inoculation it could not be thought of, as it would cost the treasury as many millions of florins as there were cattle—about one and a half millions (reckoning each inoculation at the minimum cost of one florin); it would also be necessary to continue it, and to indemnify the proprietors for the losses they might sustain through inoculation, either in reimbursing them the total value of the cattle that died, or in repairing the damage caused by the loss of the tail.

The following table gives the results obtained since the promulgation of the new law:

Periods of Four Weeks.	Number of animals declared diseased.	Expropriated.	Killed by the proprietors.	Died.	Cured	Result unknown.	Not diseased.	Number of communes infected.
1st to 28th Jan.	1087	612	171	112	94	89	9	157
29th Jan. to 25th Feb.	960	47	244	50	32	592	4	168
26th Feb. to 25th Mar.	757	46	139	50	13	509	...	144
26th Mar. to 22nd April	549	23	111	56	7	352	...	110
23rd April to 20th May	439	25	76	40	7	290	1	105
21st May to 17th June	393	32	84	30	13	234	...	94
18th June to 15th July	298	64	54	23	12	145	...	104
16th July to 12th Aug.	222	85	24	13	2	98	...	91
13th Aug. to 9th Sept.	347	119	46	23	...	159	...	110
10th Sept. to 7th Oct.	343	192	68	15	5	63	...	98
8th Oct. to 4th Nov.	304	265	19	1	3	16	...	97
5th Nov. to 2nd Dec.	155	143	8	2	...	2	...	72

In the first period of four weeks the number of animals declared diseased amounted to 1087, distributed in 157 communes, 153 of which were in North Holland, south of Utrecht. As the budget for 1871 only allowed 5000 florins for the expropriation of animals affected with pleuro-pneu-

monia, it was necessary to renounce *general occision.* A royal decree of January 6th *suspended* it to July 1st, in the provinces of Holland and Utrecht, except in the localities not yet infected, and in a portion of the province of Utrecht, and in the islands of South Holland, where sporadic cases were only observed. Occision was resumed on July 1st, in the province of South Holland, in the region of North Holland situated to the south of the Y, and the climes to the west of the railway, and in that portion of the province of Utrecht comprised between Yssel and Lek, to date from August 25th. Lastly, on October 1st slaughter was vigorously carried out in a *general manner*, and its effects were such that during the last period, from November 5th to December 2nd, there were only 155 cases of pleuro-pneumonia in seventy-two communes, or about one case in each commune in fifteen days.

On the return of the cattle to the pastures for the winter the number of cases increased; for while from the 3rd to the 9th December there were only twenty-nine new cases, in the following week there were sixty-five. This was expected. "The facility with which sequestration can be carried out during the period when cattle are housed, and the limited movement of stock during the winter, gave grounds for hoping that a few weeks would suffice, if not to become master of the disease, at least to reduce it to such a point that it could be easily combated afterwards. If this object could have been attained some weeks before the grazing season (to which a late spring should have contributed), so as to prevent any suspected animal being turned out, the slaughter would have ceased, and there would have been nothing more to do in the future than to watch that no diseased beasts were introduced from without. The results obtained in this region would then have found an echo in others, and the Netherlands would have given the example of a rational attempt to overcome pleuro-pneumonia." So says the official circular.

While warmly applauding the efforts made by our neighbours, the Netherlanders, says M. Déle, in the direction of extirpating this plague from their territory, and the happy effects of which would have been felt in Belgium, we nevertheless cannot avoid making some important observations on the subject of this circular. We regret to learn that the Netherlands has given an example to other countries in the institution of rational measures for the suppression of pleuro-pneumonia. We do not pretend to claim for Belgium the priority in the matter of *compulsory* slaughter, which has been practised consequent on a royal decree of December 1st, 1868, in every case of specified contagious disease. We only limit

ourselves to saying that the slaughter of pneumonic cattle, the sequestration of the suspected, and the disinfection of contaminated localities, have all been much anterior to the same measures which have been scarcely tried in the Netherlands. With regard to the complementary measures, the marking of the suspected and the publicity given to the existence of infectious centres by placards, they have an importance which had not been overlooked by the Belgian Government.

In speaking of inoculation, the circular adroitly evades a difficulty in not pronouncing categorically on its value. The government recommends it, but does not wish to render it *compulsory*, as it would have to be continued, and would entail considerable expense. If the Netherlands government were *convinced* of the efficacy of this measure, ought it to have confined itself to only recommending it? Might it not have *required* it to be carried into effect, if not in a general manner, at any rate in the case of animals *suspected*, because of their cohabitation with the diseased, and subordinate the granting of an indemnity to the preliminary inoculation of animals belonging to this category? This requirement would otherwise have had the advantage of abbreviating the very long period of three months fixed for sequestration.

We remark in a part of the circular, adds Déle, that the government shares the opinion of those who consider pleuro-pneumonia as *propagated exclusively by contagion;* and afterwards it says that in certain parts of the provinces of southern Holland and Utrecht there were only *sporadic* cases. This is a contradiction which we have vainly endeavoured to account for.

INSPECTION OF MEAT AND CATTLE AT VIENNA.

The Council of Health for Lower Austria, and which is ocated in Vienna, has decided at the meeting held in August, 1871:—

1. That the inspection of cattle and meat shall, for the future, only be made by veterinary surgeons, surgeons, or persons who, in addition to their having attended the theoretical course on the inspection of meat, which is delivered at the Veterinary Institute, had also assisted for six weeks at a practical course of inspection given in a slaughter-house:—

2. That in every slaughter-house a veterinary surgeon shall be charged with the inspection of cattle and meat, as well as the practical course of inspection:—

3. That all meat, before being admitted into Vienna, must

be inspected by a Commissary of Markets having the title of Diplomated Veterinary Surgeon, and that the introduction of meat into the said capital shall only take place at certain points at fixed hours.—*Aerzt-Intellig. Bl. und Wochenschrift f. Thierheilkunde.*

RUPTURE OF THE CIRCULAR PLANE OF MUSCULAR FIBRES OF THE INTESTINE; PROCIDENCE OF THE MUCOUS MEMBRANE.

To Doctor Wehenkel, Professor of Pathological Anatomy at the Brussels Veterinary School, I am indebted for a copy of the report of this remarkable case, which he brought before the Belgian Royal Academy of Medicine a short time ago. The lesion is one of an extraordinary character, and is perhaps without a precedent,—at least, M. Wehenkel could find no mention of such an accident. The morbid specimen, together with a history of the case, was forwarded by M. André to the professor, who, struck with its novelty, very properly undertook to give it publicity.

It appears that the farmer to whom the animal belonged kept his horses in good condition, but worked them severely at times; the district in which he resided being very hilly and the roads bad. The animal, a magnificent bay mare, three years old, was, up to October, 1870, in a satisfactory state. In April of that year it had attacks of colic which continued for about twelve days; the internal pains were not continuous, but were chiefly manifested after each ingestion of solid food. The injection of the visible mucous membranes and the strength and quickness of the pulse necessitated antiphlogistic treatment. The morbid symptoms having yielded to diet, repeated bleedings, and mucilaginous and saline purgations, food easy of digestion was given until the animal could be fed with green food. During the time it was submitted to this treatment it continued well and worked as usual.

In September dry food was substituted for green, and in October the attacks of colic recommenced. At first the intestinal pains were manifested at long intervals, but gradually they became more frequent, until three weeks before death ensued the pain was great and nearly continuous. Four or five days previous to the fatal termination cerebral symptoms, characterised by somnolescence alternating with fits of delirium, were added to those of colic. An antiphlogistic

and purgative treatment was again had recourse to, in order to combat these manifestations, but the mare died on February 16, 1871. An autopsy made forty-five hours after death revealed, in addition to the lesion of general and recent peritonitis, due to the escape of fæculent matter into the abdominal cavity, the very interesting alteration above-named. The thoracic organs were normal,—the cerebro-spinal organs were not examined. The small intestine, the greater portion of which is now preserved in the Museum of the Brussels Veterinary School, was remarkable for the very intense sanguineous impregnation it offered, and for the considerable volume and the bosselated appearance it presented in a part of its extent, and which gave it a certain resemblance to the colon. For about seven feet, this intestine, the normal diameter of which is from one to one and a-half inches, had acquired a mean circumference of ten inches. By a simple inspection, but still better, by an examination of the organ after it had been inflated, it could be seen that it did not possess the same thickness nor the same structure throughout. In the upper moiety, corresponding to the insertion of the mesentery, the longitudinal plane of muscular fibres was deficient, but in the opposite moiety all the tunics were complete. The transition from one side to the other was abrupt, and the attenuation of the upper wall very evident. At the extremities of the normal portion of the intestine the two borders of the longitudinal muscular plane joined at an acute angle.

The solution of continuity in this place should be attributed to over-distension, followed by rupture of the circular fibres; but the very marked sanguineous impregnation in all the tunics did not permit the nature of the alterations in the elements of the tunic, even when examined microscopically, to be made out.

The sacculations observed on the surface of the intestine did not extend to the whole circumference of the organ, but were limited to the part in which the longitudinal fibres were deficient; the partial strangulations to which this bosselated appearance was due were situated at somewhat regular intervals from one another, and corresponded to the places at which the vessels passed, in bifurcating, from the mesentery to the two surfaces of the intestine.

The passage of intestinal matters into the peritoneal cavity took place by an inconsiderable perforation in one of the bulges.

Wehenkel, taking the salient points in the history of the case into consideration, is of opinion that this particular lesion of the muscular plane of the intestine dates from the

period when the first signs of colic were exhibited by the horse, and that the lesion was more or less directly the cause of the subsequent intestinal pains which preceded the fatal termination by peritonitis. The perfect health the animal enjoyed up to two years of age did not allow the origin of the disease to be carried further back,—while the predisposition to the digestive disturbance manifested subsequently proves that, notwithstanding the disappearance of the inflammatory phenomena, which were very probably the cause of the primary colics, the intestine did completely recover its normal characters.

The morbid manifestations witnessed during the life of the patient were not sufficiently characteristic to enable any one to recognise the nature of all the alterations to which they were due; but on discovering the lesions after death it is easy to account for nearly all the pathological *processes*. The symptoms observed at the same time as the primary manifestations of colic, and the favorable influence exercised on the morbid disturbance by the antiphlogistic treatment, leads to the belief that the pathological process going on at that time was of an inflammatory nature. The reappearance of the intestinal pains in April, 1870, after each ingestion of solid food, may have been caused by an exaggerated irritability of the intestinal mucous membrane; but the disturbance in the peristaltic movements occasioned at first by the inflammatory infiltration, and, later, by this infiltration and the dissociation of the muscular elements of the intestine, or by the latter lesion only, have certainly not been without influence in these attacks of colic; for this disturbance was a favorable condition to the accumulation of alimentary matters in the diseased intestinal loop, and the distension of the latter. The professor thinks that the muscular lesion was produced during the evolution of these primary colics, as after that period the intestinal functions were only properly performed as long as the patient received food capable of easy digestion.

The transition from green to dry forage provoked new attacks of colic, because the contents of the intestine were then harder and drier, and the imperfect peristaltic contractions, which had previously been sufficient to displace these contents, were now insufficient to carry them along. Consequently, the ingested matters accumulated in the situation corresponding to the rupture of the muscular layer and distended the intestinal parietes, and this distension would account for the reappearance of colic and the increase in the solution of continuity in the muscular tunic. The

mucous membrane being only imperfectly supported in the part corresponding to the kind of button-hole produced in the longitudinal layer of fibres, had, in dissociating the two layers of the mesentery, made a hernia through that gap, which of course it tended to enlarge. The sacculations noticed on the intestine were due to the inequal resistance the hernial mucous membrane encountered in becoming distended; for the strangulations corresponding to the large intestinal branches of the mesenteric vessels bifurcated branches furnished by these vessels in passing from the mesentery to the intestines.

The increasing distension of the hernial membrane was evidently a favorable, perhaps a determining, condition for the perforation of the intestine which occasioned the fatal peritonitis.

"The appreciation of the facts relating to this case," says the professor, "not only permits us to determine the moment when, in all probability, the rupture was produced, but furnishes us, in addition, with indications by which we may recognise the cause that led to this solution of continuity. This cause we find in the exaggerated distension which probably ensued from the inflammatory infiltration of the muscular tunic; for under this influence, which exerted its action more particularly on the fibres of the circular plane, these fibres would rupture all the more readily in consequence of the impregnation diminishing their power of resistance. The solution of continuity took place at the part where this power of resistance was least—at the point where the two layers of the mesentery separate to receive the intestines between them, and where, consequently, the muscular and mucous tunics were not sustained by the serous covering."

VETERINARY MEDICAL ASSOCIATION.

AN ESSAY ON THE MANAGEMENT OF THE ELEPHANT, AND ITS TREATMENT IN ORDINARY DISEASES.

Read before the Veterinary Medical Association, London, November, 1872, by Lieutenant J. W. Ouchterlony, late Sub-Assistant Commissary General, Abyssinian Field Force, in charge of the Elephants.

The Abyssinian campaign of 1868 demonstrated the extraordinary value of the tame elephant as a beast of burden, as under the exceptionally difficult circumstances of that campaign this animal was found to be capable of undergoing great hardships and vicissitudes of climate, while only receiving ordinary care and attention.

I propose, first, to enter into a brief *résumé* of the structure of the animal; next, to speak of its management and treatment under disease; and lastly, to offer a few hints as to the points to be noted in selecting an elephant for working purposes.

In respect of the first section I must express my regret that I have not had an opportunity of referring to any published work to confirm my own observations, which I can only present to you, therefore, in rather a crude form.

The height of a full-grown male or female elephant is nine feet, measured at the shoulder; its weight from four and a half to five tons.

The height of an elephant is accurately ascertained by measuring twice round the fore foot. The hind feet are smaller in circumference than the fore feet.

The hide is corrugated and covered with many sharp and coarse hairs, the largest being found on the eyelashes and eyebrows and at the end of the tail.

The hide is extremely sensitive, and in most parts is very loosely attached, so much so that the animal has the power, when laden (no matter how firmly attached his saddle, gear, &c., may be), of rolling or moving his carcase underneath his skin, as it were, and thus dislodging his load, to the great risk and inconvenience of his driver. This capability, I believe, to be quite peculiar to the elephant. Along the spine aud over the broad of the back the hide is thickest, being three or four inches in substance. It is extremely vascular, bleeding freely when punctured, as is the case also even when bitten by the mosquito insect, or gnat.

I am not aware whether the elephant has any *Panniculus carnosus;* and it would appear not to be needed, as the trunk of the animal can reach almost all parts of the body from before back-

wards, and the long tail the remainder, thus dislodging any causes of irritation: besides which, the trunk, if it cannot reach far enough, has the power of blowing over the part whatever quantity it may have been able to suck up either of fluid, dust, or other material.

I may here observe also that the elephant has the power of withdrawing fluid from his stomach, by inserting his trunk into his throat, viz. the anterior part of the pharynx, and, as it were, sucking it up. Fluid, also, by a similar insertion of the trunk, is projected or blown into the stomach. By the same process the cow feeds its young, and teaches it to feed itself.

It might be supposed that, if the power of exerting the aërial force by the trunk were lost, the animal could no longer drink, but such is not the case, for in the instance of an elephant which came under my own observation, that had lost half its trunk by a round shot in action, the fluid was poured down its throat after the manner of administering a drench; and this the animal was quite capable of swallowing with facility.

The extreme sensitiveness of the skin naturally induces the animal (while in a wild state) to cover the upper part of the body with dust, grass, leaves, &c., and the inferior parts and extremities with water or mud, which soon makes an artificial covering, and thus protects it from heat and other sources of irritation.

From this we may learn how essential it is, in a domesticated state, always to have a covering over the animals, and to picket them, whenever practicable, under the shelter of trees. Hence, doubtless, is the origin of the custom of repeatedly anointing the top of the head and forehead with some vegetable oil, as this keeps the hide cool and moist, and alike prevents blisters from excessive heat of the sun, and cracking of the cuticle in extreme frost and cold. The tail and upper part of the ears equally require this attention.

Male elephants are of two classes, the Tusker and the Mukhna.

The Tusker is furnished with two long tusks, projecting forwards from the antero-lateral parts of the face, and taking origin from two large alveoli.

From their roots to the point of their projection from the anterior maxillary bones the tusks are hollow, the cavity being filled with the tooth pulp or a marrow-like substance, which affords nutriment for the growth of the tusk. As the tusks increase in bulk, so do the cavities in which they are developed expand and grow larger.

The Mukhna is a male with stunted or otherwise deformed tusks. He is sometimes entirely devoid of the cavities above referred to.

In this case the nutriment, which would otherwise be fur-

nished for the development of the tusks, seems to be diverted from its usual function, and to be used for the support of other bony parts of the skull, for this class of male has a more massive skull, and is apparently larger in bulk than others. I may also here state that the Mukhna is invariably more vicious than the Tusker.

MUSTHEE.—The male is furnished with a small aperture, situated in the centre of the temple, about an eighth of an inch long, similar to a wound made by a penknife. This is the must-hole or ched. From it, at certain seasons of the year, there exudes a transparent gelatinous fluid, not very dissimilar in appearance to the synovia of joints.

I am not acquainted with the precise location of the gland which secretes the fluid, but its activity in producing it is, in my opinion, directly or indirectly connected with the generative system of organs. I associate the secretion with the generative system because at the period of the appearance of the musthee the male is ready for the cow, and becomes violent and unmanageable. There are many diverse opinions about the must, its uses, causes, &c., but I am afraid time will not admit of my enlarging on this most interesting part of my subject.

Sometimes the male elephant, when the secretion is active, becomes almost mad. The brain seems to be affected, for he does not recognise his keeper or attendants, is very violent, off his feed —in fact, scarcely eats anything—drinks very little, is continuously moving from side to side, seldom lies down, and will pass several days and nights without sleep. In short, he evidences all the symptoms of severe cerebral disturbance, with eyes protruded and bloodshot.

The duration of these symptoms will vary greatly: they may pass off in a fortnight or be prolonged for six months, and during the whole period of their existence the animal cannot be worked, and consequently he becomes an expensive incumbrance.

For the first few days the discharge is slight, and the animal is off his feed and fractious, which is sufficient warning of what is coming on. He ought consequently to be at once extra and securely hobbled, and other necessary precautions taken to prevent his doing injury.

I had better introduce here the treatment I recommend in this particular state of morbid excitation. I would proceed, first of all, to bleed freely. Take away, say, about four or five quarts of blood, either from the forehead or back of the ear, and administer a good strong purgative of castor oil, mixed with powdered cardamoms and other spices. This would lower his system and reduce the plethoric state of his body.

It is simple treatment, and not liable to lead to any serious

functional derangement, besides which it may be repeated according to the requirements and symptoms of the case. The result to be hoped for would be, that the "must" period would not last so long and the animal would be less violent.

I do not advocate the system of administering strong sedatives and other similar medicines in these cases, as is the practice in some parts, for such treatment is liable to stop the flow of the secretion *altogether*, and cause lethargy, sinking, and collapse, and often the death of the animal.

Nature cannot be interfered with in her functions, beyond a certain extent, with any safety.

This visitation, if I may so term it, is not very regular. Often it does not happen for many consecutive seasons, especially with animals regularly worked, so that we may conclude that a plethoric state of the body is favorable to its development. It also never occurs until a male has arrived at the age of puberty, which would be from twenty-five to thirty years of age.

The tusks are evidently weapons of offence and defence: they are also used for procuring food, tearing bark off trees, digging clay from the banks (a peculiar yellow clay, which cattle are very fond of), prising down bamboos from out of their thorny clumps, (where, from the multiplicity of thorns, the trunk would be too tender to perform that office), also for detaching earth and roots from tufts of grass and shrubs whilst feeding. The animal is also often seen to hang the trunk across the tusks, as if to relieve itself of its weight.

In a domestic state the elephant uses the tusks for lifting heavy weights, turning over ponderous beams of wood in the dockyards, or dragging them, when needed, by ropes twisted round his tusks,

In many parts elephants drag very heavy loads by the aid of their molar teeth, which are four in number, two in each jaw. They are set in their alveolar cavities in a very peculiar manner, something similar to a horse's. It would therefore be impossible to extract them without fracturing the walls of the cavities.

These molars increase in size proportionately with the age of the animal, being renewed horizontally and from behind.

In extreme old age their corrugated surfaces are worn quite smooth, and level with the gums. Posteriorly, are found several detached plates of tooth; from which we may conclude that the molars are constructed of several layers or plates, placed vertically one against the other, and that they increase in size from before backwards.

In the foregoing remarks I have somewhat anticipated the second branch of my subject, viz.:

The management and treatment of the Elephant.

I observed at the outset that the Abyssinian campaign proved the elephant to be capable of withstanding great vicissitudes of climate; but cold is, nevertheless, one of the greatest difficulties to contend with in dealing with this animal, and hence it should be mitigated by every available means.

When an elephant once gets thoroughly cold (and this happens too often from an undue exposure to a low temperature), I have generally found it a matter of the greatest difficulty to bring back the normal circulation, and, if this be not accomplished, a fatal termination soon follows.

You may take it generally, nay, almost always as a bad sign, when you observe an elephant to be struggling in the midst of his painful shivering, and then to come down in a recumbent posture. He will always get up again if he has the power to do so, but as he becomes weaker and weaker, he remains prostrate and never rises again. I have found it very advantageous, when arriving on the march in a cold and bleak locality, to administer diffusible stimulants from time to time as occasion requires; sometimes once a day is sufficient.

Brandy, rum, or arrack, from a pint to a pint and a half, dried ginger, powdered cloves, red and black pepper, garlic, chillies, and such like, powdered and mixed up with treacle and flour to make a sort of cake. These medicines, pleasant to the taste, are easily given; others more nauseous require an adept, who is, however, generally to be found in the person of the keeper. It often happens, however, that a stranger will succeed better, simply because the animal suspects the keeper, and is off his guard with a stranger.

I have frequently given a nauseous-smelling ball mixed with food at the first attempt, after the keeper had been trying for half an hour or more.

Most medicines are given to the patient standing. In some cases, but very rarely, he requires to be cast and bound; but I have never advocated this plan, indeed I have always opposed it, as I generally found that patience and perseverance were only required to accomplish the task.

I can remember but one exception; and this was in a very extreme case. The animal was made to kneel down, and secured from rising by passing a chain under his forearms and over his neck and hobbling his hind and fore legs; an iron crowbar was then placed between his grinders, and the draught injected down his throat.

Having regard to the way in which the elephant suffers from

cold, you should in the first place, when on the march, select a dry sheltered spot, whenever practicable, for picketing your animal.

Next you would, if possible, take care that the ground has a slope. This is desirable for many reasons, but principally for the facility it affords to the animal, when lying down, of rising, by his feet being lower than his head. Left to himself, he would instinctively take this position; but the reverse sometimes happens, and, when his head is down hill, he cannot rise without assistance, or through a great deal of violent exertion, by which he becomes soon not only exhausted, but may seriously injure himself.

This is a matter very often overlooked by a careless keeper, and in the morning you find, perhaps, three or four of the elephants still on the ground, while the others are all up. You very soon discover the reason of this when you go up to them. You find them moving their trunks restlessly; their eyes are bloodshot, and flanks heaving. The breathing is hard, and distressfully panting, and the animal evidently prostrate from continuous struggling. No time is now to be lost.

If you have other animals, bring one, two, or even three of them round to one side with their drivers, to push at the prostrate elephant's side, and assist him as much as possible to regain his legs. Or if, as is sometimes the case, he is too exhausted to help himself, draw him over on his other side, and let him lie still, or be kept in that position for a short time. Raise his head and shoulders from off the ground, and administer a quart of rum or arrack in a little rice gruel (conjee), and repeat the dose if necessary. Worry him as little as possible, as this in itself is weakening and only does harm; and when you have decided that he is rested sufficiently and ready to get up, assist him gently at first, and if he responds and makes an attempt, give him all the assistance possible and literally shove him up on his legs.

I have dwelt on this part rather longer than may seem necessary, but I wish to make it particularly understood that this lying down is a sign of great prostration and danger.

The elephant, like the camel, is a very chicken-hearted animal in sickness, and, when once down, will, like the camel, scarcely exert himself to rise again; but, if once got up on his legs, he will remain so, until, if haply, he becomes convalescent.

If it were an abstract question of stubbornness, however, I must give the palm to the camel, for I have seen them lying about on the beach (where they had landed from the boats), at low water, sulky and vicious, refusing to rise whether under kind or harsh treatment, and there remain until the tide came up and literally drowned them by inches. Yet even in cases like this with camels, the intelligent elephant is capable of being made of great assistance.

You know that a camel rises to the upright position by extending his hind limbs first; well, the sagacious elephant places the bend of his trunk behind the rump of the camel, and pushes him forwards and upwards, until the fear of what may follow rouses the animal up.

As regards the elephant itself I may here observe, *en passant*, that he is the only one of the Herbivora who, in assuming a recumbent position, goes down on his elbows and stretches his forearm out in front of him, doubling his hind limb at the stifle and stretching it straight behind him, and, in rising, raises his fore extremity first and then the hinder.

From the peculiar anatomy or construction of the elephant it is very evident he is more adapted for weight-carrying than for draught; and although we see him harnessed in various ways to loads, it is plainly to be noticed that it is more by his own ponderous weight that he is able to move the load than by the exertion of the muscles of his limbs (as in the case of the horse). He cannot throw his weight forwards on the fore part of his feet, like other draught animals, because they are not formed by nature to resist such pressure.

We know that, by the agency of his large and powerful jaws, assisted by his trunk, he can draw very heavy loads, and also move ponderous substances by butting with his forehead; but the work he performs in this manner is very limited, and it soon tires him. I cannot enter into particulars now to demonstrate this fact, but will only add that where I have seen elephants used for dragging heavy beams of timber through a forest, five miles a day has been considered a good day's work, and this not continuous, but with a good deal of resting at different times. Even when aided by mechanical contrivances, such as wheels, rollers, &c., the elephant can only draw such weights, as guns, waggons, &c., with difficulty over level roads, and that with a necessity of resting at every fifty yards or so.

But let the weight to be transported be shifted to his back, and he will carry it with ease, making journies over decent roads, and in weather not too warm, of from fifteen to twenty miles a day, and keep this up for a continuous period of time. Indeed, experience has shown that a full-grown elephant, in good health, can carry a weight of fifteen to sixteen hundred pounds, day after day continuously, travelling fifteen or twenty miles a day. During the late campaign in Abyssinia, the loads actually carried by the elephants ranged from fourteen to eighteen hundred pounds, and even more.

The "mortar elephants" carried eighteen hundred and forty-four pounds, but *Chumpa*, the ammunition elephant, I believe, carried much nearer two thousand. And let it be noted that

these heavy loads remained sometimes for twenty hours on the elephants' backs before being removed.

I place these facts thus prominently before you for the purpose of drawing your attention to the tremendous weight that is thus necessarily thrown on the pad of the animal's foot, which I am now desirous to describe, as briefly as I can, with particulars as to its formation, trusting I may elicit some discussion or remarks on it that shall afford information to all.

The skeleton of the foot is composed of eighteen phalanges, corresponding to the bones in the human fingers, articulating superiorly with the metacarpals, of which there are five in each fore limb, and inferiorly set into a bed or cushion, composed of soft elastic matter, interspersed and fed by innumerable blood-vessels, and kept moist by sebaceous secretion.

This pad, as it proceeds to the surface downwards, becomes less vascular, and secretes another fluid peculiar to itself, its function apparently being to destroy foreign bodies which enter into the sole of the pad. This fluid is of an oily consistence, clear and light in colour.

In making a vertical section of a foot you will observe—

First, nearest the surface, that the pad has a hard horny covering of an elastic nature, interspersed by many fissures or cracks, over the whole exterior surface of the foot.

The second layer is of a less dense and spongy material, in which will often be found strong, fresh, green thorns or spikes, which the animal has picked up in walking, and which apparently give him no pain. Above this, again, is another layer of the same material, which gets gradually less dense as it proceeds upwards. Here the thorns are often found embedded in a horizontal position, having been deprived of their hard consistence. In the next layer upwards they lose their shape and become, to a certain extent, amalgamated with the pulpy consistence contained in the interior of the pad, giving to it a greyish appearance.

There is evidently a fluid provided by nature for the destruction of all these foreign bodies which penetrate the sole or pad, but how they are generally got rid of I cannot, as yet, determine, unless they are destroyed by this or other secretions, and afterwards rejected or cast off by some other process.

The elephant's foot is, perhaps, of all our other beasts of burden, the most delicate, sensitive, and easily injured. It is endowed with the power of touch to the highest degree, and, I need hardly add, it is, of all other members, the most important; for the animal might be deprived of the use of his trunk, eyesight, or ears, and yet be worked, but, should his feet go wrong, then his usefulness is at an end.

I might here mention, as an illustration of this extraordinary

power or sense of touch with which the elephant's foot is gifted, that it is entirely, I believe, through this that he is prevented from crossing dangerous or unsafe places. It is a common practice, when a bridge or stage is erected, to test its firmness and strength by putting an elephant to cross it. This the animal proceeds to do in his clever sagacious manner, trying the structure most cautiously under the continued pressure of his foot before advancing upon it; and, so confident is his driver that it will not attempt to cross if it be unsafe, that he never hesitates to mount the animal during the trial. Whether he be laden or not, nothing whatever, if he considers it unsafe, will tempt or force him over a crossing of the kind referred to.

The pad of the foot is often the seat of disease and injuries, resulting in suppuration and fistulous wounds, requiring considerable time and judicious treatment to cure; these rarely appear at once, but commonly within two or three days after the injury.

I would advise keeping the feet moist under these circumstances, and applying some astringent lotion, at the same time reducing the load and letting the animal only travel during the cool of the day.

I will now treat briefly of various diseases of the foot. Cracked-sole is of frequent occurrence, generally from excessive cold or sudden change in the temperature of the day or night. The most painful cracks are those situated about the margin of the toe-nails, and, if not attended to in time, they degenerate into very obstinate wounds, and, like cut-sole, entirely lay up the animal. This last is generally the result of suddenly stumbling on to the point of sharp rocks or stones, or broken flints, on the roads or in a river bed.

Bruised-sole is, perhaps, the most serious affliction to the foot we have to contend with, as it takes some time to develop itself, and by that time there is deep-seated injury. In most cases it is generally the consequence of slipping; that is, in going over large pieces of rock; loosely strewn together, the stone or rock, by rolling over or slipping from underneath, causes the foot to drop with some violence against the surface or prominence of another piece of rock; and this happening to a heavily laden animal often causes very serious injury. The after symptoms are great heat, swelling of the whole superior surface of the foot, and lameness. The animal is also continually soothing and rubbing it with the trunk or blowing water over it.

The usual native remedy, and, I believe, a very successful one, is first to foment well with hot water, and then plaster all over with a poultice of cowdung moistened with water and heated over the fire in earthenware pots. These poultices are continually applied until the inflammation is subdued. This is the first step;

the after treatment would be dependent on the stages to which the injury reached.

I have already occupied so much of your time that I will deal summarily with the third part of my subject, which is to give a few hints on the

Selection of animals for working purposes.

As elephants are, as a rule, all of one colour, we should naturally conclude it would be impossible to distinguish them, but yet it is a rare occurrence to find two elephants alike. There is a marked difference in the shape of the head particularly, the body, and other parts.

I am now referring to the Indian or Asiatic breed. Those found in Africa seem to be quite another race of animal. The heads of the latter are very differently shaped—more allied to the Abyssinian. These lack the intelligence of the Indian elephant, are not so tractable, and certainly are not so well shaped for domestic purposes. They are all legs and no barrel, and the head is out of proportion to the general bulk of the animal.

In purchasing an elephant you would, of course, consider for what use he was intended, as that might alter some of the points to be considered; but assuming the animal is required for the general purposes of carriage and draught, and for immediate work, it would be advisable to attend to these particulars.

Choose a medium-sized one, say about seven and a half to eight feet high, having a large broad back and barrel, a good open chest, and a rounded massive head. A cow is to be preferred to a bull, as being more tractable; but for real hard work I should choose a MUKHNA.

Then proceed to examine the animal's eyes, proboscis, ears at the roots, and extremities, the back along the spine, withers, and prominences of the shoulder and loins, the toes and soles of the feet (fore feet particularly). Next make the animal lie down, and examine along the floor of the abdomen and sternum, and, lastly, the tail.

I should be guided as to age principally by the features, the whole look of the head, the tail, and appearance of the tushes. To examine the teeth would be a great trouble, and scarcely satisfactory; in fact, it would be of very little assistance.

The eyes should be examined for the same reasons you would examine a horse's; then the trunk, because, if the animal was unwell or aged, the Schneiderian membrane would give indication of it, and the end of the trunk would have a mottled appearance, and the inside bend or grip be worn or cakey.

The ears should be examined at the superior parts externally

and at the junction with the head, for scabs or ulcerated sores; the extremities of the ears for any disease or remains of one, or any in the ear-holes.

Next the spine for saddle galls, warts, &c.; the withers for galls, &c., and shoulder and loins for the same.

The feet.—If the toes are much worn, it is a sign the elephant is a good worker, but you must see there is no injury, or disease, or deformity, that the cushion is healthy and soft, and not cracked or having traces of old injuries.

The belly is examined for remains of old scars or recent ones; the tail for disease and age, or traces of disease. If aged, this latter would have little or no hair on it and be hard and caked.

Age.—An elephant's age is to be judged of by his general appearance and height (according to the sex and breed), and the condition of the tusks. It is impossible almost to judge of age by the teeth unless the animal is dead.

About thirty-five to forty years old an elephant would begin to look lean about the head, hollow above the eyes and sides of the cheeks; have drawn-down wrinkles under the eyes, and the hair or bristles be worn down shorter over the face or body. It is indispensable to first of all ascertain what state of health the animal is in, and then to see him move over the ground, first with his keeper and then with a stranger, to ascertain if he be tractable and docile.

I will not further enlarge on the particulars necessary to be observed in determining the choice of one of these invaluable animals for purposes of real hard work. Indeed I too sensibly feel that I have already trespassed upon your patience and indulgence in an unwarrantable degree, and I will now abruptly close, with the offer of my grateful thanks for the kind attention which you have been pleased to give to the reading of my essay.

I am,

Mr. President and Gentlemen,

Your most obedient servant,

THE ESSAYIST.

THE SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

THE quarterly meeting was held in Cumming's Hotel, Lothian Road, Edinburgh, on Wednesday, 20th November, at 2 p.m.; Professor Williams, President, in the Chair. Present—Professor Walley; Messrs. Borthwick, Kirkliston; Aitken and Cumming, Edinburgh; Black, Howgate; Young, East Calder; and the Secretary.

Mr. Young, East Calder, was elected a member. The present office-bearers were re-elected.

Professor Walley brought forward his motion as to "Fees for Examinations as to Soundness," stating that in his opinion these were at present based on a wrong system, the same common fee, 10*s.* 6*d.*, being charged for examining a £10 horse as for one worth £1000. He considered that such charges should be made on the same basis as those of engineers, architects, and other professional men, who, when employed to examine and report, charge so much per cent. on the value of the machinery, property, or other articles examined.

After a slight discussion; "It was resolved that, though it would be almost impracticable and very unadvisable to form any fixed scale of charges for such examinations, and bind the members of this or any Society to abide by them, yet it was very much to be desired that an effort should be made to get increased remuneration for this responsible and at times not very pleasant duty; and that it might be well, through the pages of the *Veterinarian*, to call the attention of members of the profession to the subject, so that each individual veterinary surgeon might not always look upon 10*s.* 6*d.* as his common or maximum fee, but endeavour, at least, to make his charge bear some slight proportion to the value of the animal and the responsibility incurred in examining him."

As interesting cases, *Professor Walley* contributed the following:—

I.—*Acute Rheumatism followed by Articular Rheumatism and Valvular Disease of the Heart.*

Subject—A well-developed dark bay cart colt, three years old.

History.—The animal was attended, in the month of August, for an injury to the foot, being last seen by me on the 29th, apparently in perfect bodily health. On the 24th October, when visiting other patients at the farm, my attention was directed to the animal, the owner saying that he had swelled legs. On examination, I found him very much emaciated, and suffering from articular rheumatism of the hock and knee-joints, with con-

siderable œdema of the limbs; pulse tolerably strong and somewhat thrilling, but regular; mucous membranes of an unhealthy hue; slight cough; breathing regular; dry, harsh coat; appetite tolerable; urinary and intestinal secretions normal; no physical signs of cardiac or pulmonary complication. Prognosis unfavorable, as swellings had shown an erratic tendency.

I told his owner that in all probability his heart would ultimately become affected. On inquiry, the fact was elicited that the colt had been exposed, on the night of the 25th September, to a bitterly cold north-east storm, and was found the next morning very stiff, great difficulty belng experienced in getting him safely housed, and little treatment having been adopted, with the exception of a dose of physic and a few doses of diuretic medicine.

Treatment.—Good diet, warmth, plenty of friction to the joints, with the inunction of compound iodine liniment and the internal administration of iodine and iron, in combination with potass. carb. in his water; bowels to be kept regular with ol. lini and carrots.

He died on the 6th November, his appetite having failed, his breathing become laboured, and the cough extremely painful, a day or two prior to his death.

A hock and knee were removed, and with the heart forwarded to me. Examination revealed considerable thickening of the subcutaneous cellular tissue of the limbs, with the so-called atheromatous or fibrinous deposits on the internal surface of the synovial membrane of the true hock-joint and the carpo-metacarpal articulation—particularly the former. Extensive thickening of the tricuspid valves, in some places to the extent of half an inch, and the adhesion of large masses of partially organised fibrine to their free borders, and also thickening of the aortic semilunar valves, to the extent of one sixth of an inch, two of them being perforated by ulceration, and one having attached to its free border an irregular mass of partially organised fibrine. The mitral and pulmonary semilunar valves were perfectly healthy.

II.—*Fatty Degeneration of Bone associated with Mollities Ossium in a two-year-old stott.*

My attention was directed to this case by Mr. Rutherford, inspector of the abattoir, who stated his belief, from the general appearance of the carcase, that the animal had been the subject of quarter-ill, from which it had made a partial recovery. Section of the bodies of the vertebræ showed the cancellated structure of a reddish-brown colour, due to the presence of dark grumous bloody material mixed with broken-down cancelli, and easily divided with the knife.

The left shoulder-joint was considerably enlarged, the articular

cartilage of the extremity of the scapula and humerus removed by ulceration (which in several spots extended through the epyphysis of the humerus) and attrition. The whole of the bones of the fore extremities were of great specific gravity, had a dark appearance externally, and were easily cut with the knife. The weight of the humerus after maceration for some weeks (without the superior epiphysis and apophysis) was 19 oz., the fat contained in the medullary canal of a longitudinal half weighed 3 oz., the shell 6½ oz.

I am not aware of Mr. Rutherford's reason for arriving at the conclusion that the animal had suffered from an attack of quarter-ill. I am of opinion that the appearances presented had arisen either as the result of an exudative blood disease—the medullary canal and cancelli becoming filled with the exudation, which ultimately underwent fatty degeneration—or as the consequence of mal-nutrition of the blood.

Professor Walley exhibited morbid specimens from both subjects—viz., the diseased valves and a portion of the heart of the colt, with the "fibrinous deposit" found in the hock-joint, also a section of the humerus of the stott, in which the excessive accumulation of fat in the medullary canal, and the peculiar state of the bone itself, were very distinctly shown. He also showed the diseased humerus of a cow, which he stated had been forwarded to him by Mr. Dewar, V.S., Midmar, the case having been one of medullary abscess, which had become evacuated through several oval apertures in the external surface of the bone, leaving a considerable cavity, with dilatation of the compact structure, and numerous external exostotic deposits—a very beautiful specimen indeed of this comparatively rare disease.

Mr. Cumming gave details of a somewhat peculiar aphthous affection in a horse, in which the appearances presented on the mucous membrane of the mouth were almost exactly similar to those seen in the foot-and-mouth disease of cattle. No apparent cause could be assigned—no drenching with turpentine or ammonia or such like, nor any injury by halter or otherwise. A few days on sloppy diet, with mild astringent lotion to the raw surfaces, and the horse recovered.

Before the discussion of his essay on parturient apoplexy, read at last meeting, was proceeded with,

Professor Walley asked permission to say a few words relative to the subject, and read a communication from Mr. Aitken, V.S., of Dalkeith, which that gentleman had forwarded to him along with the head of a heifer which had succumbed to parturient apoplexy. "The animal was seven years old, and had suffered from an attack four years previously (having had three calves in the interval). She was attacked very suddenly on the

afternoon of Saturday, the 17th of August, the owner (owing to her high condition) having given her a dose of cathartic medicine the previous day. She died at 4.30 a.m. on Sunday, the attendant stating that 'she beat her head about fearfully before dying.' Mr. Aitken made a post-mortem examination on the morning of Monday, the 19th inst., and found all the abdominal and thoracic viscera healthy, with a dead calf in the uterus; her time was not up until the 20th. I made a careful examination of the head, but unfortunately allowed it to lay too long before doing so, the brain being partially decomposed. I however discovered that the internal coat of both carotids and their branches was sheathed with a partially organised fibrinous deposit; large quantities of serum also flowed from the foramen magnum, and there was satisfactory evidence of a large amount of congestion of the superficial vessels of the brain. From the decomposed state of the brain, I could not detect any structural evidence of the former attack of apoplexy. I have for some time thought that there might be some difference in the anatomical arrangement of the arteries of the brain in the cow and mare, to account for the fact that the former animal was subject to parturient apoplexy and the latter not, and have made several dissections to satisfy myself on this point, and am now engaged on an injected specimen which will tend to settle the matter either one way or the other. So far as I have gone, I can discover no vessel corresponding to the ramus anastomoticus of the horse, and believe that the basilar is formed by the vertebrals, in which case the force with which the blood is propelled into the cephalic arteries (especially at the time of parturition, and taking into consideration the shorter neck of the cow, with the more pendulous or level position of the head) will be greater than in the mare; thus tending to serious complication, and rendering the brain of the cow more susceptible of disturbing influences."

The discussion which followed was but slight; the members present, while expressing the pleasure with which they had listened to and perused Professor Walley's essay, and giving him every credit for the very able manner in which he had treated the subject, and admitting to a certain extent the plausibility of his views as to the nature of parturient apoplexy (which, according to Professor Williams, were somewhat analogous to those held at one time by the late Professor Barlow), were, nevertheless, apparently of opinion that the disease arose chiefly in consequence of the strict almost stationary confinement in which the animals are kept, and derangement of the digestive organs from that or any other cause at the time of parturition.

Professor Walley, in reply, stated that he of course admitted that confinement and derangement of the organs of digestion were

two of the principal causes of the disease, and considered that he had given sufficient prominence to them in his essay, but could not but think that there must be some peculiarity, anatomical or otherwise, to account for the fact of the cow being, of all the domestic animals, so liable to parturient apoplexy.

It was announced that the annual meeting of the Association will take place in February.

C. CUNNINGHAM, *Secretary.*

Slateford, 12*th Dec.*, 1872.

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

THIS Association held its fourth quarterly meeting within the Athole Arms Hotel, Dundas Street, Glasgow, on Wednesday, the 23rd October last, at 2 o'clock.

Present—Daniel M'Lean, Esq., President; Professors Fadie, Glasgow; M'Gill, Glasgow; Walley, Edinburgh; and Messrs. Robinson, Greenock; Sharp, Hamilton; Craufurd, Dundonald; Brownlie, Coatbridge; Kerr, Leith; Pottie, Renfrew; Boyle, Kilmarnock; Wm. Anderson, sen., Glasgow; and the Secretary.

The following gentlemen were elected members of the Association, after the minutes of the previous meeting had been read and confirmed:—Professor M'Gill, and Messrs. Craufurd and Boyle.

The President, in addressing the meeting, remarked that the attendance was not altogether to his mind, and hoped that, although the meeting was small, the discussion would be great and profitable.

Professor Walley then read the following communication, in order that the subject of his essay read at the last meeting m ht be again introduced and further discussed:—

"*Tuberculosis affecting the Glands at the superior posterior part of the Larynx and Pharynx of a Horse.*

"Specimen forwarded to me by Mr. Kettle, of Market Drayton, with following history:—

"The animal was first observed to be ill in February last, having a slight cough. In May he was treated by a veterinary surgeon for a simple cold. In June Mr. Kettle's opinion was sought, when he considered there was an abscess forming, the symptoms being as follows: breathing laboured and quick, and accompanied by a

snoring sound; abundant flow of saliva from the mouth, with the return of food through the nostrils. The treatment consisted in the allowance of a liberal diet, the administration of iodine with tonics, and the free application (aided by friction) of the Ungt. Hydr. Iodid. to the throat. Under this treatment, which was continued for six weeks, he improved, but as soon as it was discontinued he gradually relapsed into his former state, the whole of the symptoms becoming much aggravated. The nose was protruded as in strangles, and the larynx much depressed, with rapidly-increasing emaciation. As further treatment was deemed hopeless, nothing more was done, and at the end of six weeks his death was determined on. By this time the tumour had increased considerably in size, and, either from its greater solidity or dimensions, was more perceptible to the touch. The appearance of the animal was more haggard and distressing. The dysphagia was great, 'swallowing having evidently become a matter of instinctive arrangement with the poor brute, as he would take a mouthful of hay and masticate it well, then hesitate as to its disposal. Having made up his mind that it was necessary for his nutrition, the head was thrown backwards and upwards, when a great attempt was made to swallow the pellet, but frequently this attempt failed, and it was cast from the mouth with a violent cough.' 'Many of the symptoms,' says Mr. Kettle, 'simulated those of strangles, except in the depression of the larynx below the angle of the inferior maxillary bone, and the non-diffusible character of the swelling.'

"The horse had been perfectly healthy up to the month of February, was eleven years old, and on post-mortem examination no other lesions were discovered than the tumour under consideration.

"On examining the tumour *in situ*, I found that it was about a pound in weight, lobulated on its anterior extremity, irregularly flattened in outline, dense in structure, perfectly isolated, except anteriorly, where it was intimately adherent to the mucous membrane of the fauces; and, when deprived of its investing cellular tissue, of a yellow colour. On cutting into it, in several places the knife came in contact with calcareous deposits, and everywhere grated more or less. Microscopically, it presented all the characteristics of tubercle in its various stages. The tumour was situated immediately between the superior cornua of the os hyoides and the guttural pouches, having the longus colli and rectus capitus anticus major muscles above it, the fauces anteriorly, and the larynx and pharynx below it; the carotid artery, pneumogastric, glosso-pharyngeal and sympathetic nerves being intimately adherent on its left side.

"*Query*—Would tracheotomy have enabled the animal to

swallow, by doing away with the fear of suffocation? Direct extirpation, could it have been carried out, would have been the most certain method of cure, but the possibility of doing it in this case is problematical.

"Could this tumour have been the sequel of strangles, an attack of which the horse suffered from four years ago?"

Mr. Alexander Robinson spoke at length on tubercle, and asked if it is in its most simple form deleterious to meat used for human food. He is of opinion that simple miliary deposit cannot be injurious to the flesh, but in phthisis pulmonalis he would regard the flesh as unfit for human food. He also brought before the meeting a very interesting case of tubercle affecting the tongue.

Professor Fadie said it is a very curious thing that animals thrive while labouring under tuberculosis; in most animals the mucous membranes become affected, whereas in cattle the deposit principally attacks the serous membranes, such as the pleura and peritoneum, &c. In a number of pigs which Professor Gamgee and he had examined, there were deposits on the spleen.

Mr. Pottie said, when tumours are produced, this brings on phthisis pulmonalis and other diseases of the same nature. This diathesis, in my opinion, is not so prevalent in the bovine species.

Professor Walley believes tuberculosis to be similar to consumption, and that the diathesis exists in children, and that plethoric men and women have died of it while apparently in good health.

The meeting returned thanks to Professor Walley for his very interesting paper.

JAMES ANDERSON,
Hon. Sec.

THE MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE twenty-third meeting of the Midland Counties Veterinary Medical Association was held at the Hen and Chickens Hotel, Birmingham, on Tuesday, Nov. 26th; the President, F. Blakeway, Esq., Stourbridge, in the chair. There were also present—S. Gamgee, Esq., Birmingham; G. Fleming, Esq., Chatham; Greaves, Manchester; A. B. Proctor, Coventry; Carter, Whitchurch; Litt, Shrewsbury; Perrens, Worcester; Price and Stanly, Birmingham; R. Pritchard, H. D. Pritchard, and Cart-

wright, Wolverhampton; Bayly, Leicester; Markham, Rugeley; Wiggin, Market Harborough; the Secretary, &c.

Letters and telegrams of apology for non-attendance were received from several members. A letter was also received from Mr. Hill, of Wolverhampton, expressing regret at being unable, through ill health, to read his paper on "Actual Cautery and its Effects," but promising to do so at some future time.

The minutes of last meeting were read and confirmed.

S. Gamgee, Esq., read an excellent paper on the treatment of wounds.

An interesting and animated discussion followed, in which the application of styptic colloid was strongly advocated.

On the motion of *F. Blakeway*, seconded by *G. Fleming*, a vote of thanks was given to Mr. Gamgee for his valuable paper.

Mr. Blakeway proposed, *Mr. Litt* seconded, that Mr. Gamgee be elected an honorary member of the Association. The motion was carried unanimously.

The next meeting is arranged to take place at the Midland Hotel, Derby, in March.

A vote of thanks to the Chairman brought the meeting to a close.

W. Palfrey,
Secretary.

Veterinary Jurisprudence.

BARNARD CASTLE POLICE COURT.

(Before W. J. S. Morritt (Chairman), A. H. Cochrane, and W. T. Hustler, Esqrs.)

Heavy Penalties under the Contagious Diseases (Animals) Act.

Lawrence Boyle, cattle dealer, Ireland, and *John Young*, cooper, Barnard Castle, were charged, on the information of Superintendent Marley, with having in their possession, on the 17th November, three beasts suffering from foot-and-mouth disease, and not reporting the same to the police. Defendants, along with *William Young*, labourer, Barnard Castle, were further charged with removing along a highway, on the 17th, three head of cattle which were affected by the disease.

Mr. Marley stated that on Saturday, the 16th November, he observed in a field near Barnard Castle, in the occupation of John

Young, three cattle which were lame, and appeared to be suffering from foot-and-mouth disease. He went to the field again on the 18th to examine them, and found that they had been removed. From information he received he went to a field in the occupation of Archibald McKenzie, of Arlaw Banks, about three miles from Barnard Castle, where he found the same three animals which he had seen on the 17th in the defendant John Young's field. They were then undoubtedly suffering from foot-and-mouth disease. He then went and spoke to Young, but Young stated that the cattle were not his, but belonged to Boyle, who had taken the eatage of the field.

Archibald McKenzie stated that on Sunday morning, the 17th November, a farmer named Thomas Robinson, residing at Humbleton, called upon him and asked him to allow three cattle to be put into his field, which he expected from Barnard Castle, he (Robinson) being then on his way to a funeral, and he would send for the cattle the next day. Witness complied with the request, and a short time after, about 9 o'clock, William Young arrived with the cattle, and drove them into witness's yard, who then observed that they were lame, and were affected by the disease. He removed them from his yard, and put them into a field. Since then five of his own cattle had taken the disease. Young told witness that he had been engaged by defendant (Boyle) to bring the cattle, and that he was to get them there as soon as he could, so that the police might not see them. Witness gave information to Superintendent Marley.

Thomas Robinson stated that he saw the cattle at Barnard Castle on the 13th November, but he did not observe then that they were suffering. He bought them on Saturday, the 16th, but he did not then see them.—Cross-examined by the Chairman: I did not see them from the Wednesday until the Monday following, when I went to bring them away from Mr. McKenzie's. I found then that they were suffering from the disease, and I did not remove them.

Mr. Johnson, assistant-veterinary surgeon to Mr. Mulvey, Barnard Castle, stated that he was applied to by Mr. Marley to examine three cattle in a field occupied by Mr. McKenzie. He did so, and found that they all had the foot-and-mouth disease, and that one or more of them presented every feature of a very bad attack. He was of opinion that they had been suffering from foot-and-mouth disease at least ten days.

Boyle and John Young, in the first charge, were ordered to pay costs. In the second charge, for illegally removing the cattle, Boyle was fined in the maximum penalty of £20 and costs; William Young was also fined £20 and costs, or in default two months' imprisonment. The charge against John Young was dismissed.

SMITHFIELD CLUB CATTLE SHOW, 1872.

Live Weights of Sheep and Cattte.

CATTLE.

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

No.	Weight.			No.	Weight.			No.	Weight.		
	cwt.	qrs.	lbs.		cwt.	qrs.	lbs.		cwt.	qrs.	lbs.
142	14	2	16	162	17	0	13	182	19	2	5
143	16	2	23	163				183			
144	21	3	16	164	15	3	10	184	23	1	0
145	18	2	26	165	15	2	15	185	13	0	8
146	15	3	4	166	16	2	3	186	22	1	14
147	17	0	24	167	20	1	24	187	19	3	18
148	13	0	7	168	18	1	12	188	17	0	20
149	11	3	25	169	15	0	21	189	15	1	17
150	17	3	15	170	13	3	26	190	16	1	1
151	15	3	27	171	16	3	14	191	18	0	18
152	18	3	15	172	17	1	22	192	20	0	24
153	15	3	7	173	17	1	5	193	22	0	22
154	21	6	15	174	16	0	0	194	22	0	25
155	19	1	15	175	16	1	1	195	16	1	2
156	21	1	20	176	19	3	21	196	13	0	15
157				177	23	1	20	197	19	2	6
158	19	0	16	178	21	0	26	198	16	1	14
159	13	0	3	179	12	1	12	199	7	2	22
160	15	3	12	180	27	0	0				
161	18	3	0	181	22	3	6				

SHEEP.

202	6	1	23	234	2	2	16	266	6	3	0
203	6	1	7	235	2	1	24	267	6	2	13
204	6	0	10	236	5	2	26	268	5	3	1
205	5	1	13	237	5	2	20	269	6	3	24
206	6	1	22	238	5	3	7	270	5	2	18
207	6	3	11	239	5	3	8	271	5	1	2
208	6	0	16	240	5	2	17	272	5	2	13
209	5	3	14	241	6	1	21	273	5	1	20
210	7	3	2	242	5	2	5	274	7	2	10
211	7	1	9	243	6	0	9	275	7	1	25
212				244	5	2	16	276	6	2	27
213	8	3	1	245	5	1	11	277	7	1	8
214	8	1	14	246	5	0	21	278	6	1	18
215	8	0	13	247	5	1	6	279	6	2	20
216	7	3	24	248	6	0	6	280	6	3	12
217	7	1	24	249	6	2	17	281	7	3	19
218	7	1	9	250	5	2	4	282	6	3	0
219	8	2	16	251	5	0	21	283	7	1	6
220	6	2	3	252	5	0	0	284	6	3	9
221	6	2	15	253	5	0	21	285	6	2	8
222	6	3	14	254	5	0	3	286	6	2	8
223	6	1	10	255	5	0	17	287	1	2	22
224	6	2	14	256	5	0	8	288	1	3	3
225	7	3	10	257	5	0	24	289	1	3	1
226	5	3	14	258	5	0	19	290	1	3	24
227	7	1	19	259	5	0	5	291	1	3	5
228	2	0	11	260	4	3	25	292	1	3	1
229	2	0	9	261	5	0	0	293	2	0	12
230	1	3	0	262	4	2	27	294	1	3	16
231	2	1	7	263	5	0	3	295	1	2	23
232				264	5	0	17	296	1	2	5
233	2	1	7	265	6	3	19	297	2	0	15

No.	Weight.			No.	Weight.			No.	Weight.		
	cwt.	qrs.	lbs.		cwt.	qrs.	lbs.		cwt.	qrs.	lbs.
298				322	7	3	23	346	7	2	20
299	2	1	1	323	7	2	6	347	2	0	20
300	2	1	2	324	5	3	16	348	2	1	5
301	2	2	10	325	6	1	19	349	2	1	20
302	2	0	10	326	1	1	19	350	2	0	10
303	2	3	7	327	4	1	5	351			
304	6	1	3	328	4	0	24	352	2	0	8
305	6	0	18	329	6	0	9	353	2	1	11
306	6	1	12	330	4	1	25	354	2	1	5
307	5	3	14	331	5	1	0	355	2	1	16
308	6	0	21	332	5	0	10	356	2	2	0
309	7	2	14	333	5	3	5	357	2	1	0
310	7	0	16	334	4	3	18	358	2	2	17
311	7	0	22	335	4	0	25	359	3	0	0
312	6	1	16	336	7	0	19	360	2	1	4
313	6	3	12	337	5	3	24	361	2	1	26
314	6	2	25	338	7	0	2	362	2	0	12
315	7	0	5	339	6	3	0	363	2	0	18
316	7	3	8	340	8	1	0	364	1	1	22
317	7	3	23	341	7	2	11	365		3	11
318	7	1	20	342	6	2	16	366	1	3	16
319	6	3	10	343	7	1	14	367	1	2	15
320	7	0	1	344	8	0	19				
321	8	3	19	345	7	0	2				

AWARDS.

Silver Cups.

Silver Cup, value £40, to the exhibitor, for the best steer or ox in any of the classes, to No. 154, James Bruce, of Burnside, Fochabers, Elgin.

Silver Cup, value £40, to the exhibitor, for the best heifer or cow in any of the classes, to No. 26, Trevor Lee Senior, of Broughton House, Aylesbury, Bucks.

Silver Cup, value £20, to the exhibitor, for the best pen of Leicesters, Cotswolds, Lincolns, Kentish, or other long-woolled breed, in any of the classes, to No. 214, John Byron, of Kirby Green, Sleaford, Lincolnshire.

Silver Cup, value £20, to the exhibitor, for the best pen of one-year-old Southdowns, Hampshire, or Wiltshire Downs, to No. 275, Alfred Morrison, of Fonthill House, Tisbury, Wilts.

Silver Cup, value £20, to the exhibitor, for the best pen of one-year-old Shropshire, Oxfordshire, cross-bred, or any other breed of sheep (not specified in Prize List) in any of the classes, to No. 317, The Duke of Marlborough, of Blenheim Palace, Woodstock.

Silver Cup, value £20, to the exhibitor, for the best pen of pigs, in any of the classes, to No. 399, A. Benjafield, of The Poplars, Stalbridge, Blandford, Dorsetshire.

Champion Plate.

A Piece of Plate, value £100, to the exhibitor of the best beast in the Show (extra stock included), to No. 154, James Bruce, of Burnside, Fochabers, Elgin.

A Piece of Plate, value £50, to the exhibitor of the best pen of sheep in the Show, to No. 317, The Duke of Marlborough, of Blenheim Palace, Woodstock.

NEW MEMBERS OF THE PROFESSION.

At a Meeting of the Court of Examiners of the Royal College of Veterinary Surgeons, held on December 19th and 20th, the following students from the Royal Veterinary College were admitted members of the body corporate.

December 19th.

Mr. Robert Brooks Beman .	Kingham, Chipping Norton, Oxfordshire.
— John Williams . .	Llanbaddock, Usk, Monmouthshire.
— Edward Leech Wiltshire .	Hanley Castle, Worcestershire.
— George William Kerry .	Newmarket.
— Robert Duncan Graham .	Newcastle-upon-Tyne.

December 20th.

Mr. James Dobbyn Adams . .	Cork.
— Robert Alfred Turnbull . .	London.
— Chalenger Alcock . . .	Ulceby, Lincolnshire.
— William Henry Bond . .	Buckingham.
— Joseph Moses Gillingham .	Croydon.

A special Meeting of the Court of Examiners was also held on the 20th of December, in accordance with the resolution of the Council, for the admission of candidates holding the Highland and Agricultural Society's certificate, when Mr. Nicholas Vasey, of Galena, Illinois, U.S., underwent the necessary examination for the diploma, and was admitted a member of the body corporate.

EDINBURGH VETERINARY COLLEGE—LIST OF STUDENTS.

The following gentlemen have entered on their studies at the Edinburgh Veterinary College, having passed the matriculation examination conducted by the Rector of the Royal High School.

Mr. D. C. Rallin . .	Dublin.
— J. A. Bole . .	Castlebar.
— C. Galdema . .	Mauritius.
— H. Morris . .	Wick
— J. R. Williams . .	Abergele, North Wales.
— J. M. Stewart . .	Edinburgh.
— J. B. McInnes . .	South Carolina, U.S. America

Mr. A. A. Simpson .	Pontefract.
— W. Gladstone .	Yetholm.
— L. T. Barker .	Skelton, Yorkshire
— S. L. Ragg .	Sheffield.
— W. Wigelsworth .	Boston.
— A. McArthur .	Roseneath, Greenock.
— P. Rothwell .	Preston.
— W. R. Mathews .	Messingham.
— E. Faulkuer .	Manchester.
— T. Anderson .	Carnonstie, Forfar.
— R. Knight .	Dunfermline.
— A. B. Wren .	Manchester.
— E. A. E. Ashe .	Cork.
— C. Gauntray .	Mauritius.
— G. Fenton .	Doncaster.
— W. J. O'Sullivan .	Cork.
— J. Corbett .	Hexham.
— J. Kenyon .	Manchester.
— R. Ashworth .	Rochdale.
— H. Hockenhull .	Manchester.
— R. T. Bell .	Eccleshall, Stafford
— R. Gibbon .	Haswell.
— J. Johnston .	Roslin, Edinburgh.
— J. Aitken .	Edinburgh.
— J. R. A. Dewar .	Midmar, Aberdeen.
— T. Calder .	Kelso.
— H. Hutchinson .	Leeds.
— H. O'Conner .	Limerick.
— J. G. Auesty .	Clifton, Bristol.
— J. Murray .	Tralee, Ireland.
— D. Lyons .	Limerick.
— J. Spreull. .	Milngavie, Glasgow.
— M. J. Wacey .	Mountrath, Ireland.
— T. Flintoff .	Deighton, Yorkshire.
— W. Anderson .	Keith.

Also the following have been admitted on educational examination certificates—

Mr. D. Coghill .	Caithness.
— A. B. Kydd .	Montrose.
— A. C. Kerr .	Australia.
— R. Henderson .	Berwick.
— A. T. L. McLean .	Ayr, Ayrshire.
— J. M. French .	Newton Stewart.
— G. Carr .	Berwick-on-Tweed.
— G. Heddle .	Edinburgh.

OBITUARY.

We have to record the death of Mr. Augustus Crook, M.R.C.V.S., Bungay, Suffolk. His diploma bears date May 21st, 1845.

To this we regret to add the death of Mr. John Keast Lord, M.R.C.V.S., the Manager of the Brighton Aquarium. Mr. Lord, who was a native of Tavistock, entered the College as a pupil in 1842, and obtained his diploma in May, 1844. Subsequently he commenced practice in Tavistock, where, however, he only continued a short time. "He afterwards joined the army, and served in the Crimean war, and took part in the battle of Balaclava.

"Mr. Lord seems to have always entertained an intense love for the study of natural history; and at the close of the Russian campaign he quitted the army for a field in every way more congenial to his tastes. He now devoted himself to the study of nature in good earnest, and spent some time in Vancouver Island. The results of his labours were afterwards given to the world in 'The Naturalist in Vancouver Island;' and he subsequently published, among other works, 'The Naturalist on the Amazons.'

"Mr. Lord afterwards served on the North American Boundary Commission, and later on was engaged by the Viceroy of Egypt to report upon certain characteristics of that country. It was from Egypt, we believe, that he was called by the directors of the Aquarium to take the appointment he can now, unhappily, no longer fill, and for which he was so peculiarly fitted."

Mr. Lord had only attained the fifty-fifth year of his age. He was unmarried, and leaves an only brother, Mr. W. Barry Lord, who is also a member of the profession, and now on *half pay* as an army veterinary surgeon.

Death of Dr. Cabal.

The Paris correspondent of the *Medical Times* says that Dr. Cabal, recently appointed to the Veterinary School at Alfort, has come by his death in a most melancholy manner. His house, which is situated on the banks of the Seine, was inundated a few days ago, and he was obliged, in consequence, to leave it and take shelter elsewhere. Being desirous, however, to save some important papers he had left behind (among which was one on animal magnetism, which he intended to read before the next meeting of the Academy of Sciences), he returned in a boat to fetch them, taking with him his son, a lad of 17, and a boatman. The current was so strong that they were unable to pull against it, and when about the middle of the river the boat upset. The doctor disappeared almost immediately, and the son, who was a good swimmer, struggled for some time and then went down. The boatman, however, finding that any effort on his part to save his drowning companions would be of no avail, held on to the boat, which was soon driven to the shore. This sad event has caused a great sensation at Alfort, and his death is looked upon as a great loss to the Veterinary School, and to the scientific world at large.

THE

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Communications and Cases.

REMARKS ON YEW POISONING.

By Professor James Buckman, F.G.S., F.L.S.

Perhaps you will kindly allow me to express my best thanks to Mr. J. Gerrard for his interesting communication on the subject of poisoning by yews. It was just the thing I asked for in the paper to which he refers,* but though cases of the baneful effects of yew upon cattle are so frequent, it is curious that so few of them are scientifically reported upon. In the cases before us Mr. Gerrard has detailed the symptoms and *post-mortem* appearances so much more clearly than I as a non-professional man could be expected to do; but at the same time, I must confess that, although I feel sure that the animals died mainly from eating yew, the evidence is not sufficient to convince me that the plant acted, as we are led to suppose, as a narcotic poison; and I ground this opinion upon the fact that in the two or three cases which have come before me, the yew was not digested. It is certain, too, that in these cases the plant was dry, and it seems to me that the fatal irritation to the stomach and bowels was accelerated by this very cause, thus confirming the popular view of the matter.

A case comes to my recollection in which I lost six calves with symptoms so like those described in the instances of so-called yew poisoning, that I cannot forbear directing attention to them. The animals were some good short-horns, about nine months old. Soon after I bought them they were

* 'Principles of Botany,' March, 1872.

taken with the foot-and-mouth disease, and were kept in a straw-yard, and given linseed gruel and roots until they recovered. After this they were removed to a sheltered orchard, and in order to secure them a warm sleeping ground some "cavings" from barley thrashing were spread beneath the trees. In a few hours they were all seen to be ill, and upon trying to get them to the farm buildings one fell down dead about 200 yards, and another 400 yards from the farm buildings, and do all we could with castor oil and stimulants they all succumbed. The *post-mortem* appearances in these cases were much the same as those described by Mr. Gerrard, only that ingesta of straw, "cavings," and grass occupied the place of yew.

As regards the supposed poisoning effects of yew berries upon children I am equally sceptical, as I have seen children eat them in quantity with impunity, where, however, from any cause the berries remain in the stomach, they seem to me to injure by setting up mechanical irritation. They never seem to digest, and it is with them, at least, so I think, as with the leaves, especially the dried ones of yew; *id est*, they can hardly be said to act after the manner of a poison when they have never been digested.

Of course, I give these ideas without any professional authority, but I still think that the matter requires further investigation.

P.S.—I have just lost a fine ewe two days after lambing, which dropped down suddenly with symptoms much like those of poisoning. A *post-mortem* examination revealed the fact that the stomach was full of straw and acorns, the refuse from barley threshing, to which she had somehow got access and partaken of in quantity with a vitiated appetite. This gorging of the stomach with indigestible matter is often the cause of death in ruminants. In country parlance it is recognised by the term of "a stoppage," and the suddenness of the end and its accompanying stupor constantly give rise to a suspicion of poisoning.

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.G.S., F.L.S., &c. &c.

(*Continued from p.* 14.)

The *Bryonia dioica*, our native example of the cucumber tribes, differs greatly from the cucumbers and melons of the

garden, inasmuch as the latter are all tender annuals, while the bryony springs up year after year from a continually enlarging root-stock. Syme says of it—"The name of this genus of plant appears to have reference to the vigorous and active growth of its annual stems, which proceed from the perennial root, and adhere to other shrubs with their tendrils. The Greek word βρυω (*bryo*), I sprout up, or germinate, is the origin of the generic name of the plant."

This climbing vine-like plant is peculiarly handsome in our hedgerows, but woe to the hedge in which it takes root, as its rampant growth soon overpowers the hedgerow plants; and it is most difficult to eradicate, as its root-stock penetrates so deeply, and, if got at, a portion left behind will re-establish the enemy in a short time. Probably the best way of at least, keeping it under is to destroy the tender shoots as soon as they appear, an operation which would want to be constantly repeated.

It is curious to reflect that formerly the plant was much rarer than it is getting to be at present, the reason being that its root was eagerly sought after for use in rustic medicine. It was erroneously called mandrake root, which title properly belongs to a species of *Solanaceæ;* but as the mandrake has obtained a celebrated reputation, this mandragora had a root so forked as to bear some distant resemblance to the body and limbs of a man, which afforded a signature to recommend its use in many human maladies. Our bryony has a large thick root sometimes forked, or if not it was cut into a rude representation of the "human form divine," and so sold by the herbalists for a considerable sum of money.

Gerarde says of it—"The queen's chief surgeon, Mr. William Godoeons, a very curious and learned gentleman, showed me a root hereof that waied half an hundred weight, and of the bignes of a child a year old." The following are quoted as some of its properties and virtues from "English Botany," probably from the pen of Dr. Lankester:—"In its root is found a somewhat milky juice, very nauseous and bitter to the taste. It is of a violently purgative and cathartic nature, and has been used in medicine, but is now seldom employed by regular practitioners. It was formerly given in dropsy and other complaints, and is of so acrid a character, that if applied to the skin it produces redness and even blisters. Like other plants of like nature, it has found favour as a cataplasm in the same way as we now apply mustard poultices, and is extolled as a remedy for rheumatism, sciatica, &c. It seems to have been a favourite medicine with the old herbalists, and was prescribed by Galen, Dioscorides,

and afterwards by Gerarde. In those days men's constitutions must have been tougher than in the present time, for we think that few could stand such doses as were then common. Galen, moreover, writes—"that this root is profitable for tanners to thicken their leather hides with;" and, according to Gerarde, "the root of bryony stamped with some sulphur or brimstone, and made up into a masse or lump wrapped in a linnen clout taketh away the mophen freckles and spots on the face, if it be rubbed with the same dipped first in vinegar." Withering says—"A decoction made by boiling one pound of the fresh root in water is the best purge for horned Cattle." The acrid and cathartic properties of the root are shared in some measure by all parts of the plant; the berries are emetic and even poisonous; the young shoots in the spring, however, are inert, and are sometimes boiled and eaten as greens without mischief. The active principle of the plant is distinguished by chemists as an alkaloid called *bryonia*. The French call the root *Navet du Diable*."

We cannot resist adding, even to this interesting account of bryony, the following remarks by Dr. M. J. Masters:

"The plant has a fetid odour, and possesses acrid, emetic, and purgative properties, and, from its elegant appearance, especially in autumn, when it adorns the hedges with its brilliantly coloured fruit, accidents are likely to occur to children and others incautiously tasting the fruit. The root is used as an application to bruises, and occasionally as a purgative; but it is unsafe from its uncertain and sometimes violent action, whence the French call it Devil's turnip."

The writer of this notice was once called on to ascertain what vegetable substance had been administered to a farmer, his family, and his cattle, by a wise man, who purported to be able to remove the spell of witchcraft under which he said they were all suffering. The man succeeded in obtaining considerable sums of money at different times from the credulous farmer, whose suspicions were at length awakened by the dangerous illness of some of the members of his family. It was not distinctly proved that the man had administered bryony; but the symptoms complained of corresponded with those which would be produced by that root, a quantity of which was found in the man's house, also a powder, which was found to consist of the leaves of the hart's tongue (*scolopendrium vulgare*).

When the mandrake was more esteemed than it is now, this root was frequently sold for it, as it occasionally branches in a similar manner, and, indeed, was forced to do

so by being grown in moulds. Even now it is occasionally to be met with in herbalists' shops as mandrake.

The white bryony and the black bryony roots, though from plants of different natural orders, have, in common, properties of a most active and poisonous nature, and hence the "wise men" who quack the foolish; and the cunning carter, who is everlastingly quacking *his* horses, make use of them, and, doubtless, by their means commit much mischief.

We have known a carter wise in "savage" (savine ?) and knowing in "brier" (bryony ?), who was for ever quacking his horses—"curing," he called it—when in all probability they would never have been ailing, except from the poisons that were continually being given them. When, therefore, the farm horses appear to be irritable, and present constant ailing symptoms, the farmer will generally do well to exchange his carter for one less knowing in dangerous drugs, our experience leading us to suppose that much loss is occasioned thereby.

After this dissertation on our native wild curcubits we now proceed to a short notice of the cultivated plants of the order.

Cucumbers, melons, vegetable marrows, pumpkins, and gourds are well known as plants of use or ornament. As regards the cucumber, the many sorts in gardens and the great care and experience brought to bear upon their cultivation, and the constant production of new varieties, attest to the popularity of this fruit as a vegetable. So changed do they seem to have been from any wild original, that it is difficult to make out their origin; but it may be noted, with all the varieties, that there is an occasional tendency to grow bitter fruit; such fruits, however, should be rejected, as there is reason to suppose that the bitter principle is referable to the elaterium before described, and its presence shows a tendency, even in the most refined cucumbers, to revert to a wilder form. Fruits grown with heat—that is, quickly and in a moist atmosphere—are generally more wholesome than those from the open garden, and should, therefore, be preferred.

Melons like the former can be grown in no end of variety, each cultivator, for the most part, having produced a "favourite." A so-called "cattle melon" attracted some attention a few years since, as the large fruits were recommended as food for cattle. We can only say, from having tried it, that our disappointment has been great, as its production was but meagre. However, cattle will eat the fruits with avidity, and so they will any sweet varieties of the family. One very dry

summer we grew an immense quantity of vegetable marrows, which were exceedingly grateful to our sheep on the burnt-up pastures.

Vegetable marrows are well known as a garden esculent; these, too, are varied as to sort, but the long green and yellow varieties are very productive, and, when young, are by some esteemed as a vegetable. Larger examples of these are useful for cattle, sheep, and pig food.

We grow our vegetable marrows on the top of the farm mixen, and so easily get enormous crops, which are used for the table, or, getting beyond this, for cattle food.

Pumpkins were formerly as much grown in England as they are now in America. Our transatlantic cousins seem to have taken with them the love as well as the art in making of the "punkin" (pumpkin ?) pie. We remember this solace of our youth far beyond even the famous mince pie of modern days; but of late years we have not had an opportunity of testing whether this was merely a youthful partiality, or whether it would stand the test of a matured taste; but if the latter, we can only consider the lapse of pumpkin-pie making to be a national loss.

Gourds are principally known to us for their curiously-formed, vari-coloured, and ornamental fruits. In the tropics many of these are employed for water-bottles and domestic utensils of various forms and sizes.

Speaking of the order in general, Professor Lindley says:—"There is reason to believe that some, at least, if not all the edible sorts, owe their freedom from poisonous properties to cultivation, for some in the wild state are found to possess them in much activity.

The *Lagenaria vulgaris* or bottle-gourd may be cited as an example of this, it being recorded that some sailors were poisoned by drinking beer that had been standing in a flask made of one of those gourds, and Dr. Royle mentions a somewhat similar case, where symptoms of cholera were induced by eating the bitter pulp."

In concluding our remarks upon this order of plants, whose structures for the most part are the receptacles for very active principles, we should mention that the seeds usually form an exception to this, as they are mostly sweet, oily, and demulcent, some being of the size and equal in flavour to the almond.

One genus, however, presents species whose seeds are intensely bitter; such are those of the *Feuillæa cordifolia* and *F. trilobata.* Dr. Lindley tells us that "they yield a fatty oil, used instead of ointment in pains of the joints. In fine,

the uses of this order in warm climates are highly multifarious, and it is probable that, if they grew readily in our climate, these would be greatly extended.

BURSATIE.

By R. Spooner Hart, V.S., Calcutta.

(*Continued from p.* 21.)

I implied, in a former article, that the angles of the mouth were occasionally the seat of bursatic ulceration, and seeing that the disease is frequently a growth of scars, we have at once an explanation of the circumstance, for the angles of the mouth are always more or less injured and cut by the bit at some time. I have observed a pecular nodular species of growth which in some respects resembles bursatic, and is sometimes called bursatie; but I deny its relation to this disease. It is undoubtedly, in some respects, a tubercular affection; I have seen it under suture points and the brand marks of horses. The skin covering these growths will frequently become irritable and ulcerate, thereby exposing a small, nodular, pinkish-white, vascular tissue, of the size of a shilling in circumference. If you cauterize these productions and slough them out, the chances are greatly in favour of their not returning, and in this respect they are vastly unlike bursatie, which is not easily to be eradicated from the site of its first development. It is a common error, and not entirely a public one, that bursatie is infectious. I have heard professional men express words of fear and surprise on seeing bursatic patients indiscriminately standing among other infirmary cases. I failed to produce the disease by inoculation, and infer from that the non-contagiousness of the malady. It is held by some that bursatie is hereditary, but I am inexperienced with reference to this particular question.

I have at the present time two bursatied mares far advanced in pregnancy, and I will endeavour to watch their produce, and hope to be in a position one day to speak with some certainty on the point. I should not be greatly surprised if the disease were hereditary, for the tubercular order of diseases in the human subject are generally admitted to be so. I may mention the fact that, in the hackney stables, where the disease is so common, there is a large amount of in-and-in

breeding carried on, which may, perhaps, to some extent, account for the frequency of the malady among these horses.

On the 10th of October last I received a note from Mr. J. B. W. Skoulding, appertaining to bursatie, of which I beg to send a copy.

"SAHARMPORE, N. W. P.

"On receipt of the *Veterinarian* to-day I see a letter of yours containing words to the effect that you will discover what bursatie really is. I consider that discovery mine; the disease is 'lupus,' as already stated by me, which statement is in print.

Yours sincerely,
(Signed) J. B. W. SKOULDING, V.S.R.H.A.

"P.S.—I consider your description of the malady accurate and good, as far as the symptoms are concerned.

"To R. S. Hart, Esq."

I replied to Mr. Skoulding by saying that—

I was happy to receive his note relative to bursatie, and, as the subject is of interest to the profession, I would take an early opportunity of replying to it through the medium of the *Veterinarian,* which, with your kind permission, Mr. Editor, I hope to do.

Not having seen Mr. Skoulding's printed statement on the subject of bursatie, I am at a loss to see in what manner he connects "bursatie" with "lupus." I have seen but few cases of lupus in man, and certainly I fail to see the relation of lupus to "bursatie," so far as appearances go, and this view is confirmed by reference to works on dermatology.

Mr. Skoulding's P.S. affords evidence that my bursatie is the same as seen by him, so that there can be no mistake in that respect.

Lupus belongs to the order "tubercular," so does bursatie, undoubtedly; but in detail each displays features quite opposed to the other, although, primarily, they may fairly be classed in one order. Beyond this fact I cannot conceive how Mr. Skoulding can call "bursatie" "lupus." The order "tubercular" includes elephantiasis, cancer, keloid, framboesia, epithelioma, rodent ulcer, and lupus; they are all more or less alike, and are characterised by the formation of tubercles, which subsequently ulcerate; and although this is so, yet some dermatologists describe no less than seven diseases as belonging to the "tubercular" order, each displaying

features peculiar to itself. Rodent ulcer and epithelioma are so much like cancer that they are frequently spoken of as cancerous affections, but they differ, and so does "lupus," from bursatie.

I now proceed to notice, for comparison, some of the leading features of lupus in man, for which I have referred chiefly to the works on dermatology by Mr. Erasmus Wilson and Dr. Tilbury Fox.

Lupus displays three or four forms—bursatie three.

Lupus Forms.

(*a.*) *Lupus erythematous,* as its name implies, is a form of obstinate erythema, with slight loss of substance and no signs of elevation.

(*b.*) *Lupus non-exedens* is lupus erythema associated with an aggregation of little nodular elevations. Owing to the lateral increase of these tubercles a large extent of surface is frequently involved.

(*c.*) *Lupus exedens* is characterised by an accumulation of tubercles and a destructive ulceration.

Bursatie Forms.

(*a.*) Papillated, circular. Bursatic ulcers may be single or plural in number; they occur in isolated spots, and are never aggregated together; they are circumscribed and do not spread laterally, and are notorious for papillary development and for the common occurrence of calcareous nodules in their midst.

(*b.*) *Medium Bursatic Ulcer* is characterised by a well-developed flat tumour or hard patch, with a very considerable elevation of the skin. As a rule, the tumour is single, and may pursue two courses, when it becomes deprived of its covering; the one is for the tubercular matter to degenerate and to be discharged, and in the other case the tumour matter may sprout up, ultimately forming a sore with a fungoid, irregular, sprouting surface. When the ulcer pursues the former course it is then that various attempts at repair are seen around the margin, generally at the upper part first.

(*c.*) The sloughing phagedænic bursatic ulcer, like the preceding, is marked by a well-developed flat plate of tumour, which, with skin covering it, dies and sloughs out, leaving a superficial chasm with ragged, everted, undermined edges.

In these three forms bursatie shows itself in Calcutta, and I fail to see the resemblance to lupus. I have seen a few cases of lupus in man, where he disease had extended half

over the face, and looked like so many pimples with their summits more or less scabbed, situated on a reddish-purple base. The appearances are quite different to those of bursatie. The aggregation of lupus tubercles frequently assumes an annular disposition, but bursatie is never seen in the form of an aggregation of tubercles; they are, as a rule, large, flat, and developed in one plate. I have in a few instances seen outlying, small nodular bodies surrounding the main tumour, but these are not separate developments, as in lupus; they are outgrowths or offshoots from the main tumour. The lupus tubercles show a preference for the face, and will defy the best of treatment, and may exist for years, or even life, in one position. Bursatic ulceration also is commonly seen on the face; I have already said why, and shall again have to allude to this as being due to a special cause. Bursatic ulceration will occur on the face and heals, and reappear on one of the hind fetlocks in less than six weeks, and in this respect alone the disease is totally unlike "lupus." In lupus one crop of tubercles may occur, and, after a variable period of time, may be followed by a second crop; the first crop, perhaps, by this time will have disappeared or subsided.

Mr. E. Wilson says that the process by which subsidence and disappearance of the tubercles is effected seems to be one of absorption, for there is no ulceration, and yet the tubercles leave cicatrized pits behind them. In bursatie the subsidence of a tumour is not the result of absorption, for so long as the skin covering the tumour remains in an unbroken, uncracked, and unabraded state, the tumour continues almost *in statu quo;* but as soon as the skin becomes cracked or abraded a discharge immediately ensues. The loss of continuity of the skin is generally seen at the upper part first, and in this case the upper part of the sore will be the first to show signs of repair on the margin, and as the tumour matter wastes and becomes removed, its removal is closely followed by the cicatrising act; this is indicated by the appearance of a tissue of a pinky-white colour.

The tubercular matter is got rid of by a species of running-out process, which, as quickly as it is effected, is followed by the healing of the sore. It would seem from this that the air, on coming in contact with the tubercular matter, causes it to degenerate; for so long as the tumour remains covered with skin no discharge takes place, but when deprived of this covering it immediately begins to break up, and disappears in the form of a dirty-yellow brown pus-like matter, not unfrequently tinged with blood, and somewhat like the matter

discharged from diseased bone. The deeply-pitted cicatrices are pathognomonic characters of "lupus." I deny that this character exists in bursatie, for the latter cicatrices neither present loss nor increase of substances.

The bursatic ulcer cicatrix is composed of a thin pellicle of delicate tissue, at first of a pinky-white colour, which is continually desquamating scales of its own tissue; the cicatrix, after a variable period, becomes black; the circumferent margin is the first part to change colour, and this gradually goes on till the whole of the scar becomes black; this change of colour is more quickly effected on the cicatrices of the body than on the legs; the scars on the legs are somewhat thicker than those seen on the body, and those near the coronets are continually desquamating semi-horny flakes, which are portions of the cicatrix. An old bursatic cicatrix is of a jet-black, shining colour, and is like the scar of a burnt wound.

Mr. E. Wilson, in speaking of the annular disposition of "lupus," says there is often seen an island of unaffected skin in the centre—this is "lupus" and not bursatie—and, further, that the tubercles are remarkable for their deficiency of sensibility; you only need try once to see that bursatie tubercles are both highly sensible and very vascular.

Bursatic ulceration is not a destructive act; the ulcerative process may remove the skin covering the tumour until it reaches the circumferent margin, and then its onward progress becomes immediately arrested. The tendency of a bursatic ulcer is to heal, and not to extend; lupus, on the other hand, from its frightful nature, is closely allied to scrofulous caries of bone. The periodical character of bursatie is essentially peculiar to itself.

The eye symptom of bursatie is opposed to any feature shown in "lupus." One of my infirmary cases of late is an aged bursatied country-bred mare; her body, face, and legs display innumerable bursatic cicatrices, the ulcers of which have been treated by me at one time or another, she having been under my observation for upwards of three years; at the present time she is free from ulceration. What is the result? Why, she is nearly blind of both eyes, and will remain so until ulceration starts afresh. She is the picture of morbosity and quite infirm, but not from old age.

In lupus I would ask, Where is a form like the circular papillated bursatic ulcer, or, indeed, the medium or phagedænic variety? The greatest and only resemblance bursatie holds to lupus is the attempt at repair which is seen in one of the courses pursued by the medium ulcer; they are both tubercular diseases, but each in detail displays features pecu-

liar to itself. In conclusion, I would say if you elect to call "bursatie" "lupus," then you at once abolish the order tubercular, and in its place describe one disease, calling it "tubercular."

CARBOLIC ACID.

By the Same.

Of late there has been a certain amount of discussion upon the subject of the internal exhibition of remedies possessing antiseptic qualities, in the treatment of infectious diseases. It is admitted that certain disinfectants have the power of rendering morbific matter inert; and also of destroying animalculæ and fungi; it is only reasonable, therefore, to presume that similar results would follow their internal administration. Recent experiments have demonstrated the morbific matter of infectious diseases to be a material poison; this is also proved by inoculation.

Chauveau, by continued experiments, has given good proof that the contagion of glanders is a solid, insoluble in water and indiffusible. Unfortunately, the highest aids that can be brought to bear upon these nosophytic particles have failed to show their physical characters, but the fact of the reproductive power of the particles goes a long way towards proving that they are living bodies, and upon this view is founded the so-called antiseptic treatment of diseases. I would draw the reader's attention to Chauveau on the nature of virus; his experiments are of great value and interest.

Mr. Greenhill, V.S., and I, in 1869, prescribed Calvert's crystallised carbolic acid internally with the same view with which it is now being tried. I have recently used it again with the same results as those which were obtained in 1869. In the year mentioned we experimented with the agent, prescribing it internally to horses who fell victims to the attack of a fever which was prevalent at the time. It was a continued fever of some days' duration, attended with rapid prostration and derangement of the mental and bodily functions with frequent cerebral symptoms, and in many cases a peculiar slight eruption on the skin. There was distinct evidence of blood poisoning.

An account of the same fever may be found in the *Veterinarian* for December, 1868, by J. Richardson, V.S., 16th Lancers, Bungalore, Madras Presidency.

We may glean from the experiments made by P. Cullen,

M.D., on the internal administration of carbolic acid, that in doses of less than one or two drachms it is a powerful poison to the largest sized dog. I have witnessed the same myself. This powerful toxic action which the acid possesses when given to the dog appears to have no such effect upon the horse, even when given in much larger quantities. There is great difficulty in arriving at immediate and correct conclusions in such cases, for while our medical agents may be given to some subjects with impunity, they may prove positively poisonous to others. Many facts may be cited to prove this; and I infer from what I have seen that such appears the case with the internal administration of carbolic acid in the dog and horse. I have given an ounce dose twice and three times a day to the horse, and have failed to observe any symptoms from its action; so what would be the maximum dose for the horse I cannot say, particularly if the horse, like the dog, became fortified against the action of acid after the first dose or so. By administering carbolic acid to dogs, say in a drachm dose, it will be observed to possess a narcotic action, and produces somewhat the same symptoms as poisoning by hydrocyanic acid. Carbolic acid in a toxical dose to the dog causes a marked derangement in the breathing attributable to the stimulating effect of the acid on the spinal cord. This increased sensibility as marked by convulsions is of short duration, and is quickly suppressed when the convulsive stage has exhausted the nervous force. There are two modes of administering carbolic acid with the view of disinfecting the tissues, viz.—

1. By inhalation; 2, by internal administration. There is great dubitation as to the best means of carrying out this line of treatment. I presume giving the acid in large and repeated doses is the correct idea, for it is to be recollected that in the administration of the acid to dogs, the tendency of the drug is to become rapidly excreted. The urine gives evidence of this although the dog dies in a few seconds only after taking the fatal dose. I hold that a large dose frequently repeated is the correct method of trying the value of the antiseptic treatment of disease. If such be the case, then I have tried the antiseptic treatment of farcy and glanders with negative results, so far as carbolic acid is concerned. I have not tried sulphurous acid or the alkaline sulphites. I have little reliance in the inhalations of carbolic acid; if any good is to be produced by its antiseptic qualities it will be by its administration internally, for in the best of regulated infirmaries cases of glanders and infectious diseases do occasionally arise, although the air may be rendered con-

stantly antiseptic by the free use of carbolic acid. I think this sufficient to show that the mere inhalation of air impregnated with the odour of carbolic acid is of but little use, and that if the acid is to produce any effect upon the disease germs, it will only be by its internal administration. I have found difficulty in giving a drachm dose in draught, for when diluted with one pint and a half of water it produces cough. I have invariably observed the dose prescribed in common mass and given it that way. I have tried carbolic acid in four cases of farcy, but have not noticed any marked benefit from it.

On August 9th a bay mare six years old, fifteen hands two inches, condition good, showing symptoms of farcy, was placed under my care. There was a beaded line extending from the anterior part of the chest and running along the abdomen. Gave aloes ʒiij, and carbolic acid ʒij. The acid to be repeated at midday and evening.

10th, 11th, 12th.—Bowels acting to aloes. ʒij of acid three times daily.

13th.—Gave ʒiv of acid three times daily.

14th, 15th, 16th.—Same.

17th.—Patient improved in condition.

The indurated lymphatics became less visible and gradually disappeared. Animal feeding well.

18th, 19th, 20th.—Same.

21st.—Gave ʒv of acid three times daily, and continued to 31st.

September 1st.—Suspicious spots on the septum nasi. No glandular enlargement. Mare still improving in condition, Acid continued.

2nd.—Spots on septum more marked; acid continued.

3rd.—Distinct pustules seen on septum; no glandular enlargement; little discharge from nostrils. Acid continued.

4th—9th.—Gave ʒij of the acid three times daily. The patient remained with me till the 10th, and there was then discharge from the nostrils, and some of the pustules had broken, forming ulcers. Being afraid to detain her longer she was destroyed. I made no *post-mortem*, for I considered the case a confirmed one of glanders, though, of course, an individual instance can afford but little evidence of the antiseptic treatment. I shall give it further trial in zymotic diseases, and leave my professional brethren to draw their own conclusions from the facts. But although the acid did not bring about the desired result in this case, there are many other uses to which the acid may be used with the greatest possible benefit. The following is one instance. There came under my

care a bay mare, with her tongue hanging half out of the mouth, and there was apparently an inability to withdraw it. The organ was almost black, greatly swollen, indurated, and covered with air-vesicles, and it was cold and almost devoid of feeling. The under part was sore and abraded, the membrane of the mouth was of a deep claret colour, and covered with pasty lymph, and showing more or less abrasion. The anterior wall of the tongue only was affected. I stabbed the tongue through and through with my lancet, scarifying very freely and deeply. This was followed by the exudation of a dark sanguineous fluid. The mare very readily stood with the protruding tongue in a pail of carbolised warm water (acid ℥vi to the pail of water), renewed when cold. In twelve honrs or less there was a marked improvement, and the mare evidently received great relief from the treatment, for she showed no inclination to take her nose out of the pail, which was before her for two days and nights. After two days the tongue was greatly reduced in size, of a better colour, and warmer, the animal could draw the tongue almost back into her mouth. I now substituted cold water for the hot and continued the acid; she stood patiently for two more days, and the tongue had then almost returned to its original position. On the fifth day I had a pail of water placed in front of her containing Nit. Pot., but she would stand no longer with her head in the pail, and in a few days afterwards, left cured.

The crystallized carbolic acid is rather an expensive drug for the veterinary surgeon, and a good substitute for it will be found in Calvert's No. 5 carbolic fluid, guaranteed to contain 80 per cent. of carbolic and cresylic acids, and free from sulphuretted hydrogen. It is of a reddish-brown colour, and possesses a strong odour of carbolic acid. You can scarcely ever purchase two samples alike from separate chemists. It should be bought in small quantities and kept in well-stoppered bottles, or it will lose its strength. Applied to the skin on the back of the hand, in its pure state, it will produce a sharp, smarting sensation, and a reddish-pink discoloration of the skin; the smarting will last for one or two hours, but it produces no actual pain or unpleasantness. The smarting sensation produced by No. 5 carbolic fluid on the skin is more perceptible than when the crystallized acid is applied. In three or four days the cuticle will peel off, leaving no sore. If you dilute the acid with an equal part of oil and apply to your hand it will produce a smarting, but slightly less than the undiluted acid, and will not cause peeling off of the cuticle, and so dilution may be continued until the acid has no effect on the skin. The No. 5 fluid has a bleach-

ing effect on the skin of the natives of Bengal. The natives do not feel so much the effects of the pure acid on the skin as do Europeans, in consequence of the continued exposure which natives are subjected to by wearing little or no clothing. In the position in which I am placed I am continually in the midst of large numbers of natives, and the class is not a very clean order, for the generality of them are covered with ringworm, and it is a common sight to see many of the natives with the whole surface of their bodies one mass of growing and spreading vegetable fungi. I have treated dozens of such cases, and one trial of Calvert's No. 5 fluid will quickly prove it to be one of the most effectual parasiticides we possess.

Dr. Tilbury Fox advocates blistering in recent cases of tinea, and prefers the contact of the parasiticide in a form that does not vesicate. No. 5 fluid carefully employed is just the agent. I have applied it undiluted to small porrigo spots, and it caused the immediate death of the fungus; for from the time of applying the agent the spreading tendency of the ring was checked, and in four or five days the cuticle would peel off, leaving a clean circle of a pinky-brown colour. In the case of the natives the parts so bleached will regain their original brown-black colour in time. Of course, in cases where the rings are large and cover a considerable surface, the appliance of the undiluted acid would produce too much irritation. The smarting effect produced on the skin by No. 5 fluid may be greatly relieved by applying to the part a little oil. No. 5 fluid diluted with an equal quantity of oil is also very destructive to the fungus of ringworm, and is a good application in man, producing much less irritation than the pure acid. Diluted with four parts of oil it may be applied to the skin of natives with a certain amount of friction over the diseased parts, and will be followed by very satisfactory results. This is the strength I usually employ the acid in the case of men and horses. In the case of our subjects presenting small tinea spots the acid may be diluted with equal parts of oil, and applied with care to the rings; but if a large surface is diseased I would recommend 1 to 4, applying with a little friction, taking care to prevent the horse from rubbing himself. I also strongly recommend isolation, since it has been demonstrated by Dr. Tilbury Fox that the air and dust of apartments occupied by ringworm subjects is found loaded with germs of the fungus, and from this we may see the importance of removing affected horses at once, and thoroughly disinfecting the stable, either with carbolic or sulphurous acids; the latter may be gene-

rated easily by burning sulphur upon an iron plate, which for safety sake, in use in stables, should be placed in the middle of a pail containing water. As an application for mange and other deranged states of the skin of the horse, No. 5 fluid will be found unequalled. It may be used diluted with eight parts of oil or twelve or sixteen, and in this diluted state may be applied to nude mangy spots with friction for fifteen or twenty minutes. I think twelve parts of oil to one of the acid will be found to be most useful as a skin dressing for general use. In some subjects with indurated nude skins I have applied the acid one to four with a certain amount of friction, producing a state a little short of blistering; this will be followed by the best possible results when carried out in the treatment of old mangy patients. The application of the acid requires a certain amount of care, for in some horses the skin becomes greatly irritated by its use; but such occurrences are rare. Carbolized oil possesses an extraordinary power of rapidly inducing the growth of hair. No. 5 fluid is best for dressing sores, &c., I generally use one to four or six of oil, and pure as a dressing to indolent ulcers. The carbolized oil, when largely diluted, produces little or no effect on indolent ulcers, and I prefer it undiluted for that purpose. It is worthy of a trial in such cases. If the surface of an irritable ulcer is painted over with No. 5 carbolic fluid, and then poulticed, the result will be most pleasing. As a dressing to farcy ulcers it is unequalled. The antidote recommended for carbolic acid when swallowed in toxical doses is oil.

POISONING BY HEMLOCK.—*CONIUM MACULATUM.*

By John Gerrard, M.R.C.V.S., Market Deeping.

The poisonous nature of this plant has long been known, ever since, indeed, the first great martyr of intellectual liberty meekly and bravely accepted a decoction of it from the hands of his weeping gaoler, and died in consequence, 400 years before the Christian era.

It is one of the most widely diffused of the natural order *Umbelliferæ,* easily recognised by its tall, smooth, glossy green stems, dotted with brownish-purple spots, and its fetid smell.

Its leaves, the most poisonous part of the plant, may be mistaken for parsley, and its root for parsnip. It has poisonous properties in common with many other Umbellifers, such as *Æthusa cynapium*, *Cicuta virosa*, and *Œnanthe crocata*, the last of which is considered the most poisonous, although it is not found to be poisonous in all circumstances.

Professor Christison states that he has not found this plant, as it grows in Scotland, to be poisonous; but it is an active poison as it grows in England, Wales, and Ireland. The distinguishing botanical character of *Conium maculatum* is the presence of five prominent wavy ridges on its carpels, instead of the linear receptacles for volatile oil termed *vittæ*, which characterise the order. Poisoning by hemlock is by no means uncommon in man, and numerous cases are recorded in the lower animals.

I propose to give the history of the instances which I have recently met with, for the reason that the cases were well marked; the plant was recognised as being the cause before the death of two of the animals, so that I was enabled to note the symptoms.

The subjects were four ten-months-old pigs, the property of Mrs. Sismey, Deeping St. James. They had been fed exclusively on barleymeal and slops in the crewe-yard, and were in good condition. Owing to the gate being left open they got out of the yard and wandered into an adjoining grass-paddock, which was bounded on one side by a small stream, on the bank of which hemlock grew in great abundance. It was not confined to the bank, however, but was to be found more or less about the sides of the hedges all round the field.

It was not known how long the pigs were in the field, for they were found feeding among the cows when they were removed from the field to be milked, about 6 p.m. They were fetched up with them to the yard, and no notice was taken of the circumstance until next morning, when two of them were found dead, and the other two unable to stir. When I reached the place, about 8 a.m., I found the pigs lying prostrate in the yard; they could not be made to move, but emitted a feeble grunt when pressed to rise. The surface of the body was cold, the breathing very slow, the mucous membranes were livid, the eyes amaurotic. No pulse could be felt, but the heart of one could be heard contracting vigorously. Some food emptied into the trough had the effect of causing one to get up on its fore legs, but the animal was unable to raise the hind ones, and giving a few grunts relapsed into its comatose condition again.

No convulsions were present; on the contrary, pricking with a pin on the posterior part of the body caused no pain, at least no contractions were present. It was evident they were suffering from the effects of some poison, so I administered a stimulant to the two sick animals, and proceeded to make a *post-mortem* examination of the two which had died.

The contents of the abdomen generally appeared healthy; the intestines were much distended with gas. The stomach was distended by a large mass of vegetable matter composed principally of grasses; but a number of fragments of a hollow stem, tripinnate leaves, and portions of an umbelliferous flower, were recognisable. Its characters were difficult to read, from the fragmentary condition in which it was present; but on going into the field it was easily recognised, and a number of the stems, in a perfectly eaten-off condition, were found, and some of the plants had been recently rooted upon the bank. The mucous coat of the stomach was much congested, particularly so in the cardiac portion, while in the pyloric extremity there were large spots of extravasation beneath the epithelium about the size of a crown-piece. The intestines presented, here and there, patches of congestion in the mucous coat, otherwise they were healthy. Portions of the grassy meal were seen in them nearly throughout their whole length. The liver seemed healthy, but on being cut into a quantity of dark fluid blood exuded; the spleen, too, was in a distended condition from the same cause. The kidneys and bladder were healthy, the mucous lining of the latter was congested from venous obstruction.

Lungs engorged with blood, very dark, otherwise healthy. Heart healthy, but pale and soft; the veins on its surface were distended with blood and easily traced; the right cavities of the organ and the large venous trunks were gorged with black, thick, but liquid blood; the left side of the heart was almost empty. The blood throughout the body was dark, and did not coagulate readily on exposure.

The appearances were very similar in both the pigs; but the digestive process was farther advanced in one than in the other, so that it would have been more difficult to make out the cause had there been in both an equal state of digestion; one of them did uot seem to have had such a hearty meal as the other.

The brain I did not examine. The examination of the two pigs occupied about three quarters of an hour, during which I had an opportunity of observing the effects of the stimulant on the others.

The stimulant used was Spts. Amm. Aromt. ʒj in half a pint of water followed up by two glasses each of sherry after the lapse of half an hour. In one no effect was visible, while in the other a sedative effect was produced, indicated by a lowering of the heart's action, and a gradual ebbing away of the vital powers. The animal died almost without a struggle in about an hour and a half after the exhibition of the stimulant. The other survived about two hours. The first one I examined and found the appearances similar to the other above described. The other was not examined.

Comments.—The appearances observed indicated the mode of death to be by *apnœa* or *asphyxia*, in which the blood acted upon by the poison becomes unfit for the processes of nutrition and innervation; paralysis of the voluntary muscles ensues, indicated by the inability of the animal to stand, or to move the limbs when pinched, and the slow heavy breathing; gradually involuntary motion was arrested, the heart ceased to beat and life was extinct. The lowering of the heart's action by the exhibition of stimulants is a physiological fact worthy of notice, the heart deriving its motory power from the ganglionic system of nerves, and the ganglia in its own substance; while the cardiac branches of the pneumogastric exercise an inhibitory or restraining influence only. The brain and spinal nerves would be the first affected with the poison; consequently, the restraining influence of the vagus would be removed, hence the vigorous action of the organ. By the exhibition of a stimulant fresh power is given to the vagus, and hence the lowering of the heart's action. Giving stimulants to lower the heart's action would be apt to be regarded as heterodox practice, still I am convinced that in certain conditions of the system it is more rational—being more in accordance with physiological principles—than the orthodox method of treatment by sedatives.

The time in which a fatal termination would occur from the poisonous action of hemlock could not be accurately ascertained; from the uncertainty as to the time when the plant had been partaken of, probably not more than sixteen hours, and not less than twelve, had elapsed, so that the mean, or fourteen, may be fixed as the fatal period. In the case of poisoning by *yew*, I think, the fatal period may be set down as twenty-four hours. If an animal having eaten yew survive that period, good hopes may be entertained of its recovery, as in all probability a sufficient quantity has not been partaken of to destroy life, a stimulant line of treatment being the best to pursue in such cases; still, could we know that a poisonous dose had been swallowed, rumenotomy

would undoubtedly be preferable, if too long a period had not elapsed before its performance. The consequences arising from the introduction of young or new stock into pastures where such plants abound, and the fact that cows had pastured in the one for a number of years with no bad results, indicates the importance of being acquainted with the nature and properties of vegetable poisons.

REMARKS ON INFLUENZA AS AFFECTING THE HORSES OF AMERICA.

By L. V. Plageman, M.R.C.V.S., Brooklyn, New York.

Having observed, in your November number, that you were desirous of hearing from some American veterinary surgeon something about the influenza in horses, I send you a few short notes on the subject. The epizootic first made its appearance in this city on the 22nd day of October, 1872, on which day thirteen cases came under my care.

The disease was immediately recognised as influenza, but somewhat modified in the character it ordinarily assumes here, year by year, in the spring.

The immediate cause, in my estimation, depended on some electrical changes in the atmosphere.

The symptoms in the early stage of influenza are, a short dry cough; watery defluxion from the eyes and nostrils; partial loss of appetite; pulse feeble, often indistinct, and averaging about 50 in the minute. Febrile symptoms are but slightly developed; the respiration is scarcely affected, and fæces are natural.

This stage of the malady usually lasts four or five days, when the pulse increases from 60 to 80; the visible mucous membranes become injected, nasal discharge thick, and of a white or greyish colour; respiration increased; urine scanty and high coloured; fæces hard; mucous rattling in the trachea; many cases running into bronchitis and pneumonia.

At the commencement of the attack I usually administered Carb. Ammon. in doses of two to four drachms daily; also Nitrate Potash in two-drachm doses in water. Stimulated the throat with ammoniacal liniment; gave linseed tea and bran mashes with scalded oats, apples, and carrots; put on extra clothing to body and legs; disinfected the stables with carbolic

acid, and allowed gentle exercise when the weather would permit.

In the pneumonic variety I blistered and setoned the chest, gave little or no hay, sponged the nostrils frequently with soap and water, allowed plenty of litter, although the patient very seldom laid down. Many of the patients would take little else but cold water.

When the fever subsided I commenced the use of tonics, ginger, gentian, and sulph. iron, either in ball or powder.

Several cases required little or no treatment, good nursing being all that was necessary.

It attacked horses and mules of all classes and ages, neither locality nor cleanliness making any difference. Many hundreds died throughout the country from the improper use of belladonna, aconite, purgatives, low diet, bad ventilation, and want of ordinary and proper attention.

Scores of animals were put to work when the nervous system was nearly exhausted. Many persons could be seen actually driving a dying horse. I myself had the greatest difficulty in obtaining horses to do my work, my own being laid up for several days.

In every case the animals needed support, and from my mode of treatment I only lost five out of more than 2000 cases.

Those which died did so either from hydrothorax, hydrops, pericardii, or purpurea. Some sunk from ulceration succeeding on laryngitis.

At the beginning of November the disease assumed an œdematous form. Effusion of serum took place into the legs, and extending upwards affected the whole of the tender part of the abdomen and sheath. Sometimes effusion occurred in patches as large as a man's fist, and occasionally the head enlarged to such an extent that the breathing becomes so much impeded as quickly to cause asphyxia.

In this stage the pulse is often imperceptible; animal immovable; breath fetid; tongue dry and furred, and mastication accomplished with the greatest difficulty. Very little urine is voided, and the fæces are small in quantity and dry.

In such cases I have given trial to scarifications and hot fomentations of diluted vinegar, friction, and warm clothing. I have also dosed the animal with warm ale or porter, and exhibited tonics and diuretics in balls.

The difference between this affection in its early stage and ordinary influenza, or as Mr. Varnell, late of the Royal Veterinary College, designated it, "bilious fever," is, that in

the former there is no yellowness of the mucous membranes, nor that peculiar yellow discharge so characteristic in the latter.

I have seen partial paralysis of the hind extremities supervene in seven cases, and in four or five others muscular rheumatism.

I treated the former with small doses of strychnine, and the latter with iodide of potassium, diuretics, and tonics.

OBSERVATIONS ON THE ACTION OF VERATRUM ALBUM AS A PARASITICIDE.

By John Howard, Veterinary Student, Edinburgh.

In the month of March, 1871, I treated two white fox terriers, a dog and a bitch respectively, for mange. The animals were in fair condition and free from any abrasion of the skin by which the active principles of the ointment applied could find its way into the system by direct contact with the blood-vessels. The male was suffering with the disease to a greater extent than the other, and, therefore, received the largest share of the rubbing in of ointment, veratrum album. After a lapse of ten minutes, I was surprised to find that the respiration of the bitch became much accelerated, and on her haunches with the fore legs apart, the head inclining forwards, and tongue hanging out of the mouth, with dribbling of saliva from the mouth; she seemed much nauseated and depressed. These symptoms continued for a few minutes accompanied with a low anxious whine; then violent vomiting set in. Her distress became so great that I feared a fatal termination, and had the ointment washed from her skin as quickly as possible; very soon afterwards the constitutional disturbance ceased, but the animal remained much depressed during the rest of the day, and refused her food in the evening.

The dog, although he had received a more extensive inunction, did not show any symptoms of functional derangement whatever. I therefore allowed the application to remain on, keeping a close watch upon him, but he exhibited no inconvenience from its presence, and ate his food heartily.

Feeling rather dissatisfied with the variable results in the foregoing cases, I last spring procured two common bred dogs of no value, and again applied the veratrum as in the preceding instances.

Dog No. 1.—In half an hour afterwards he suffered from nausea with attempts at vomition. The respirations were short and quick; the pulse at the heart was increased from 100 to 130 per minute, and small in character. The extremities and superfieial parts of the body were cold; these symptoms continued with but little variation for three hours, at the expiration of which the dog began to improve. I experimented on this animal in the early part of the day. In the evening, I found his pulse reduced to 90 per minute; it was still smaller than in health, with great loss of tone. The dog refused all food and lay motionless during the rest of the day. On the following morning he had nearly recovered, and gradually regained his health and spirits.

Dog No. 2.—Began to show uneasiness in about two hours after the application of the unguent. The symptoms were very similar to those in the preceding case, but not so urgent in character. The animal did not attempt to vomit, and recovered by the evening, at which time he partook of his food with a fair appetite.

In addition to the foregoing, another case has come under my notice which proved fatal from the external use of the drug. A middle-sized dog of a mixed breed was treated for mange. Hs was a poor weakly animal in very low condition. the disease having resisted nearly all known remedies, both internal and external, the Ung. Veratri Alb. was applied, and in three hours afterwards the patient was found almost insensible. He laid helpless on the ground; the body cold, the breathing short and catching, and accompanied with a low moan. The heart's action was altogether imperceptible, and in spite of all attempts at resuscitation the dog died within the hour after his condition was discovered. I made a *post-mortem* examination, and found signs of congestion on the mucous membrane of the stomach, the organ itself appearing much relaxed and flaccid to the touch. The lungs were congested and gorged with black-coloured blood; the heart was in a similar condition, but presented no markedly abnormal condition of texture.

I have applied this remedy in conjunction with other substances to the horse in cutaneous affections, and have reason to believe with benefit; its action on gramnivora and herbivora seems to be very mild when compared to that which it has on carnivora. I would respectfully suggest that it might be an advantage to many if in future editions of our pharmacopœias (where therapeutical information is given), a note were appended to this ointment, intimating its very uncertain and dangerous effects on the canine species. The prescrip-

tion for this ointment will be found at p. 261 of Professor Tuson's 'Pharmacopœia.'

Pathological Contributions.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of December, 1872, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	Number of Animals affected.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered at place of landing.
Cherbourg	Southampton . .	Foot-and-Mouth	...	...	...	8	8	8
Coruña .	Portsmouth .	"	4	...	...	...	4	4
Hamburg .	Hartlepool	"	4	...	...	...	4	4
"	Hull . .	"	54	12	...	...	66	66
"	"	Sheep-scab .	...	1	...	...	1	1
"	London .	Foot-and-Mouth	30	169	...	...	199	199
"	Newcastle-on-Tyne	"	18	...	...	...	18	18
Harlingen .	Hull . .	"	1	...	...	...	1	1
Total . . .		Foot-and-Mouth	111	181	...	8	300	300
		Sheep-scab .	...	1	...	...	1	1
Total			111	182	...	8	301	301

"Privy Council Office, "ALEXANDER WILLIAMS,
"Veterinary Department, 13th January, 1872." Secretary.

CATTLE PLAGUE.

The outbreak of cattle plague at Coblentz, intelligence of which reached us from Dusseldorf last month, appears to have been immediately suppressed by the slaughter of the diseased beast, and the adoption of the usual precautionary means to prevent the spread of infection. According to the last report no other case of the disease than the one referred to in the *Veterinarian* for January occurred in the district.

Accounts from Warsaw state that there has been a sensible diminution in the severity of cattle plague, owing as is thought to the cold weather. In our experience temperature exercises little or no influence over the progress of the disease. Notwithstanding the altered benefit arising from the change of weather, it appears that the plague exists in twelve districts in Poland.

Cattle plague is still raging in the Austrian dominions, in Hungary, Sclavonia, Galicia, Moravia, Bohemia, Buckowina, Dalmatia, and Lower Austria. An outbreak of the pest is also reported to have occurred in Corfu, to which place it is presumed the disease was imported from the opposite continent.

In Trebizond the cattle plague is reported to have almost disappeared. It is also diminishing in Bosnia and Servia. Trieste is reported free.

FOOT-AND-MOUTH DISEASE.

Fresh outbreaks of this affection continue to occur in different parts of the country, but the malady is undoubtedly subsiding. There has been observed for some time past a considerable modification in the severity of the attacks, and in some districts where the disease prevailed extensively and in a virulent form it has entirely subsided.

PLEUROPNEUMONIA.

This disease maintains its ordinary rate of prevalence; nothing of special interest has been reported in reference to this disease from the agricultural districts, while from the chief centres of infection, the dairies of large towns in this kingdom, no reports have been received.

THE AMERICAN HORSE DISEASE.

From New York, where the epizootic influenza was recently so extensively diffused, the reports received are in effect "a clean bill of health."

The epizootic, however, continues among the hills in the Charlestown district, but it has disappeared from the coast. It has also disappeared from Galveston, nevertheless is reported to be extending further westward. Fresh reports of the introduction of the disease into this country have been investigated, but in every instance it has been ascertained that the only foundation for the reports has been the occurrence of catarrhal affections, sometimes of the enzootic form, complicated with bronchitis, or severe irritation of the larynx and fauces.

No increase of mortality from these affections has been observed.

INFLUENZA IN INDIA.

Mr. R. Spooner Hart writes us that influenza has been very rife among the horses in Calcutta. The malady began very suddenly in the middle of last November, and continued till about the third week in December, when the disease began to abate as rapidly as it arose. The disease usually ran its course in about twelve days, and during its prevalence it caused considerable inconvenience to many private individuals as well as to large houses of business, but fortunately not any serious loss from death of the animals. In the majority of cases the symptoms were those of ordinary cold, such as catarrh, cough, weeping from the eyes and nose, loss of appetite, staring coat and slight elevation of internal temperature. In some cases derangement of the liver accompanied the catarrhal symptoms. The visible membranes were tinged yellow. Obstinate constipation existed in most of these cases, but in others diarrhœa prevailed. There was little or no tendency to bronchitis, but great debility was a leading feature in all.

Active treatment was required only in exceptional instances. In the majority little more was needed than watching the progress of the case, and administering as necessary mild aperient and febrifuge medicine; using also slight counter-irritation to the throat. This with good nursing was generally sufficient to bring the patients to a convalescent state.

The same form of influenza disabled great numbers of the Calcutta horses in March and April, 1870, but until the recent outbreak the City has been quite free from it.

Facts and Observations.

Physiology of the Pneumogastric Nerves.—As the result of a series of thirty-seven experiments carried on with electricity on dogs and pigeons, Prof. Masion, of Louvain, has stated that there is a marked difference of action between the two pneumogastrics on the heart, and concludes that for weakening and suspending the functions of the heart, the right nerve possesses a power far superior to that of the left one. The greater action of the right pneumogastric, adds M. Masion, does not exert itself in any peculiar department of the heart, but in block as it were.—*Lancet.*

Advantages of Tow for Dressing Wounds.—Dr. Jansen, of Belgium, advocates the advantages of tow such as is prepared by M. Brocker, chemist. The tow is first subjected to the action of carbonate of soda, then cleaned with a solution of hypochlorite of soda, and carefully dried. Dr. Jansen prefers this to charpie for dressing wounds.—*Lancet.*

Hydrophobia.—From Demerara we learn that numerous deaths from hydrophobia had taken place there, causing extreme uneasiness, and the adoption of stringent measures for the safe keeping of dogs.—*Ibid.*

To get rid of Flies.—Dr. Hewson, in the *Philadelphia Medical Times*, states, that hanging branches of wild chamomile in flower about a room will expel the flies, which will be also done by strewing the dried flowers about the room, or by burning black pepper on a hot shovel.—*Medical News.*

Noctilucin.—By T. L. Phipson (' *Chemical News*,' xxvi, 130).—The peculiar organic substance which causes the production of light in phosphorescent fish, the glowworm and probably all other phosphorescent animals, appears also to be formed by a variety of circumstances at the expense of dead animal and vegetable tissue, and even by certain living plants (*Euphorbia, Agaricus,* &c.). The author has named it noctilucin, and his present observations relate to it only as produced in the animal world.

At the ordinary summer temperature noctilucin is a semi-fluid, almost liquid substance, containing nitrogen ; it is white, contains a considerable amount of water, and has a slight odour resembling that of caprylic acid; it is only slightly soluble in water, and insoluble in alcohol and ether. Sulphuric or nitric acid dissolves and decomposes it, and potash evolves ammonia from it. When moist it absorbs oxygen

and evolves carbonic acid, and, when left to itself, dries up to thin, shining, transparent films, devoid of structure, and resembling the *mucin* of the garden snail.

Recently produced, it is highly phosphorescent, and the production of light is owing to oxidation. It is secreted in phosphorescent animals by a special organ just as bile is secreted by the liver, and appears to be used in producing light nearly as fast as it is formed. Its light is nearly monochromatic, and its spectrum principally developed between the lines E and F. In an impure state noctilucin can be obtained from the surface of various fish when highly phosphorescent, also from the glowworm by pressing the luminous matter collected by the scalpel through porous filtering-paper. It is secreted in a pure form by the luminous centipede (*Scolopendra electrica*).—J. B.—*Journal of the Chemical Society.*

PREPARATION OF ALBUMIN.—('Dingl. Polyt. Jr., ccv,' 78).—Schwalbe states that if a drop of mustard-oil be added to 20 grams of milk, the latter does not curdle, but its casein is, after some time, changed into albumin.

Albumin may thus be cheaply prepared.—M. M. P M.—*Ibid.*

THE POISONOUS PRINCIPLE OF ERGOT-OF-RYE.—By E. Handelin ('N. Jahrb. Pharm., xxxvii, 157 ; Chem. Centr.,' 1872, 577).—This substance dissolves in water, but scarcely or not at all in alcohol. It is soluble, however, in dilute alcohol mixed with acetic acid, from which solution it is precipitated by ether, partly at least undecomposed. It is decomposed by barium hydrate not precipitated, or only partially by potassium-bismuth iodide. By precipitation with mercuric chloride and tannic acid, it undergoes alteration, by which it loses its physiological activity. Hence it would appear that neither the substance (echoline) which Wenzell obtained from the precipitate formed by mercuric chloride, nor the ergotine obtained from the filtrate, can be regarded as the active principle of the ergot.—H. W.—*Journal of the Chemical Society.*

INFLUENCE OF FOOD CONTAINING LITTLE OR NO PHOSPHORIC ACID ON THE COMPOSITION OF BONES.—By H. Weiske ('Zeitschrift f. Biologie,' vii, 133—179; 'Chem. Centr.,' 1872, 427).—The author concludes from his experiments that the removal of lime or phosphoric acid from the food of an adult goat has injurious results, and finally causes death, but has no influence on the composition of bones, and can hardly render them brittle.—T. L. B.—*Ibid.*

THE VETERINARIAN, FEBRUARY 1, 1873.

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

SHEEP ROT IN AUSTRALIA.

WE have the pleasure to call the attention of our readers to the following highly practical article on the fluke disease or rot of sheep. It is extracted from the Melbourne *Leader* for Sept. 7th, 1872; having been written by Dr. John P. Rowe, who modestly signs himself as "A Sheep Farmer in the Goulburn district." Our colleague, Professor Cobbold, has received a letter from the writer, thanking him very cordially "for the light he has thrown on this subject, and for the essential services he has rendered to the sheep farmers of Australia."

"The sheep pest known as fluke is very much on the increase in the flocks of Victoria; it may indeed be asserted that its ravages have extended during the last three years to flocks in every part of the colony, with the remarkable exception of those fed on the salt plains of the north-western district, and some other salsuginous pastures. The losses by some of our sheep-owners since shearing have been really alarming, and it is calculated by persons of great experience that both the increase of sheep and the growth of the staple this year will be materially diminished by it. We know that in England the estimated deaths from fluke, or liver rot (as the disease is sometimes called), have in one year amounted to upwards of 1,000,000 sheep, and I have reason to believe that the losses in Victoria during the last two years will be very little short of that amount. Anything, therefore, which will assist sheep farmers to a knowledge of the nature of such a direful plague, or may enable them to frustrate its further ravages, cannot but be acceptable to them, and prove interesting to the general public, who are so directly concerned in the production of cheap and wholesome animal food."

"We are indebted to Dr. Spencer Cobbold and other distin-

guished helminthologists for an explanation of the nature, structure, and habits of the sheep fluke, but they have not, as far as I am aware, ever suggested any remedial measures. Dr. Cobbold admits that this description of the genetic relations of the parasite may, on further researches, require some modification in its minor details, yet asserts positively (and my own observations confirm his assertion) that in the main his general description will be found substantially correct. It will be necessary for my purpose to set forth briefly, and in the plainest terms I can use, Dr. Cobbold's explanation of the phenomena of fluke life. It is as follows: Fluke is especially prevalent during the spring months, at which season of the year large quantities of fluke eggs, and sometimes probably living flukes themselves, escape from the infested animal, through the common duct of the liver into the intestinal canal, and thence are transferred with the dung to the pasture grounds. The eggs thus freed are very minute, not measuring more than the 160th part of an inch in diameter; they are furnished with a lid at one end of the shell, for the facility of the escape of the ciliated or hairy-edged embryo, each containing only a single germ, to be subsequently developed by a process analogous to plant-budding. The action of the dew, rain, or pools of water on this egg, assisted by the vital movements of the embryo contained within, serve to loosen the lid of the shell, and the animalcule is thus set free. The liberated animalcule, which at this stage is less than the 160th part of an inch in diameter, as soon as convenient, after its release finds and attaches itself to the body of a small snail or mollusc, always abundant in wet sour-grass country; it then parts with its hairy covering, and gains access to the interior of its friend. Once there, the embryo disappears, leaving the germ-bud, which now undergoes a rapid development, and being bisexual, begins already to reproduce itself by a second progeny formed within its own interior. It is then transformed into a sac or cyst for the support and protection of its contained progeny, and in this condition is called "a nurse." These nurse-progeny are furnished with tails, and when fully developed are the well-known cercariæ. The cercariæ now migrate from the bodies of their host, and for

a short time assume an independent existence, swimming about in water holes and wandering over marshes and all moist pastures, especially whilst the dew is heavy on the grass, until at length they are taken into the stomach of the sheep or other herbivorous animals when the latter are feeding or drinking. Dr. Cobbold adds, that it is not improbable they may sometimes be swallowed when they are in the body of their host, and I incline to think that this is the usual condition in which they enter the rumen of the sheep. Be that as it may, the worms soon fasten themselves on the coat of the stomach of their new landlord, by means of a sucker provided for the purpose, and bore their way through the tissues to the liver, where they lose their tail, and become encysted for some weeks or even months before they are converted into perfect flukes as found in the biliary ducts. The bile appears to be their natural food, for in the ducts they thrive rapidly, attaining the length of one inch and even a larger size. Here also they begin to expel in large quantities, though only one at a time, their ova, which escape by the common duct of the liver into the intestine, and are thus transmitted to the pastures, to be again transformed into fluke by the process already explained."

"On the primary origin of flukes Dr. Cobbold gives no opinion. Very little, if anything, is known on that subject; it is the general belief of all students of nature that, like the acari, and all other parasites, flukes are not a spontaneous production. As I have before stated, my own observations confirm, with the single exception noted below, the perfect accuracy of Dr. Cobbold's theory, and on its basis only can any remedial or prophylactic treatment of the disease be entertained. The existence of fluke in the north-eastern district is contemporaneous with the introduction of strange sheep. It was unknown here until about the year 1855, and followed very soon after the importation of the first German rams and the introduction of some other sheep from localities where fluke was known previously to have prevailed; it is noteworthy that those flocks amongst which have been introduced the fewest strange sheep are the last and the least affected by this disease. It thus appears from Dr. Cobbold's explanation and other data that two conditions are absolutely

necessary for the introduction of liver-fluke into any pasture: 1st. There must be sheep infested with the parasite, and containing what may be termed the seeds of the disease. 2nd. There must already exist, either in the pastures, water-holes or rivers a certain class of snails specially organised to act as hosts for the embryo, or, in other words, as receptacles for these seeds. If either are absent fluke cannot be reproduced. These facts fully account for the total absence of fluke during many years from a portion of this district now seriously infested by it, and also for the positively ascertained impossibility of reproducing fluke on the salt plains pastures. I have it on unquestionable authority that for many years fluky ewes, in lamb, were annually removed from this district to the westward plains, and that though they bred there for three or four years afterwards, yet liver-fluke was never found in their offspring. My informant further states that the change of pasture did not rid the mother sheep of her unpleasant guests, but their ova being scattered on what I may term barren ground, perished there for want of congenial hosts, and the lambs of the fluky ewes invariably remained sound. Dr. Cobbold's theory explains also why after unusually wet seasons fluke is more prevalent in our flocks in this district, and on the contrary in dry seasons the same district is comparatively free from the disease. All the snail tribe increase very much in moist weather; a larger number of the ova are therefore developed, and taken up by the sheep; an abundant crop naturally follows a plentiful supply of seed, whilst in dry weather the nurses become scarce and a large portion of the ova perishes for want of them.

"Various remedies have been suggested for the cure and prevention of this terrible scourge of our flocks. Two only are worthy of observation, as they are now in general use by owners of infested flocks. The first is a constant and liberal supply of rock salt placed in troughs in every paddock wherein sheep are depastured; and the second is a compound of sulphate of iron and common Liverpool salt in the proportion of one part of the former to five parts of the latter. The iron and salt remedy was introduced some years ago by Mr. Charles Thomas, a very old colonist and the brother of

the late Dr. Thomas; it is now very extensively used, and is found to improve the condition of the sheep. Owners of fluky flocks are much indebted to Mr. Thomas for its introduction. These reagents, however, have not as far as I have been able to ascertain ever removed the parasite from the liver of the sheep. Rock salt has doubtless mitigated the severity of the disease by dissolving and destroying large numbers of the cercariæ whilst yet in the rumen, and thus prevented them pursuing their tunnelling operations. Salt is always death to the snail tribe, but it cannot possibly reach the fully developed fluke, exciting to disease the liver of the sheep. A good deal more, however, may be said in favour of the iron and salt remedy; it is a useful purgative and an excellent tonic, and is readily taken by the sheep from the troughs. It is not only a valuable prophylactic, acting on the cercariæ in the rumen in the same manner as rock salt, but is, to a considerable extent, a remedy for the ravages the liver has sustained from the operations of its disagreeable lodgers. Dr. Sasse, an eminent authority on the use of iron, says—"The exhibition of all the preparations of iron by their chemical operation on the gases contained in the circulatory system supplies the loss of blood-corpuscles; it increases also the temperature of the animal body, and promotes its activity and nutrition." Now fluky sheep are most deficient in the red corpuscles of the blood, and the use of sulphate of iron is, therefore, clearly indicated. This remedy, above all others, has been attended with the most satisfactory results. Still it will not cure fluke: and how is this terrible visitor to be got rid of? I must candidly admit that the question is a most difficult one to answer, and I have, after much thought and observation, come to the conclusion that the only remedies are—1st. To get rid altogether of the sheep infested. 2nd. To burn the whole of the grass, carefully, on which diseased sheep have been depastured; but this means all ova deposited, and a large quantity of snails and nurses, would be destroyed. 3rd. To kill, as far as is possible, all marsupials known to be infected with liver-fluke. 4th. To restock the pastures either with cattle or with sheep which are perfectly sound. By these means I do not hesitate to assert that, unless fresh

diseased sheep be subsequently introduced, the pastures will remain free from fluke. It appears to me that taking Dr. Cobbold's theory to be correct, and of this I have not the slightest doubt, the plan I have suggested is the only rational method of stamping out liver-fluke from our flocks. The difficulties and the loss attending these proceedings might at first sight appear very great, but if you compare them with those incurred in the retention of fluky sheep, the loss will be comparatively trifling, and in the long run it will be found "the first loss will be the best." Store sheep are just now in great demand, and our infested sheep could readily be sold to or exchanged for sound ones with any of the sheep breeders on the salt bush country, provided a liberal allowance was made to cover an increased mortality, which under any circumstances would not exceed 20 per cent. No sheep will fatten so quickly on salt country as those infested with flukes. I have fattened thousands of them on the Murray plains, and converted them into money within six months after their arrival. The suggestions I have ventured to offer to my fellow sheep farmers are the result of a long and painful experience of the folly of continuing to breed from infected sheep in a country favorable to the reproduction of fluke. If this communication should only be the means of exciting more attention to its important subject than has hitherto been displayed by sheep-owners my object will be accomplished; more thought and more research may lead to fresh discoveries in this interesting branch of therapeutics. At present, from the data before us, we must come to the inevitable conclusion that there is no remedy for liver-fluke, and that the sooner they are fattened and converted into cash the better it will be for the colony."

In a footnote Dr. Rowe questions whether flukes ever pass out by the bowels of infected animals. He says—"My observations lead me to doubt the accuracy of Dr. Cobbold's statement in this respect. I do not think the living fluke ever leaves the ducts of the liver; its embryo only, encased in an eggshell of the minutest size, passes through the liver duct. I have never found a living fluke in the duct small enough to pass through."

In a subsequent number of the *Leader* Dr. Rowe enters upon the question as to whether the meat of rot-affected sheep is or is not wholesome as human food. He writes thus—"As my long experience and observations may throw some light on this all-important branch of the subject I have to ask a further space in your columns. The thought that we are consuming the flesh of animals in whose viscera hosts of crawling things have been living is doubtless unpleasant enough, but a little reflection that nearly every kind of flesh, fowl, fish, or vegetable that we consume is subject to the same abnormal condition under some form or other should tend to dispel the feeling; the knowledge only of the fact produces the disgust of the consumer. If we were to reject every article of food for such a reason we should indeed have very little left to live on. There is not an animal, bird, fish, or even vegetable, and some of the most disgusting character, that has not its peculiar parasite, "a life living on its life." It is only when its own health suffers from the ravages of its disagreeable lodgers that it becomes unfit for human food. The fluke of the sheep and cattle, the worm of the hare and rabbit, the inhabitants of the viscera of the duck and all species of wild fowl, the aphis of the cabbage plant, the rust of wheat, the oidium of the vine, and the mistletoe of the oak, are all of the same category, and it is not until they begin to sap the health of their victim, and change the structure of its organic life, which in most instances is long after the period of their invasion, that they render it valueless for the purposes of man. The only effect of flukes when they first take up their abode in the liver ducts of the sheep is to produce torpidity, a kind of lethargic inactivity, an aversion to rapid motion, especially up hill; the consequence of this state is a great disposition to fatten, exactly the same condition that is produced in stall-fed oxen and geese when put up to fatten in darkness and close confinement—the liver becomes congested and is enlarged, and in point of fact there is no more organic disease in the one case than in the other. Practically graziers in Europe are so well acquainted with this fact that sheep are brought in large numbers annually from the high lands to graze in fluky pastures, for the purpose of

rapid fattening. In the early stage, therefore, of fluke, the health of the animal is in no way disturbed; it is much in the same condition of health as any female animal is when under the first few weeks' influence of a gravid uterus; the nervous and vascular systems are doubtless affected, but there is no change of organic structure, and the flesh is in a sound and healthy condition. As the parasites grow or increase in number they begin to drain and exhaust the vital power of their host, the animals pine away rapidly, disease is the consequence, and it is then only that the flesh becomes unwholesome. But in this stage of fluke it is never consumed, nor ever likely to be, because it is not in a saleable condition; the flesh loses its colour, and is quite uneatable. From what I have stated it will be seen, then, that the mere presence of fluke in the viscera of any animal is no proof that it is unfit for human food, and for the inspectors of slaughter-houses to adopt such a test of wholesome food would be the greatest mistake. It would afford no protection to the public against unhealthy food, would increase the price of animal food, and be ruinous to our farmers and graziers. If the consumption of fluky beef and mutton were prejudicial to the health of man, there would be very few people alive in this part of the colony, for to my certain knowledge they have had no other animal food to live upon for the last twenty-five years, and I believe they may be compared, for physical ability, favorably with any other part of Australia. It is a still greater mistake to imagine, as some medical men do who have not given this branch of therapeutics much attention, that the notable increase of hydatid disease in the human subject may be in any way referable to the consumption of fluky meat. Long experience as a medical man and much observation as a stock farmer has led me to the conviction that such a theory is quite untenable. The distoma hepatica or liver fluke of the sheep is never found in any part of the human frame, at least there has been no clearly authenticated instance of it. The hydatid cyst of the liver, and of other organs of the human body, are prevalent enough, but in no case so far as I am aware has it been traced to be a transformation of the sheep parasite. The sheep fluke and its

transformations appear to be exclusively confined to herbivorous animals, and especially the ruminating species; it is rarely found in the horse, and never in carnivorous animals. I have found it in sheep, cattle, goats, opossums, kangaroos, geese, ducks, &c., but have never seen it or anything like it in men, dogs, or pigs. The human hydatid has been distinctly traced to the invasion of the parasites of carnivorous animals, such as the transformation of the tænia of the dog, and there is every reassn to believe that nearly every case may be accounted for by the careless and unnatural manner in which many persons associate and almost live with domestic animals. The result of a commission of inquiry some years ago in Iceland proved that one sixth of the deaths which occurred in that country arose from hydatid disease, received by its inhabitants from their constant companion the dog, and I have been informed by a gentleman who spent some years amongst the Kuzzlebashes of the desert that the Arab is very subject to tapeworm, which he takes from his horse. In this district, where fluke has been always more or less prevalent in sheep and cattle since its settlement, I have, after careful inquiry, only heard of one case of hydatid cyst in the human subject, whilst on the salt plains of Lower Murray, where fluke cannot be produced in sheep, I found during a period of six years no less than three cases of hydatid liver cyst in the European and two cases amongst the aboriginal population, and in every case their presence might be reasonably attributed to their promiscuous association with the dogs.

We are prepared to endorse much of the writer's statement respecting the innocuous character of well-cooked meat from fluky sheep, but we have frequently opposed the eating of rot-affected mutton as being comparatively innutritious.* Dr. Rowe has fallen into one important error which must be corrected. So far from its being true to say that the common fluke does not infest the human body, we believe there are no less than eighteen instances on record where the *Fasciola hepatica* has been found in man.

* Our readers will find a full description of Rot in the 'Journal of the Royal Agricultural Society' from the pen of Professor Simonds.

Extracts from British and Foreign Journals.

RABIES.

The subject of Rabies has of late received more than an ordinary share of attention, and it must be confessed not without reason. The malady would appear not only to be assuming a greater degree of virulence in those countries in which its presence has for centuries been known, but also to be becoming more frequent. The number of people who perish from hydrophobia is larger every year, and the malady is making itself manifest in regions where it was formerly unknown, or so rare as not to be noted. At a *séance* of the French Academy of Sciences, held at Paris on the 14th of October, 1872, notice was drawn to these facts by M. Bouley, the distinguished veterinarian, and Member of the Institute of France, who is now director and inspector of the French veterinary schools. We extract from the *Comptes Rendus* of the Academy of Sciences, just published, the following allusion to it.

M. Bouley, in presenting to the Academy a work in English by Mr. Fleming, and containing a complete study of Rabies and Hydrophobia, expressed himself as follows:—"I have the honour to present to the Academy, on behalf of Mr. George Fleming, President of the Central Veterinary Medical Society of England, a book having for its title *Rabies and Hydrophobia,* with this epigraph borrowed from Celsus: "Miserrimum genus morbi. In quo simul æger et siti et aquæ metu cruciatur. Quo oppressis, in angusto spes est."

"In this work Mr. Fleming gives the history of Rabies from the earliest times up to our own; then he traces its geography, and shows that it is a rare malady in regions of extreme temperature, as the tropical and glacial regions; while it is, on the contrary, frequent in temperate countries, and chiefly in Europe, where it appears to have acquired a character for a greater degree of virulence than it has previously had, while, at the same time, its manifestations are becoming more numerous. In Europe it is not uniformly spread; it is in France, Germany, Upper Italy, and Holland, that it is most frequent; but it is rare in Spain, and almost unknown in Portugal. In England, cases of rabies, at one time very unfrequent, have greatly multiplied since the commencement of the century; 'so that,' says Mr. Fleming, 'if we do not have recourse to general measures, England will soon suffer as severely from this terrible malady as France and Germany.'

"In the chapter on its etiology, Mr. Fleming examines and discusses all the circumstances to which have been attributed a casual influence in the production of rabies. He admits its *spontaneity*, because it appears to him impossible to explain, with the etiological doctrine of contagion, the epizoötic manifestations of the disease at certain periods and in certain regions. As an example of *spontaneous rabies* developed under the influence of terror, Mr. Fleming gives a circumstantial account of its sudden appearance in a very small toy-terrier (*joujou*), which accompanied him in a journey by rail. This dog, which was asleep, and had every appearance of health, was all at once roused up from its slumbers by the screaming sound of a passing train. From that moment it gave vent to the strangest howls, was seized with an extreme agitation, became deaf to the voice of its master, sought to escape, and from its mouth flowed an abundance of saliva. All the characteristic symptoms of rabies were developed the following day, at the end of which this disease, whose commencement had been so sudden, terminated in death. Was this rabies? Unfortunately, inoculation, which alone could have solved the question, was not tried.

"In the paragraph relative to the modes of transmission, Mr. Fleming has collected facts which demonstrate that it is not only the saliva which serves as a vehicle for the contagion, but that the blood itself is virulent from the commencement of the malady, and may transmit it by experimental inoculation. This chapter is very complete, and full of interest.

"I may say as much for that relative to the symptomatology of the disease. Mr. Fleming traces the characters of rabies in every species of animal, the human species included, and neglects none of the traits which, especially in the canine species, may serve to indicate it at every stage, from its initial period to its termination in death.

"Mr. Fleming's work terminates with an *exposé* of the means of treatment, and the greater portion of this chapter is consecrated to preservative measures; at the head of these Mr. Fleming places in the first line the *vulgarisation* of the symptoms. He also recommends—and this very practical idea would be, I believe, of the greatest utility, in a prophylactic point of view—that the most salient features of rabies should be printed on the back of the receipt which the collector of taxes gives to persons who keep dogs; a tax which is imposed upon these animals in nearly every country. In fact, rabies is not really dangerous, and would not cause so many misfortunes, if its initial period were known. If we

knew how it showed itself at the commencement, it would always be possible to prevent its ravages by chaining up the dog at the moment when it is not yet dangerous, and thus hindering it from obeying the instinct that impels it to escape from the dwelling of its owner, and to spread in every direction the terrible contagion for which it serves as recipient and vehicle.

"The author of the work of which I have made this brief analysis, proposes, with this view, the very useful *vulgarisation* of the symptoms of rabies; and in order to realise this project, he has compared his own experience with that of authorities of every country who have written on this strange malady. Thanks to this *concours*, always duly acknowledged, he has made his book the most complete, perhaps, which has ever been published on the subject."*

CATTLE DISEASE IN CHINA—RINDERPEST.

(*Continued from p.* 51.)

In one case, reported at page 68, I was informed before the nostrils were examined after death, that there had been no such discharge, but I found the cavities nearly filled with fluid of a most offensive character exuded from an extensively diseased surface of mucous membrane. Discharge from the eyes is seldom absent; when the conjunctival inflammation is severe it gives a very marked character to the head; the eyes then appear deeply sunk between the red edges of the swollen lids, from which a profuse purulent discharge escapes, accumulating at the inner angles and running down the sides of the nose. I noticed tolerably profuse salivation in one or two cases. In the hope of inducing the sick animal to resume chewing the cud, the natives occasionally tie a band of hay across the mouth, in champing which an increased flow of frothy saliva gathers, and running from the lips may deceive the observer who is looking for increased discharge from the mouth and nostrils as a sign of disease. Dysenteric purging is a marked and constant symptom in the advanced stages of the disease, and bears a pretty close relation to the severity of the intestinal lesions. In my second memorandum I noted the reasonableness of anticipating that the bowels would chiefly suffer in Shanghai. The laboured breathing is peculiar, inspiration shallow, and expiration a grunt. In many cases this depends

* 'Comptes Rendus des Séances de l'Académie des Sciences,' No. 16 (October 14, 1872), page 894.

no doubt upon the affection of the windpipe and bronchi, in others it seems to indicate an effort to confine respiratory movements to the chest, while in others again, in advanced stages of the disease,, it is simply the noisy shallow respiration preceding death. I have never observed redness between the toes with scaling of the epithelium. I have only once noticed an eruption on the skin; this was in the case of the bull already referred to as being the only example of recovery; his loins, back and belly were covered with a moist crusted eruption, and he lost his hair. Cough is not a prominent symptom; it was observed, however, in some of the cases, and in one was the first indication of disease; it may be described as dry and husky. The vulva in cows appears open, swollen, and much congested; I have seen it superficially ulcerated and covered here and there with patches of viscid puriform secretion. I have examined the bodies of 5 cows destroyed by the disease while in calf; none of them had aborted; 3 were about five months gone, 1 was seven months gone, and one had reached the 279th day. The urine passed in the advanced stages presented a dark brownish red colour.

The lesions are confined almost exclusively to mucous membranes, and are remarkably extended to all such surfaces in the body. They appear as the result of catarrhal inflammation of varying degrees of intensity, which has something of a specific character, indicatsd by the leaden or purple discolouration of the congested membrane seen from the very commencement, by the frequent blood extravasations into the sub-mucous tissue, by the croupous or diphtheritic exudation in the windpipe, and by the peculiar affections of the solitary intestinal glands. Serous membranes are singularly spared. I have had repeated occasion to mention an appearance "as of the first stage of peritonitis," seen on opening the abdominal cavity, and I have used this guarded expression advisedly, for although at the very onset of the disease the existence of an apparently active hyperæmia of the peritoneum is indicated by the pink discolouration of the serous surface of the bowels, still, beyond a deepening or an alteration of the tint from pink to shades of blue or purple, I have never observed a single indication of advancing inflammatory change; in no one instance, even the most severe and prolonged example of the disease where the intestinal lesions were most extensive, have I detected any diminution of the natural gloss of the membrane, fluid in the cavity of the peritoneum, or plastic exudation. I have never seen increased vascularity of the pleuræ nor any exudation in connexion with these membranes.

I now proceed from general statements to more particular descriptions of the lesions.

The *Conjunctivæ,* which are nearly always much congested during life, do not by any means constantly retain this appearance after death. I have seen blood extravasation in the sub-mucous tissue. The mucous lining of the *nostrils* suffers variably, but I have never seen this membrane free from morbid change; from the first there is red, purple or leaden discolouration, due apparently to the increased vascularity of catarrhal inflammation; in the more advanced stages there are superficial ulcerations, and the membrane is more or less extensively covered with adherent patches of viscid, puriform exudation. The *mucous membrane* of the mouth is ulcerated, the ulcers varying in size from a pin's head to a large melon seed; they are scattered over the smooth surface of the gum, lip and posterior third of the roof of the mouth, and occur also on the rough lining of the cheek; they are of no great depth. On the anterior third of the tongue, the fungiform papillæ appeared in two or three cases raised and of a bright vermillion tint; the base of the tongue was frequently found covered with a viscid greenish yellow deposit extending for a short distance into the œsophagus, possibly exudation detached from the interior of the windpipe and partially swallowed.

The lesions of the *larynx* and *trachea* have been in every case peculiar and characteristic, varying in degree according to the individual attacked or the stage of disease reached. The mucous lining is discoloured with red, pink, purple and leaden tints due to increased vascularity, or to sub-mucous blood extravasation. Such tints are generally most intense in the neighbourhood of the vocal cords. The mucous surface is more or less extensively denuded of epithelium, and more or less covered with a viscid puriform secretion. In severe cases ulceration extends quite through the sub-mucous tissue, and fibrinous exudation unites the disintegrated tissues into friable blood-stained casts of the interior of the tube. I have spoken elsewhere of the exudation as croupous or diphtheritic, and cannot now find more expressive terms for its description. By "croupous" I mean a tolerably easily detached false membrane of no great thickness, seated on a surface denuded of epithelium; by "diphtheritic" I wish to convey the idea of a more firmly adherent, tougher and thicker tissue situated on a more deeply ulcerated base. The sub-mucous blood extravasations are frequently very extensive, appearing in streaks, dots and patches; the peculiar discolourations are greatly due to them. Occa-

sionally the interior of the windpipe is filled with an abundant froth, white or pinkish, and this may extend into the larger bronchi. I have once seen an abscess in the substance of the trachealis muscle.

The *Lungs* and *pleuræ* have been examined carefully in every post-mortem at which I have assisted, but I have only once seen an appearance of pneumonic complication (see page 70). Venous congestion is common enough, but appears to be a mechanical result from the gradual failure of the heart's action. I have never seen the slightest indication of pleuritic inflammation. On two occasions I noted blood extravasations in the sub-serous tissue of the lining of the *pericardium*. I have already mentioned the presence of froth in the *larger bronchi*. I have seen increased vascularity of the mucous membrane in these tubes, but never any exudation.

On opening the *abdominal cavity* the attention of the observer is at once attracted by the pink patchy discolouration of the omentum and surface of the paunch, and by the varying shades of pink, blue and purple which colour the serous surface of the intestines. I have frequently observed spots of ecchymosis in the sub-serous tissue, but, as elsewhere stated, have never seen roughening of the peritoneum or exudation of any kind into its cavity. The stomachs have been in every case distended with the food last taken, the processes of digestion appearing to have been arrested at the onset of the disease. In the paunch I have noticed a peculiar softened condition of the epithelium which permitted of its easy detachment. The lining of the fourth stomach in every case in which it was examined was found to be much congested and the seat of more or less extensive ulceration. The mucous lining of the *intestinal canal* was, in by far the greater number of cases diseased throughout; the most serious lesions were usually seen in portions of the small gut; it generally appeares in patches swollen, softened or thinned; it is usually of a dirty red colour, varied here and there by shades of pink or purple obscured by a more or less viscid, puriform and blood-stained secretion which adheres to the surface. In the large gut the longitudinal folds shew as red streaks on the surface of an otherwise naturally coloured lining; in the small gut the discolouration is more equally diffused. Blood extravasations are common, and occur both on the surface of the membrane and in the submucous tissue. Ulceration varies from a mere diffused stripping of epithelium to a distinct circumscribed destruction of tissue. I observed in one or two cases the

surface studded with small circular ulcers of some depth which appeared to mark the situation of the solitay glands. The position of these glands was indicated here and there in many cases by a raised blue or purple spot about the size of a No. 2 shot, in the centre of which the small orifices of the glands were frequently to be seen. A peculiar appearance, somewhat resembling the special lesion of Enteric Fever, was noted in a few cases; in these the cavities of the glands were filled with a cheesy looking substance which protruded from their mouths appearing as yellow spots on the mucous surface. I have frequently noticed bluish black points, of about the size of a large pin's head and of tolerably firm consistency, partially adherent to the surface of the lining of the bowel, and have regarded these, correctly or incorrectly, as the extruded contents of the glands. The special appearances in connexion with the intestinal glands were not always observed. So far as my observations go they are confined to the solitary glands.

The *Liver, spleen* and *kidneys* appeared to be healthy in every case. The contents of the gall bladder are occasionally altered in colour—from the natural clear green to a dirty yellow. The nervous centres were never examined. The blood in every case of advanced disease was fluid, and dark in colour.

Some observers have described peculiar appearances revealed by the microscope in the muscular tissue of animals destroyed by Cattle Plague. Without denying the importance of such investigations, circumstances have directed my attention rather to the practical question whether or not it is possible to detect by ordinary inspection the diseased condition of the beef taken from the carcase of an animal suffering from this complaint. A disease which runs such a rapid course cannot be supposed to cause such an absorption of fat as would give a marked character to the meat, and experience proves that it does not do so. Decomposition sets in early, but this is a fact of no practical significance. When the animal is not slaughtered until disease is so far advanced as seriously to affect the heart's action, and to occasion extensive morbid change in the mass of the blood, the beef may be expected to present an altered (darkened) colour, due to the stasis or even extravasation of imperfectly aerated and partially decomposed blood, but the existence of even this probable morbid alteration has not been as yet satisfactorily proved.* As the result of my experience during the past

* The native butchers, as Dr. Thin tells us, slaughter the animal as soon as the disease is unmistakeable.

few months, I am able to express a decided opinion that it is practically impossible to distinguish such meat from the beef taken from an animal slaughtered in perfect health.

INFLUENZA AMONG THE HORSES IN AMERICA.—HISTORY OF THE DISEASE, THE CAUSE, AND CURE.

By Prof. James Law.

For nearly two months the prevailing epizootic in horses has almost completely absorbed public attention, mainly, no doubt, because of its rapid progress over the hemisphere, its universal prevalence wherever it has appeared, and the great and unprecedented inconvenience caused to the community. So striking has been the phenomenon, that many naturally concluded that it must be something new in pathology, and that there must be some very unusual and easily appreciable causes to have brought about so remarkable a result. But there have been no extraordinary climatic nor atmospheric changes, no known electrical nor volcanic vicissitudes which have not occurred again and again without the intervention of influenza. And though often less impartial and universal in its choice of victims, this malady has been far from uncommon in the past; its visits, indeed, in its less striking forms have been neither few nor far between. And so rarely have these visits been preceded or attended by any unusual phenomena among the forces of nature, that the coincidence must be looked upon rather as accidental than as indicating any relation of cause and effect.

The varied phases which the malady has assumed in different epizoötics have procured for it a variety of names, yet, throughout the whole Christian era, we can trace its erratic course as it broke out at intervals and spread over nations and continents, temporarily paralysing agriculture, commerce, or war, and substituting its own devastation for that of the sword. To trace its history would exceed the limits at our command; yet, out of fifty recorded outbreaks, one or two may be named. Laurentius Rusius reports of the epizootic of 1299, A.D., as it appeared in Seville: "The horse carried its head drooping, would eat nothing, tears ran from the eyes, and there was hurried beating of the flanks. The malady was epidemic, and in that year 1000 horses died." Sollysel describes that of 1648, as he observed it in the French Army operating in Germany: "It began by fever, great prostration, tears running from the eyes, and a profuse greenish mucous discharge from the nostrils. There

was loss of appetite and cold ears. Few of those attacked recovered."

In 1688 influenza was epidemic over the whole of Europe, spreading from east to west. Short and Ratty assure us that in the British Isles it was preceded by a nasal catarrh, from which horses universally suffered. In 1693 Europe had another visitation, almost identical in every particular with that just named. In 1699 America suffered in common with Europe, the horses proving the first victims on both continents. Again, in 1732, it prevailed on both hemispheres, attacking, indiscriminately, horses and men. Gibson has left a very full description of the equine disorder. In 1767 it once more prevailed on both sides of the Atlantic. Forster and Mumsen for Europe, and Webster and Ulloa for America, record the implication of horses and dogs. In 1776, almost exactly a century ago, after a very severe winter and warm summer, with an earthquake in Wales, influenza spread over Europe, attacking horses and dogs first and human beings later. Poultry died in great numbers of an epizoötic, with defluxions from the eyes. The similarity of the climatic conditions preceding that outbreak and the present one is not a little remarkable. We have passed through a winter of intense severity and a summer of unusual heat: earthquakes have occurred on the continent, and, to make the analogy more complete, it would seem that our poultry-yards are now to be decimated. But similar conditions have often failed to produce the same results, and, in the present state of our knowledge, we can only look on the coincidence as accidental.

Causes.—That unwholesome states of the atmosphere contribute to spread the affection, and to increase its severity, there can be no doubt. The milder outbreaks will sometimes confine themselves to stables which are unduly exposed to prevailing cold winds, or to such as are damp, filthy, undrained, and unventilated. Pearson, Parkes, Baker, and Gray, have observed that influenza in man is often similarly localised, or made to take on a malignant form under unwholesome conditions of life, and their conclusions are further substantiated by the reports of the English Registrar-General. But this is nothing more than is seen in other epizootic or zymotic diseases. Unhealthy conditions, and, above all, impure air, lead to undue waste of the component structures of the body, and hinder the elimination of the waste, or used-up materials from the blood, so that that liquid becomes very impure, and especially adapted to the reception and growth of morbid poisons. Such conditions

favour the outset of the disease, and increase its severity; but there is every reason to conclude that they are powerless to produce the poison where it was not already in existence. These conditions constantly exist, but the disease only appears at long intervals.

Changes of the conditions of life, such as a transition from the open pasture to the close confined and impure stable, make the subjects more receptive of the poison than those already habituated to the confinement. So with regard to the spring and autumn changes of coat. There is an increased susceptibility at such times, and influenza will often prevail with unusual severity at such seasons. So it is also with cold, wet, intemperate seasons; these may confer a potential energy on the poison by laying the animal system more open to its attack, but they are powerless to produce it anew.

A favorite doctrine concerning the causation of influenza has been that it was due to some modification of the atmosphere, or of the terrestrial magnetism. It has been supposed by some that it fell simultaneously on all parts of a continent or hemisphere, and by others, that its progress bore some relation to the motion of the earth; one party supposing that its invariable course was from east to west, and another that it was from west to east. But hitherto there has been adduced no reliable evidence of the truth of any of these theories. It has been found to prevail under all extremes of heat and cold, moisture or dryness of the atmosphere, excess of ozone and its absence, high and low barometric pressure, and positive and negative condition of electricity. Moreover, all the extremes of these conditions are constantly alternating with each other without producing any specific disease. They vary too greatly in different localities, while the disease goes on steadily advancing, and apparently unaffected by their vicissitudes.

(*To be continued.*)

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF THE COUNCIL, HELD WEDNESDAY, JANUARY 8TH, 1873.

MEMBERS PRESENT. — The President and Professors Simonds, Brown, Pritchard, Williams; Messrs. Balls, Broad, Burrell, J. C. Broad, Cartwright, Cowie, Dray, Field,

Fleming, Greaves, Moon, Naylor, Owles, Pritchard, Wilkinson, Withers, and the Secretary.

The notice was read convening the meeting.

The minutes of the last quarterly meeting were read, but previously to their being confirmed

The President stated that since the last meeting he had consulted Mr. Wilkinson, the solicitor, as to the legality of the Council paying interest on the sum given by Mr. Mayer as a nucleus for a Building Fund. The solicitor stated that such a course was perfectly legal. He had also sent a letter to the Council in answer to the inquiry.

The letter was read and ordered to be entered on the minutes.

The President further stated that in the balance sheet presented by the Council to the profession in 1849-50 an entry was made:—"Received of T. W. Mayer, Esq., being his donation towards a Building Fund," but in the body of the report of the same date it was stated to be "a contribution to a fund for procuring a residence or place of meeting." The solicitor accordingly suggested some alterations to be made in the circular about to be sent to the profession, making it read, "to procure by purchase or lease, or otherwise, more suitable premises."

Professor Simonds thought that Mr. Mayer would object to the statement; it would be appropriating the money for a totally different purpose to that intended. As Mr. Mayer was not present, he would move—"That the report brought up by the President with reference to the sum of money given by Mr. Mayer be referred to the next Council meeting, and that Mr. Mayer be consulted in the mean time."

Mr. Fleming seconded the motion.

The resolution moved by Professor Simonds was agreed to.

Letters read from J. Miller, of Ely; Graham Mitchell, of Melbourne; Wm. Broughton, of Leeds; J. Cameron, of Berwick-on-Tweed; and Messrs. Sampson, Low, and Co., of London.

The December Examination.

The Secretary read the report of the December examinations, from which it appeared that ten candidates were passed and five rejected. He also reported that at a special meeting the written examination papers with answers from Mr. Nicholas Vasey, of Illinois, were laid before the Board of Examiners, and that Mr. Nicholas Vasey had received the diploma.

The Registrar read the obituary report.

A letter was read from Mr. Bloxam tendering his resignation as a member of the Board of Examiners.

Professor Bloxam's Resignation.

Mr. Naylor moved that Mr. Bloxam's resignation be received, and that the thanks of the Council be accorded to him for his past services.

Mr. Dray seconded the motion, which was agreed to.

The Secretary said that Dr. Taylor, having been asked to name some eminent chemist to fill the vacancy, had suggested the following gentlemen:—Dr. A. Bernays, Lecturer on Chemistry at St. Thomas's Hospital; Dr. W. H. Dickinson, Lecturer on Materia Medica at St. George's Hospital; Dr. Thomas Stevenson, Lecturer on Chemistry at Guy's Hospital; and Professor Voëlcker.

Professor Simonds moved the appointment of Professor Voëlcker.

It being suggested that the practice of the Council was opposed to teachers nominating examiners,

Professor Simonds said no man was more desirous than himself of seeing an efficient Court of Examiners, and he therefore ventured to propose for the consideration of the Council the name of Dr. Voëlcker, as being a man well fitted to do honour to the position. He was a thorough, good, sound, practical, scientific chemist, and one whose name would be received throughout the country with the greatest respect.

Professor Williams in seconding the motion said, Dr. Voëlcker was a chemist of high reputation, and had done a great deal towards agricultural chemistry for this country. His name would be a guarantee that the student had passed a satisfactory examination.

Professor Brown, referring to the nomination of Dr. Voëlcker by Professor Simonds, said he was present when Professor Spooner, the late Principal of the Royal Veterinary College, proposed the appointment of Professor Bloxam.

Mr. Cowie supported the appointment of Professor Voëlcker.

Mr. Withers proposed the appointment of Dr. Dickinson to fill the vacancy. He had a very considerable reputation, and was one of the physicians at St. George's Hospital.

The motion was not seconded.

Mr. Fleming supported the appointment of Professor Voëlcker, as it would show that the Council was quite alive to the necessity of their students being acquainted with the science of chemistry as it bore on agriculture and on veterinary science.

The ballot having been taken, the President declared that Professor Voëlcker was unanimously elected.

The Secretary asked authority for a reprint of the diplomas, and also that an additional line be engraved on the plate for one of the professors of the College.

Mr. Wilkinson moved that permission be given to print 200 copies.

Mr. Broad seconded.—Agreed to.

The April examinations were fixed to be held in London in the week commencing Monday, March 31st, and those in Scotland in the month of April; the Council meeting to be held on the 9th of April.

Read notice of motion by Mr. Greaves for the alteration of Bye-law 20.

Professor Simonds pointed out that a notice involving the alteration of a bye-law could not be discussed at an ordinary quarterly meeting, but that a special meeting must be convened for the purpose.

The motion was postponed accordingly, a special meeting to be called at the close of the next quarterly meeting.

Letter read from Mr. Owles enclosing the following notice of motion :—"That a list of persons, proposed in writing as members of the Council, agreeably to No. 2 bye-law be prepared by the Secretary, and suspended on the notice-board before the annual meeting, and that such names be read at the meeting, before any other gentlemen be proposed or the ballot taken."

Mr. Owles said the object of this proposal was to make the proceedings of the annual meeting somewhat more orderly than they were at present. He was quite ready to admit that the result of the present manner of proposing members of Council showed that the right members of Council were elected, but the manner in which the names were placed before the voters might be improved. If the names were sent in writing the Secretary could prepare a list, and the gentlemen who attended the meeting could determine, at their leisure, for whom they would vote. It would be more respectful to the electors than the present hurried way of doing business, and, altogether, more satisfactory and becoming to the profession.

Professor Simonds said this must also go to the special meeting, as it involved an alteration of a bye-law.

Mr. Owles said he was prepared for that objection, and would give notice of motion for such special meeting, to the effect that "All candidates for election as members of Council

must be proposed in writing to the Secretary, on or before the 14th of April in each year; a list, stating the names and residences of the persons proposed to be prepared by the Secretary, and suspended on the notice-board before the annual meeting, and such names to be read at the meeting before being balloted for." He would withdraw the first notice, and substitute this one.

Professor Simonds said the Council could never make any bye-law to interfere with the right of a member of the body corporate proposing any gentleman at the annual meeting that he might see fit to propose as a member of Council.

The matter was then adjourned.

The Report of the Building Fund Committee was read.

The balance sheet for the quarter ending September 30th, 1872, was brought up.

Mr. Dray moved and *Mr. Owles* seconded its adoption, which was agreed to.

The Report of the Finance Committee was read, also the balance sheet to December 31st, 1872.

Mr. Fleming moved and *Mr. Naylor* seconded the reception of the balance sheet.—Agreed to.

Mr. Naylor proposed and *Mr. Owles* seconded its adoption. Agreed to.

Cheques were ordered to be drawn to pay outstanding accounts.

Special Examination Committee.

Professor Simonds, in the absence of the Chairman of this Committee, presented the Report, and moved that it be received.

Mr. Moon seconded the motion, which was agreed to.

A communication relative to the proposed alterations was read from Colonel Fitzwygram, the Chairman of the Committee, and also one from Professor McCall.

Examination Committee.

Report.

At a Meeting of the Council held October 2nd, 1872, a Special Committee was appointed "to consider the whole question of the mode of Examination of Students."

Your Committee has met several times, and after a full consideration of the subject has agreed to the following Report.

Should the Council adopt the Report, it will be necessary that several of the existing Bye-Laws of the College be

amended, and others revoked, that the recommendations of your Committee may take the place thereof.

The Bye-Laws thus alluded to are respectively numbered 19, 20, 21, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, and 38.

1.—That the Teaching Schools or Colleges be requested not to admit to Matriculation any Candidate who has been rejected at the Matriculation Examination of the same Session at any other Veterinary School.

2.—That with a view of facilitating this arrangement, the Principals of the several Schools be requested to communicate to each other the names of any rejected Candidates, as early as possible after such rejection.

3.—That the Student during his Academical Course be be subjected to two Examinations before Boards appointed by the Royal College of Veterinary Surgeons.

4.—That no Student be eligible for the First Examination until he has attended, at least, one Winter and one Summer Session at the same College or School.

5.—That no Student be eligible for the Second, or final Examination until he has attended, at least, one full Winter Session after passing the First Examination.

6.—That a Student who has been rejected at either his First or Second Examination shall not be eligible for Re-examination unless he gives satisfactory proof of having attended the Lectures and General Instruction of the School at which he had been educated during the interval between such rejection and the ensuing Examination as established by the Royal College of Veterinary Surgeons.

7.—That there be Three Examinations in each year—namely, in April, July, and December.

8.—That an Examination Fee of £7 7*s.* be paid prior to the first Examination, and that each successful Candidate pay a further sum of £1 1*s.* for Registration; likewise that each successful Candidate at the Second Examination pay an additional sum of £2 2*s.* for Enrolment as a Member of the Royal College of Veterinary Surgeons.

9.—That a Student rejected twice at either the First or the Second Examination pay a Fee of £3 3*s.* in addition

to the original fee of £7 7*s.* for each subsequent re-examination.

10.—That no Student be allowed to present himself before the Board of the Royal College of Veterinary Surgeons for his First or Second Examination more than three times.

11.—That at the First Examination there be three tables—one for Anatomy, Physiology and Histology; one one for Materia Medica and Botany; and one for Chemistry—General and Practical—and Toxicology. That twenty minutes be allotted to each Student at each table. Total, one hour.

12.—That at the Second Examination the Student be examined on Morbid Anatomy; Pathology as applied to the Diseases of Domesticated Animals; Veterinary Medicine and Surgery; Therapeutics and Pharmacy. Also on the Principles of Shoeing and the practical duties of the Profession.

13.—That at the Second Examination there be three tables—one for Therapeutics and Pharmacy; one for Pathology and Morbid Anatomy; and one for Veterinary Medicine and Surgery, including the Causes, Symptoms, and Treatment of the Diseases,—ordinary, special, and parasitic,—of Domesticated Animals. Time at each table, twenty minutes.

14.—That at the First Examination there be not less than six Examiners, nor at the Second less than seven; and that in the event of any Examiner falling ill or being otherwise suddenly prevented from attending at the Examination, the Court to have power to select a qualified person to supply the vacancy *pro tem.*

15.—That each Examiner be elected for five years only, but be eligible for re-election.

16.—That these Rules be applied to all Students who are examined from and after the period of their adoption by the Council.

Signed, F. W. Fitzwygram,
Chairman.

The report was then considered clause by clause.

Clauses I *and* II.

Professor Simonds said these clauses could not be embodied in the bye-laws of the College, because they would interfere with the private rights of existing Institutions. The

matter must be left entirely to the honour of the Principals of the several schools. There could be no objection to adopting these suggestions and making them resolutions of Council. He moved that these clauses stand part of the report as received by the Council.

Mr. Cartwright seconded the motion, which was agreed to.

Mr. Wilkinson thought they were mixing up the Council with the schools in a way which would be totally ineffective. The Council had no power over the schools whatever, and unless the schools assented to any law which the Council made, there would be a reservation on their part which would render the whole proceeding utterly ineffectual.

Professor Simonds said they did not propose that this recommendation should be made a bye-law, it was simply a request. When the report was adopted by the Council he was prepared to post all the alterations, taking effect as a resolution of the Council affecting the existing bye-laws, as new bye-laws.

Professor Williams said on his part he could say they would receive the 'request' with every favour.

Mr. Wilkinson thought it beneath the dignity of the Council to request anything of the sort. The schools would be as independent as ever, and it would be much better for these matters to be settled by the schools themselves. The Council would show itself wanting in common sense if it passed a law which it could not carry out.

Professor Simonds said the matter had been well discussed in committee, and it was thought the Council might bring a little power to bear on the schools by sending these resolutions to the Principals of these several colleges, asking their consent to carry them out.

Mr. Wilkinson said he cordially agreed with that course.

Clause III.

Professor Williams moved, and *Mr. Cowie* seconded, the adoption of Clause III which was agreed to.

Clause IV.

Mr. Dray moved, and *Mr. J. C. Broad* seconded, the adoption of Clause IV, which was agreed to.

Clause V.

Mr. Dray proposed, and *Mr. Moon* seconded, the adoption of this Clause, which, after a short discussion, was agreed to.

Clause VI.

Mr. Broad proposed, and *Mr. Dray* seconded, the adoption of this Clause.—Agreed to.

Clause VII.

Mr. Naylor proposed, and *Mr. Withers* seconded, the adoption of this Clause.—Agreed to.

Clause VIII.

Mr. Dray proposed, and *Mr. Owles* seconded, the adoption of this Clause.—Agreed to.

Clause IX.

Mr. Dray proposed, and *Mr. Broad* seconded, the adoption of this clause.—Agreed to.

Clause X.

Mr. Dray proposed, and *Mr. Naylor* seconded, the adoption of this clause.—Agreed to.

Clause XI.

Mr. Dray proposed, and *Mr. Owles* seconded, the adoption of this clause.

Professor Williams proposed, as an amendment, that the clause read—"That at the first examination there be three tables—one for anatomy; one for materia medica, pharmacy, and botany; and one for chemistry—general and practical—and toxicology. That twenty minutes be allotted to each student at each table; total, one hour." By this means physiology and histology would be deferred to the second examination, for he considered that first-year students, or the generality of them, were unfit to pass an examination in physiology. Continuing physiology for the second examination had this advantage, that it kept the student alive to the subject of anatomy; he would be compelled, if not to attend to the details of anatomy, at least to remember the principles of the science, and, therefore, the examination being divided into two, would be a far better test of the student's capabilities.

Professor Simonds said he was at first inclined to take a similar view, but on considering details he found it was totally impracticable so to do. On speaking with his colleagues they fully agreed that anatomy and physiology were so intimately bound up together that it would be wrong to separate them, and seeing that a student would be two sessions at a college before presenting himself for his examination upon physiology, it was not asking too

much of him. According to the plan the Committee had before them, they had deemed it prudent that the last examination should be thoroughly and completely a practical examination, and that it should be essentially conducted by veterinary surgeons. If the subject of physiology was thrown into the second examination the physiological examiners would be sitting two nights to the veterinary surgeon's one, and the expenditure would be greatly increased.

Mr. Fleming said that if Professor Williams' suggestion was adopted they would drive a large amount of important matter over to the last examination. This had been very carefully considered by the committee, and the division of subjects was made as fairly as possible.

Professor Brown said one point which weighed with the committee, in suggesting that the subject of physiology should be included in the first examination, was the conviction of the utter impossibility of a student understanding lectures on the science of pathology unless he knew something of the normal functions of the body.

Mr. Greaves supported the amendment, which, on being put to the Council, was carried by a majority of ten to six.

Clause XII.

Professor Williams proposed that the following be substituted for Clause 12:—"That at the second examination there be three tables—one for physiology, pathology, and morbid anatomy; one for veterinary surgery, to include the external diseases of the domesticated animals; and one for veterinary medicine, embracing the internal diseases of horses, cattle, sheep, dogs, &c."

Mr. Greaves seconded the proposition, which, after some conversation as to its details, was adopted.

Clause XIII.

Professor Williams proposed that the following words be substituted for Clause 13:—"That at the second examination the student be also examined on the principles of shoeing and the practical duties of the profession."

Mr. Greaves seconded the proposition, which was agreed to.

Clause XIV.

Mr. Dray proposed, and *Mr. Broad* seconded, the adoption of this clause, which was agreed to.

Clause XV.

Mr. Greaves proposed, and *Mr. Cartwright* seconded, the adoption of this clause,—Agreed to.

Clause XVI.

Professor Williams proposed the adoption of this clause.

Mr. Greaves seconded.

It was agreed that these rules should be considered by the Council at a special meeting to be held in April, so as to come into force in July next.

Mr. Wilkinson proposed that the rules, as amended, should be printed with the notice of motion, and circulated to each member of the Council and the Principals of the schools.

Mr. Dray seconded the motion, which was agreed to.

Professor Simonds gave notice that, at the first special meeting of the Council convened for the purpose, he should move "That the bye-laws from 19 to 36 inclusive be revoked, in order that the following may take the place thereof; and that the Bye-law No. 38 be amended and transposed, so as to become one of the series of new bye-laws applicable to the examinations of students."

The Council then adjourned.

Proposed New Bye-Laws.

Copy suspended in the Council Room of the College.

Proposed Bye-law No. 19.—The Council shall appoint twenty-two persons to constitute the Court of Examiners, and shall from time to time fill up any vacancies which may occur.

20.—Each Examiner shall be elected for five years only, but be eligible for re-election.

21.—Twelve of the Examiners shall be members of the College, two Botanists, and the remaining eight, persons eminent for their knowledge of medical science or chemistry; a moiety of each shall act as a sectional Court of Examiners for England, and the other moiety for Scotland.

22.—The Professors and appointed Lecturers of any veterinary school sanctioned by the Charter shall be, *ex officio*, Members of the Board of Examiners.

23.—The Principal Veterinary Surgeon to the Army shall be an *ex officio* Member of the Board.

24.—Each section of the Court of Examiners shall have a Chairman and a Secretary. The Chairman of the English and also of the Scotch division of the Court shall be elected by and from among its Members. The Secretaries shall be appointed by the Council.

25.—Every Member of the Court attending during the

entire period of each meeting shall be entitled to a fee of Three Guineas.

26.—Three examinations shall be held in each year, namely, in April, July, and December.

27.—The President of the College, or in his absence the senior Vice-President, may direct a special Court of Examiners to be holden on any emergency.

28.—Each student, who is a Candidate for the diploma of the Royal College of Veterinary Surgeons, shall, during his Academical Course, be subjected to two Examinations before Boards appointed by the College.

29.—Each Candidate shall forward in writing to the Secretary of the Royal College of Veterinary Surgeons as acting for England, or to the Honorary Secretary of the Court as acting for Scotland, a notice of his intention to present himself for examination, not less than seven days prior to such examination taking place, at which time the examination fee must be paid. He shall, also, seven days prior to both his first and second examination, forward to the Secretary of the College such certificate, or other legal proof, as may be required of his having been educated at one of the recognised Colleges or Schools.

30.—No student shall be eligible for the First Examination until he has attended, at least, one Winter and one Summer Session at the same College or School.

31.—No Student shall be eligible for the Second, or final Examination until he has attended, at least, one full Winter Session after passing the First Examination.

32.—A Student who is rejected at either his first or Second Examination shall not be eligible for Re-examination unless he gives satisfactory proof of having attended the Lectures and General Instruction of the School at which he had been educated during the interval between such rejection and the ensuing Examination as established by the Royal College of Veterinary Surgeons.

33.—An Examination Fee of £7 7*s.* shall be paid seven days prior to the First Examination, and each successful Candidate shall pay a further sum of £1 1*s.* for Registration. Each successful Candidate at the Second Examination shall also pay an additional sum of £2 2*s.* for Enrolment as a Member of the Royal College of Veterinary Surgeons.

34.—A Student rejected twice at either the First or the Second Examination shall pay a Fee of £3 3*s.* in addition to the original fee of £7 7*s.* for each subsequent re-examination, and seven days prior thereto.

35.—No student shall be allowed to present himself before

either section of the Board of the Royal College of Veterinary Surgeons for his First or Second Examination more than three times.

36.—At the First Examination there shall be three tables —one for Anatomy and Histology; one for Materia Medica, Therapeutics, and Botany; and one for Chemistry—General and Practical—and Toxicology. Twenty minutes to be allotted to each Student at each table. Total, one hour.

37.—At the Second Examination there shall be three tables —one for Physiology, Pathology, and Morbid Anatomy; one for Veterinary Surgery, to include External Diseases of Domesticated Animals; and one for Veterinary Medicine, to include the Causes, ordinary, special, and parasitic, Symptoms, and Treatment of Disease in general. Time at each table, twenty minutes.

38.—At the Second Examination the Student shall also be examined on the principles of Shoeing and the practical details of the Profession.

39.—At the First Examination there shall not be less than six Examiners, nor at the Second less than seven; and in the event of any Examiner falling ill or being other wise suddenly prevented from attending at the Examination, the Court shall have power to select a qualified person to supply the vacancy *pro tem.*

40.—Every Student shall be examined by each division of the Court, and at the conclusion of the examination the Examiners shall reunite, and each division report the result of the examination to the Chairman, when the sense of the whole Court shall be taken as to the qualifications of the Student.

41.—Should the result of the examination of any Candidate for the Diploma appear doubtful, such Candidate shall be recalled, and examined before the whole Court.

42.—Should a Candidate conduct himself disrespectfully, or otherwise improperly, at any meeting of the Court, the Chairman is empowered to stay the examination of such Candidate, and report the transaction to the Council.

43.—Any Candidate who shall, by a false certificate or other stratagem, impose upon the College to obtain its Diploma, shall be suspended by the Court of Examiners; and, on the fact being proved to the satisfaction of the Council, he shall be declared disqualified for examination for as long a period as the Council shall see fit.

44.—A list of the successful candidates, at each examination, signed by the Chairman of the Court, shall be transmitted to the President, who shall, on receipt thereof, as

applying to the first examination, order the Candidate's name to be registered; and as applying to the second examination, grant the Diploma of the College to the Candidate.

45.—Every successful Candidate shall, on his admission as a Member of the College, subscribe his name to the Rules and Bye-laws of the College for the time being.

46.—The signatures of the Examiners and of the Professors of the School in which the Student has graduated, shall be affixed to the Diploma, which shall be stamped with the seal of the College, and shall be in the following form:

"*Know all men by these presents, that the Board of Examiners appointed under the Royal Charter of Incorporation having examined M , and having found him fully qualified to practise the art and science of Veterinary Surgery and Medicine, he is hereby declared a Member of the Royal College of Veterinary Surgeons. By order of the Council.*

_____ *President.*

_____
_____ } *Members of the Council.*

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_____
_____ } *Professors.*

_____ | _____
_____ | _____
_____ | _____
_____ | _____
_____ | _____ } *Examiners.*

_____ *Secretary.*"

CENTRAL VETERINARY MEDICAL SOCIETY.

The ordinary monthly meeting of the above Society was held at 10, Red Lion Square, January 2nd, at 7 p.m., the President, F. J. Mavor, Esq., in the chair.

The Secretary introduced the morbid specimen of the inferior maxillary bones shown at a previous meeting by Mr. Clark. The tumefied portion had been cut open, showing the internal structure of each jaw, together with the alveoli and teeth *in situ*. It was demonstrated that there was displacement of the third and fourth molars, the fang of the third projecting outwards, that of the fourth more directly inwards, each causing a corresponding tumefaction. Between the fourth and fifth molars the roughly masticated food had forced its way more than in the others, and caries of the alveolar cavities had resulted, extending more or less through their entire depth; the same disease had also implicated the teeth, the nerve pulp of the third and fourth being particularly affected. In the discussion that ensued it was questioned whether the disease was congenital or not.

The Secretary then read a letter and newspaper extract from Mr. Graham Mitchell, V.S., of Melbourne, detailing an equine affection very prevalent there among young stock, called "Osteo Porosis;" a disease chiefly of the nasal organs, characterised by an enlargement of the superior maxillary and nasal bones, together with enlargement of the joints of the legs and knuckling over at the fetlocks, the tumours being composed apparently of lymph, bloody serum, and fatty matter surrounding imperfect turbinated bones. Other symptoms were those of ordinary rheumatism.

In the discussion that ensued, the *President* observed, there was a similarity in some of the cases of the foals that were till lately bred at Willesden paddocks; in these animals, no union took place between the epiphyses and apophyses, many of the animals showing rheumatic symptoms and knuckling over, the cause being due, in his opinion, to a want of phosphates in the soil.

Mr. Moore considered there was some analogy to rachitis in the human species.

Mr. Burrell thought that the disease was a rheumatic affection of the cartilaginous portions of the frame, because of there being more cartilage in the bones at that time.

Mr. Hunting said, that in America the disease was called "Big Head," and was described by Professor Varnell as "Osteo Porosis" in the *Veterinarian;* and that Mr. Paget, after making several

examinations of fresh subjects, found there was a deposition of more fat, and not calcareous matters; and his, Mr. Paget's observations, led him to think that the liability to fracture was due to a want of compactness. It seemed to be commoner in America, especially where the land had been gradually reclaimed.

At this stage the further discussion of the subject was adjourned to the next night of meeting, and the President introduced several specimens of laminitis. In the first case the horse had been overfed and but little used. After a ride he returned lame, and had simply had some aloes administered; five days after he (Mr. J. F. Mavor) was sent for, and found the horse to be suffering from an acute attack of laminitis, the breath was fetid and the bowels constipated; the horse was eventually destroyed, the specimen showed rupture of the capillary vessels of the sole and laminæ. The next case was of chronic laminitis, where there was descent of the coffin bone and deposit of horny matter in the interspace. The next case was of sandcrack of a hind foot that had been unskilfully treated, pus had formed and accumulated, throwing great pressure on the periphery of the nerves, causing by reflex action on the spinal cord such excessive irritability of the dorsal respiratory muscles and diaphragm, such violent spasms, that both urine and fæces were involuntarily expelled, till in one of these paroxysms a blood-vessel burst in the lungs, and the horse died suddenly from hæmorrhage. In the first case, if early attended to, the most efficient means of treatment at disposal is hypodermic injection of the vegetable alkaloids, for they act immediately on the nerve centres, restore their deranged function, thereby removing the cause, and the effect in the feet would of itself cease. Should any other remedy be required, he advised saline aperients and the application of cold. Whereas, in the other case, the contrary action is indicated, the removal of the pus by local treatment, when the irritation and reflex action would cease. In the case of sandcrack no hypodermic treatment had been adopted, the case being considered too bad to hold out hope of recovery.

The evening being now advanced, the further discussion of the subject was adjourned.

The election of Messrs. Stanton and Shaw was declared unanimous.

Present:—Ten Fellows and one visitor.

JAMES ROWE, Jun.,
Hon. Sec.

NORTH OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

The fifth annual meeting of this Association was held in the Mechanics' Hall Buildings, Aberdeen, on Saturday, 4th January, 1873.

Mr. Cassie, the President, occupied the chair.

The minutes of the previous meeting having been read and approved, the election of office-bearers for the year took place. Mr. Duncan, of Methlic, was elected Vice-President; the Treasurer and Secretary were re-elected.

The following gentlemen were elected members of Council:

Messrs. Fowlie, Peterhead; Robbie, Banchory; Deuchars, Cruden; Diack, Olmeldrum; Robertson, Stonehaven; Stewart, Rothiemay; Barron, Echt; Cassie, Newmachar; and Masson, Kintore.

The Treasurer read the annual financial report, which showed a balance in favour of the Association.

A scale of fees was submitted to the meeting, generally raising them, which was approved of.

Mr. Cassie then addressed the meeting on the events of the past year in connection with veterinary science, after which he called on Mr. Keith, of Strichen, to take the chair as President of the Association for the present year.

Mr. Keith, after delivering his inaugural address, called on Mr. Robertson, Stonehaven, to open the discussion on contagion and infection left over from the half-yearly meeting held in July last.

A very spirited discussion followed Mr. Robertson's remarks, and many different opinions were expressed on the subject.

Mr. Thomson, Aberdeen, kindly consented to bring forward a subject at next meeting.

Votes of thanks to the essayist, Mr. Robertson, and the chairman, terminated the meeting. The members subsequently dined in the Royal Restaurant, Market Street, where they spent a very agreeable afternoon, not in the usual way of toast and song, but in a friendly discussion on various diseases, the most prominent being that of "Stomach Staggers," an affection to which cattle are so much exposed in Aberdeenshire.

(Signed) Thomas Mellis,
Secretary.

Veterinary Jurisprudence.

IMPORTANT APPLICATION UNDER THE NUISANCE REMOVAL ACT.

ROT IN SHEEP.

On Saturday, Jan. 4th, the Town Clerk of Leeds made an important application before Mr. Bruce, at the Town Hall, under the Nuisance Removal Act. On Friday evening Mr. Newhouse, Inspector of Nuisances, visited the premises of Mr. William Jackson' butcher, Shambles, and seized the carcases of ten sheep, dressed for sale, which the officer, along with Inspector Storr, alleged were diseased and unfit for human consumption.

A large number of butchers were present in Court during the hearing of the application made by the Town Clerk that the carcases of the ten sheep should be destroyed. Mr. Granger appeared to oppose the application on behalf of Mr. Jackson.

The *Town Clerk* said that he had to make an *ex parte* application under the terms of the Nuisance Removal Act, 1863, by which the Medical Officer of Health for the borough or the Inspector of Nuisances might at all reasonable times examine animals, carcases, meat, &c.; and, if they found any diseased, unsound, unwholesome, or unfit for the food of man, they could lawfully seize, take, and carry it away, or direct it to be carried away, and then make an application before a justice for the destruction of such as might be found to be unsound. As something would turn on the construction of the words of the section, he wished to call the attention of the Court to the fact that it provided that any animal, carcase, or meat diseased, unsound, or unwholesome came within its provision. He now applied that the carcases of nine out of ten sheep, seized the previous evening by Inspector Newhouse, should be destroyed. There was no provision in the Act for giving notice to the person whose property was alleged to be unsound, but in this case he (the Town Clerk) had given notice to the owner of the sheep, and he understood that, availing himself of such notice, Mr. Jackson had summoned a number of witnesses, and that he was prepared to raise the question whether the sheep were unwholesome or unsound. He (the Town Clerk) thinking that the Court might wish to hear independent medical testimony, had sent for Dr. Clifford Allbutt.

A messenger, sent for Dr. Allbutt, returned to Court, and stated that that gentleman had been called to Wakefield.

Mr. Granger said that, on behalf of Mr. Jackson, he had several veterinary surgeons, and witnesses who had been practically engaged in the trade, to call.

The *Town Clerk* then called the following evidence:

Dr. Robinson, Medical Officer of Health for the borough, said that he had seen nine of the carcases of ten sheep seized on the previous evening by Inspector Newhouse. The livers were rotten

and contained worms technically called flukes. He was not aware that the fact of there being distinct evidence that there were flukes in the liver, without the liver itself undergoing putrefaction, would be sufficient to communicate a disease of that description to man. The meat of the nine carcases was soft, flabby, and to a certain extent dropsical. Technically the meat was unsound; there was watery effusion in the cellular tissues of the whole of the carcases, exactly what he should have expected from the appearances of the diseased liver and kidneys. The carcases were not in a state fit for human food. He was unable to tell the exact age, and from the cursory examination he made could not state the sex of the sheep. When he examined the carcases they were in the dead meat depôt.

Mr. Granger.—Is the depôt well ventilated?

Witness.—Well? the ventilation is bad.

Mr. Granger.—Is there any ventilation at all?

Witness.—Hardly what you would call ventilation.

Mr. Granger.—Do you think it would improve meat to be kept in such an atmosphere for any length of time?

Witness.—It would deteriorate it.

Mr. Granger.—You have mentioned as a symptom of disease the presence of flukes in the liver: is that not a common complaint among sheep?

Witness.—Very common at certain times of the year; in wet seasons particularly.

Mr. Granger.—Was the disease in the case of the livers far advanced?

Witness.—The livers were rotten.

Mr. Granger.—Can you say that that disease of the liver would affect the flesh?

Witness.—Unquestionably it has in these cases.

Mr. Granger.—You have seen a great number of cases of disease in sheep?

Witness.—Yes, within the last eight years.

Mr. Granger.—And is it not very common, indeed, to meet with diseased livers in sheep?

Witness.—It is not common to see livers rotten; but in the cases of sheep coming from very low wet marshes, they are generally subject to disease of the liver.

Mr. Granger.—There was a deputation from the Leeds Butchers' Association to examine the sheep, and they saw them, I believe?

Witness.—I believe they did.

By the Town Clerk.—I first saw the sheep this morning.

Inspector Newhouse said that he seized the carcases of ten sheep in a slaughter-house in Smith's Yard, Briggate, on Friday evening. The defendant acknowledged that they were his, and witness removed them to the bad meat depôt. At the time of the seizure the carcases were dressed for sale, and before removal they were examined by Inspector Storr. Witness had also examined them. The

flesh was wet and soft; the livers appeared to be rotten, and the kidneys were pale in colour and had a bad smell. The carcases of the sheep were removed to the depôt between eight and nine o'clock on Friday evening.

By Mr. Granger.—Six sheep were dressed and four were in process of dressing. Witness remained in the slaughter-house until the four were dressed. Mr. Jackson never made any attempt to conceal the fact that the sheep were his.

Mr. Granger.—Did you tell Mr. Jackson where you were going to remove the sheep to?

Witness.—I said I was going to remove them to the bad meat depôt.

Mr. Granger.—Is the bad meat depôt well ventilated?

Witness.—There is a skylight in the top of it. (Laughter.)

Mr. Bruce.—I should judge, from what Dr. Robinson said, that there is no ventilation at all.

By Mr. Granger.—It is a badly ventilated place. Mr. Jackson may have said (although I do not remember) that he would pay for the services of policemen to watch the slaughter-house, provided the carcases were allowed to remain.

Mr. Granger.—You have had some experience, Mr. Newhouse, in these cases?

Witness.—I have.

Mr. Granger.—And what business were you brought up in?

Witness.—The greater part of my life I have been at sea.

Mr. Granger.—Not as a butcher?

Witness.—No.

Mr. Granger.—Nor instructed in examining cattle as in this case?

Witness.—Not until the last eight years.

Mr. Granger.—And will you pledge your oath that this meat was not fit for human food?

Witness replied, that he would not pledge anything of the kind, although he considered that the mutton was not eatable.

J. H. Ferguson, V.S., Upper Fountaine Street, said that he examined the carcases of the sheep a little before mid-day on Saturday. The livers of nine out of the ten sheep were rotten. At this season of the year sheep were very liable to be attacked with fluke, but in this instance the livers were diseased independently of fluke. The flesh presented the appearance of being dropsical. Meat so affected was unsound.

Mr. Granger.—Will you swear that it was not fit for the food of man?

Witness.—It was unsound.

The Town Clerk raised an objection to the question.

Mr. Bruce said that it would be enough, so far as regarded the prosecution, to prove that the meat was unsound; but, at the same time, it would be more satisfactory to prove further the exact condition of the carcases.

Mr. Granger.—Every beast or sheep killed, then, is unsound?

Witness.—No, not necessarily so. He could not say whether the

sheep were young or old, or how long they had been diseased. Food and climate would have much to do with their condition.

This concluded the case for the prosecution.

Mr. Granger said that he had been instructed by the Leeds Butchers' Association to call before the Court several witnesses of great experience, who would state that it was a very common thing at this season of the year to find traces of disease in the livers of sheep, whilst the carcases were perfectly sound and fit for human food.

Mr. Mitchell, V.S., stated that he had been requested to examine the sheep on behalf of both sides. The livers of nine of the carcases were diseased, but not rotten by any means.

The Town Clerk.—That is sufficient to prove my case.

Mr. Granger.—The bench will decide it.

Mr. Mitchell, continuing his evidence, said that whilst there were flukes in each of the nine livers the fact did not affect the meat a bit. In his opinion, if the carcases, instead of being hung up in the dead meat depôt, where there was no ventilation, had been allowed to remain in the slaughter-house, where there was a current of air continually passing through, the meat would have been as firm as a deal board. The legs, loins, shoulders, and back were as firm as could be wished. He saw some of the carcases cut up, and the meat was bright and clear. He did not know what Mr. Ferguson had been living upon, but he (Mr. Mitchell) would be only too glad to get such meat. (Laughter.)

The Town Clerk.—Do you pledge your professional reputation that these sheep were not diseased and unfit for food?

Witness.—I do, so far as regards them not being rotten. I could hear the grating of the knife as they were cutting up the liver—a thing you could not do if they were rotten. The sheep were thin, being half-breds. There was a little air underneath the cellular tissue when the knife was put in, but there was no water. When the kidneys were cut into they were a little pale.

By Mr. Granger.—Half-bred sheep as a rule are small.

William Fearnley. V. S., said that he had been called on behalf of the Corporation to examine the sheep in the depôt—a shed without any ventilation. The livers, lungs, hearts, and kidneys were all arranged upon a table, He examined the hearts and lungs, and found them perfectly healthy. With the exception of slight external symptoms of disease the whole of the kidneys were perfectly healthy. The symptoms exhibited were those usually seen in sheep at this season of the year, and he thought that the meat was perfectly sound. [The livers of the sheep were here produced and examined by witness, who, taking one in his hand selected by Dr. Robinson, said that he only wished his own liver was in as healthy a condition. (Laughter.) Dr. Robinson also handed to the witness another liver, and pointing to a particular portion asked him if he did not think that it presented an appearance different from that of a healthy liver? The witness, laughing, said that the particular portion had been in the dirt, and that it was in fact the ligament binding it to the diaphragm.] (Laughter.)

John Cuthbert, V.S., thought that the carcases were perfectly sound and wholesome food, and that the presence of flukes in the livers was not more marked than in the generality of sheep at this season. The fetid atmosphere of the depôt would seriously deteriorate the meat. There was no ventilation whatever, and when he entered the building that morning it was impossible to breathe. He would have no objection to eat the meat.

By the Town Clerk.—The close atmosphere would not produce the flukes in the livers. They were diseased independently of the flukes; there were slight symptoms of organic disease.

Mr. Broughton, V.S., corroborated the evidence given on behalf of defendant as to the state of the meat, and the prejudicial effect of the dense and close atmosphere in which the carcases had remained all night.

John Robinson Smith, butcher, and master of the slaughter-house, said that he saw the ten sheep killed and dressed in his shop. He considered them fit for human food. He saw every sheep opened, and there was not the least appearance of dropsy. Externally the kidneys appeared to be sound; and when they were cut open, they were not so bad as he had seen some. Had seen some kidneys so diseased that the fingers could be easily passed through them. The kidneys in this case were slightly diseased.

Mr. Bruce.—Would you require that kidneys should fall in pieces before you would say they were diseased?

Witness.—No, sir; there is a difference between a kidney falling in pieces when you put your finger through it and such as these kidneys were.

The Town Clerk.—Then when they fall in pieces, we can agree they are unsound. (Laughter.)

By Mr. Granger.—When the sheep were alive, I went to Dr. Robinson, in order to get him to examine them.

The Town Clerk.—Then you considered it to be part of your duty to get the Medical Officer of Health to get him to examine your sheep and see if they were sound? A.—They were not my sheep.

Q.—But they were in your place? A.—Yes.

Q.—Why did you do so? A.—Because Dr. Robinson and Mr. Newhouse came the day before and they said that some sheep had gone out of the yard.

Q.—And what did they refer to? A.—Nay, I do not know. I wished to know, because there had been several policemen about the place.

Q.—Do you always go to Dr. Robinson before you kill sheep? A.—No; but I went this time, and would go again when people begin to make a noise about them. I wanted him to see them alive, as I thought I was responsible after they came into my place. That was the only reason why I went.

Henry Walker, butcher, and a Corporation valuer of diseased cattle, said that he had seen the sheep, and in his opinion they were free from disease and fit for human food. Had he been engaged in this case by the Corporation, he would have passed them.

The Town Clerk.—The livers are unsound?

Witness.—I do not say that they are perfectly sound.

Q.—Are they sound or unsound—give me a definite answer. A.—I won't say that they are sound.

Q.—Or unsound? A.—Very good, sir.

Q.—Give me a definite answer, "yes" or "no?" A.—They are not sound.

Councillor John Child, butcher, said that he had been engaged in the trade for more than twenty years. He had examined the carcases, and the presence of flukes in the liver was a common daily occurrence with regard to sheep and beasts. In the present case the condition of the liver did not affect the meat at all.

The Town Clerk.—You are a member of the Butchers' Association? *Witness.*—I am

Q.—Secretary, in fact? A.—Yes.

Q.—The funds of the association, I believe, are used by the members, or rather applied by the association, in the defence of cases of this kind, are they not? A.—No.

Q.—Then who pays the expenses of to-day? A.—Mr. Jackson.

Mr. Jackson.—Yes, I pay the expenses.

Mr. Child.—But I shall not charge him with my expenses.

Mr. Bruce.—Mr. Granger stated distinctly that he had received his instructions from the Butchers' Association.

The Town Clerk.—You are an interested person, then, Mr. Child, in cases of this description?

Witness.—I am not.

Q.—Are you not liable to purchase beasts or sheep which may turn out bad, and therefore be seized? A.—Yes.

Q.—Then you are interested in that respect? A.—In that case I certainly am.

Mr. Bruce.—As the association has been dragged into the case, would you favour me, Mr. Child, by telling me the names of a few of its members?

Mr. Child.—I will give you the names of them all, or send you a copy of the last report, which contains a complete list.

William Walker, butcher in the Shambles, said that the flesh of the sheep would not be affected in the least by the flukes in the liver. Witness had been occasionally employed by Inspector Newhouse to examine carcases.

The Town Clerk.—And you have also been engaged against the Corporation?

Witness.—Not that I am aware of.

Q.—You are treasurer of the Butchers' Association? A.—Yes, I am.

Q.—How much of the funds of the association has been expended in defending butchers who had charges preferred against them similar to the present? A.—I cannot tell.

Q.—How much, now, do you think this case will cost?

Mr. Granger objected to the question being put, but *Mr. Bruce* overruled the objection on the ground that it was put in cross-examination.

The Town Clerk thereupon repeated the question, when the witness answered that he did not know what the cost would be.

John Whitehead, who stated that he was a butcher in the Shambles, of twenty-two years' experience, said that he had examined the carcases, and found them perfectly sound and wholesome in flesh and bone.

This concluded the case.

Mr. Bruce asked Dr. Robinson if he agreed to the opinion that the livers might be bad to a certain extent without rendering the flesh unwholesome?

Dr. Robinson replied that the sheep might have flukes in the livers and the liver not be diseased; but in this case the livers were diseased in addition to the flukes being present, and the flesh of the sheep, in consequence of the action of the liver, was unwholesome.

Mr. Bruce.—Are flukes a disease?

Dr. Robinson.—Unquestionably.

Mr. Bruce.—Then a liver is diseased so soon as it has flukes in it?

Dr. Robinson.—Yes.

Mr. Bruce.—But this disease may exist without affecting the flesh?

Dr. Robinson.—Without affecting the flesh to any appreciable extent, and does often exist, so far as our knowledge goes.

Mr. Bruce said that his mind was in a state of doubt upon the case. He had heard the evidence on both sides, and the evidence of the scientific witnesses had left his mind (as it often did) in a perplexing state of uncertainty. Persons for whose judgment and reputation the highest respect were entertained had been called, and sworn to quite the opposite thing. Both Dr. Robinson and Mr. Ferguson admitted that the meat had been put in a place which was very likely to produce a bad effect upon it—as it did upon human beings when there was no ventilation at all, except such as might find its way through the crevices of doorways. There was also a large amount of contradictory evidence as regarded flukes, and, in fact, the testimony generally was so conflicting that he could not make an order.

The order was therefore refused.—*Leeds Mercury.*

REVOCATION OF THE ORDER OF COUNCIL RELATING TO THE IMPORTATION OF SHEEP FROM GERMANY.

At the Council Chamber, Whitehall, the 7th day of January, 1873, by the Lords of Her Majesty's Most Honorable Privy Council. Present—Mr. Forster, Mr. Stansfeld.

The Lords and others of Her Majesty's Most Honorable Privy

Council, by virtue and in exercise of the powers in them vested under the Contagious Diseases (Animals) Act, 1869, and of every other power enabling them in this behalf, do hereby revoke their Order, bearing date the thirty-first day of July, one thousand eight hundred and seventy-two, relating to sheep and goats brought to Great Britain from any place in the Empire of Germany, and landed in Great Britain: Provided that nothing herein shall invalidate or make unlawful anything done under the said Order before this Order takes effect, or interfere with the institution or prosecution of any proceeding in respect of any offence committed against, or any penalty incurred under, the said Order.

This Order shall take effect from and immediately after the thirteenth day of January, one thousand eight hundred and seventy-three.

(Signed) EDMUND HARRISON.

OBITUARY.

WE have to record the following deaths:

Mr. John Byrne, Royal Horse Guards, *half pay*. Diploma dated June 28th, 1836.

Mr. Joseph Armstrong, M.R.C.V.S., Sydney. Diploma dated Dec. 13th, 1837.

Mr. Richard Brotherton, M.R.C.V.S., Bombay. Diploma dated 1843. *Edin.*

Mr. Robert Gibton, M.R.C.V.S., Melbourne. Diploma dated May 18th, 1849.

Mr. John F. Shaw, M.R.C.V.S., Melbourne. Diploma dated May 7th, 1843.

Mr. Edmund Carrington, M.R.C.V.S., Beverley. Diploma dated April 30th, 1851.

ERRATUM.

In our last issue of the *Veterinarian*, the name of "*Rallin*" appears amongst the students of the Edinburgh College; it should be D. C. Pallin.

THE

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Communications and Cases.

CONTRIBUTIONS TO OUR KNOWLEDGE OF THE GROUSE DISEASE, INCLUDING THE DESCRIPTION OF A NEW SPECIES OF ENTOZOON, WITH REMARKS ON A CASE OF ROT IN THE HARE.

By Professor T. S. Cobbold, M.D., F.R.S., F.L.S., Lecturer on Parasites and Parasitic Diseases at the Royal Veterinary College.

Although I have already published some notes on the so-called grouse disease, it has been thought that a more precise record of the facts observed, together with a description of the parasite which I found in such abundance, might prove acceptable to the profession; and fortunately, through the kindness of Mr. Alexander Stables, the Earl of Cawdor's steward, I have enjoyed fresh and repeated opportunities of re-investigating, confirming, and adding to the data already enunciated.

With the exception of a few more or less considerable omissions, and one important correction, the following quotation forms the substance of my original communication to *The Field* for Nov. 9, 1872 (p. 450). It is necessary to give these earlier details in order to render the subsequent particulars intelligible to those who have not had access to the previous record.

"On the 2nd of Nov., 1872, I received from Dr. John Millar a batch of grouse, several of which had died of the 'disease.' They had been transmitted from Cawdor Castle, Nairn, along with a communication, from which I was per-

mitted to gather some highly interesting facts. Thus, Mr. Stables is of opinion that when an outbreak of the epidemic takes place, it 'follows a season in which the grouse have been unusually numerous and healthy,' and he supports this *post hoc propter hoc* principle by a reference to the fact that a remarkable quantity of sound game was obtained from the Cawdor Moors during the previous year. He adds:—'They showed well this year up to the time the young were beginning to fly, when, all at once, numbers of old birds were observed sickly,' and those which were found dead lay generally 'along the edges of small burns—the number of diseased and dead birds increasing as the season advanced.'

"In a paper which I read at the Dundee meeting of the British Association in 1867, and which was afterwards reported in *The Field* (for Sept. 17 of that year), I endeavoured to show that there was no good ground for asserting that the grouse disease of 1867 was due to the prevalence of tapeworms in these birds. To that opinion I still adhere; nevertheless I am by no means prepared to deny that the disease of the present season may not be due to some form of parasitism or helminthiasis. The following facts, at all events, are well worthy of consideration:

"On the day referred to I examined four birds sent by Dr. Millar, and, as Mr. Stables spoke only of three as 'victims of the mysterious disease,' I suppose one of the four was accounted healthy. Certainly the odd one was in fair condition, the other three being very thin—two of them reduced, in fact, to mere skeletons. I examined the skin, muscles, and blood of one of the birds with much care, whilst the intestinal contents of all four were more or less completely searched. The evidences of pyæmia, with softening and disorganisation of the lungs and liver, which were so much spoken of in connection with the outbreak of 1867, were here totally wanting. In this view it was, as well as for other purposes, that I subjected the blood and muscular tissue to microscopic scrutiny. The skins of all were beset with lice—the parasites being dead, and therefore readily dislodged by disturbing the feathers. Only one imperfect tapeworm was detected. In like manner I failed to obtain evidence of the existence of the ordinary *Ascarides*, which are usually rather common in these birds and their allies.

"But for one circumstance, I should have pronounced these grouse as remarkably free from entozoa. It would appear that they were all stuffed with minute nematodes of a species which I have not hitherto encountered in these birds, and which I believe to be altogether new and unde-

scribed. I will call the species by the provisional title of *Strongylus pergracilis*. Examples of this new species of parasite occupied the whole length of both of the intestinal cæca. They were present in greater or less abundance in all four of the birds. The male parasite gave an average of one third of an inch in length; the females extending up to three eighths of an inch, or rather more. The latter had their oviducts crowded with eggs arranged in single file, and displaying various stages of yolk segmentation; but I did not notice any fully formed embryos. It may afford some notion of the extraordinary abundance of these nematode entozoa, when I state that from less than a teaspoonful of the intestinal contents I obtained many hundreds of specimens. I am confident that no one of the four grouse contained less than a thousand examples, and I believe that one of the more diseased and emaciated birds contained fully ten times that number.

"That such a multitude of active nematodes could reside in the intestines of any bird without producing suffering or serious inconvenience to the bearer is hard to believe; and therefore, in the total absence of other evidence, it is perhaps not too much to assert that the murrain of the present season is attributable to the presence of multitudes of very fine strongles. I am perfectly well aware that birds can fly about with all sorts of strange entozoa in their bodies without apparently suffering in the least degree, and we have lately become acquainted with a singular instance of this apparent immunity. Professor Wyman found *Eustrongyli* surrounding the cerebellum of seventeen out of nineteen snake birds or water turkeys shot in Florida; and he remarks that the presence of these threadworms 'in the cranial cavity might be called the normal condition of this bird.' Dr. Wyman's parasite is a viviparous form of nematode. (See 'Proceed. Bost. Nat. Hist. Soc.' for 1868.) These and other like data do not, however, disprove the generally admitted conclusion, which I have over and over again had occasion to verify, that internal parasites are liable to occasion inconvenience, suffering, disease, and not unfrequently death itself, to their bearers, more particularly when they occur in excessive numbers. A parasite-bearer, like any given territory, can only support a certain number of occupants. In the case of entozoa an unusually wet season following a mild winter is eminently favorable to the excessive multiplication of certain forms of these creatures.

"Since dissecting the four grouse above referred to, I had an opportunity of examining with still greater care the

intestinal contents of a fine healthy grouse, also sent from the same locality. In this case a very large number of the strongles occupied both cæca, though not in such prodigious numbers as in the emaciated bird above mentioned. There were several examples of the *Tænia linea*—these tapeworms being limited to a narrow portion of the small intestine situated from five to ten inches above the point of junction of the cæca with the large intestine. No other forms of entozoa were present. I may likewise add in this place that the more cursory examination of the contents of yet another grouse—the sixth under my observation from the same locality—also yielded a quantity of strongles. A question will here naturally suggest itself to the mind of the practical man. Does not the fact of the occurrence of these parasites in the intestines of a so-called healthy grouse destroy the notion of disease from this source? My reply is, 'Certainly not.' A large experience with the symptoms produced by entozoa, both in human and animal bearers, enables me to assert with confidence that the measure of feebleness, disease, or suffering usually corresponds with the degree of parasitism; but not exclusively so, since another factor concerned in the welfare or destruction of the bearer, as the case may be, arises out of the constitutional vigour of the bearer. A strong bird will overcome or resist the irritation set up by the presence of hundreds of entozoa; while a feeble bird, or one attacked before it is perfectly grown, will more or less rapidly succumb to the invasion. It is the same with mankind. One person will have convulsions from a single parasite, whilst another will play the part of 'host' or bearer to the same species of parasite without the slightest discomfort. On these and other grounds, therefore, with some reservation, I do not hesitate to express the opinion that the present grouse murrain may be due to parasites. The irritation, probable distress, and subsequent emaciation of the birds are readily explained by the presence of hundreds and thousands of strongles; and, as these parasites are very small, investigators seem to have hitherto overlooked them. I assume this to be the case, because I have neither encountered them previously, nor am I acquainted with any description corresponding with this species of parasite."

As the foregoing remarks comprise all the more essential facts originally communicated to *The Field*, I will now, before recording the results of further examinations, give a systematic description of the new parasite.

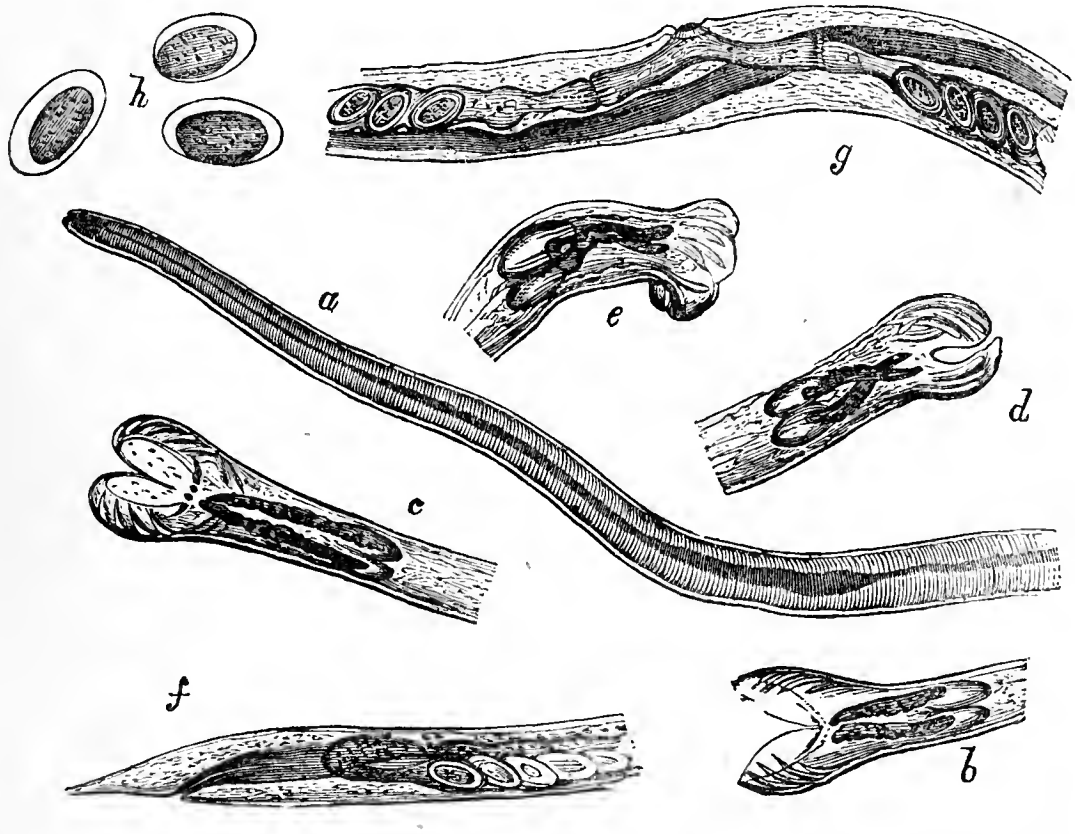
Order.—NEMATODA, Rudolphi.

Family.—STRONGYLIDÆ, Dujardin.

Species.—*Strongylus pergracilis*, T. S. C.

(The very slender strongle.)

Characters.—Body filiform, finely striated, gradually diminishing in front, uniform in thickness below; head bluntly pointed, with a simple oral aperture; tail of the male furnished with a bilobed bursa, each half supporting four pointed rays, spicules two, thick, and slightly divergent; tail of the female slightly swollen above the subterminal anal orifice, rather sharply pointed at the tip; vaginal opening situated at the upper part of the inferior sixth of the body.



Description of figures.—*Strongylus pergracilis*:—*a*, head and neck; *b*, tail of the male, viewed from the front; *c*, another view, showing the expanded bilobed hood, the two spicula, oval glandular organs above, and the bursal rays; *d*, *e*, lateral and oblique views of the tail of the male; *f*, tail of female, with anal outlet and fold of the inferior uterine tube; *g*, portion of the body of the female showing the reproductive papilla, vaginal passages, and constrictions, with lower portions of each uterine tube, also the digestive canal; *h*, three of the ova.

Length of male $\frac{1}{3}''$ to $\frac{3}{8}''$; body $\frac{1}{400}''$ in diameter, tapering

anteriorly to $\frac{1}{2000}''$ at the head; greatest breadth immediately above the bursa $\frac{1}{350}''$.

Length of female mostly $\frac{3}{8}''$, sometimes very nearly $\frac{1}{2}''$; breadth above the tail $\frac{1}{270}''$ to $\frac{1}{250}''$, narrowing at the extreme point to $\frac{1}{7000}''$; longitudinal diameter of the eggs $\frac{1}{250}''$, their breadth being $\frac{1}{650}''$.

These measurements have been carefully made by Mr. Charles S. W. Cobbold, with the aid of a Wasserlein microscope and micrometer. I am also indebted to my son for numerous illustrations of the worm, from which the accompanying figures have been selected and drawn on a reduced scale.

During the latter part of the month of November I received a second batch of grouse from the Cawdor Moors. There were six brace in all, three of the birds being described by Mr. Stables as diseased, but whether picked up dead, or how otherwise obtained, he was not informed. The remaining nine were shot by the keepers, and were "believed to be in good condition." In accordance with Mr. Stables' instructions, the three birds in question were purposely selected from "the most diseased" which Lord Cawdor's keepers came across. It will therefore be seen that I had, thus far, examined eighteen birds from the Cawdor demesnes; and the results afforded, in relation to the probable cause of the grouse disease, if not generally accepted as decisive, are, at all events, of very considerable interest.

I may here mention that whilst shooting over the Kirkconnell Moor, in Kirkcudbrightshire, this autumn, my host —Richard J. Strong, Esq., then residing at Barcaple House —and myself bagged several unusually thin grouse. One of these birds, which rose to my gun at the edge of a burn, was even more emaciated than some of the worst of those received from Mr. Stables; at least, I judge so, in the absence of means of actual comparison. I have no doubt that the bird was already in a dying state, and that it was perishing from the same cause as that which had proved so destructive to the birds further north and elsewhere. Partly because I had no microscope at hand, and partly because I was so occupied with sport and the abounding natural charms of the locality, I made no internal examination of the game there obtained. As to this moribund bird, however, I may add that it could scarcely fly, and was only induced to rise after being nearly trampled under foot. By careful inspection I ascertained that there were no external evidences of previous gunshot injury. In short, to use a phrase, which has now become famous, the poor bird had evidently been reduced, by a slow process, to "a mere ruckle of bones."

It may save a great many words if I tabulate the results obtained by my second special investigation of the Cawdor game in the following manner:

Number of specimen.	Condition of bird.	State of viscera.	Tapeworms present.	Strongles present.
1	Good.	Full.	None.	Abundant.
2	Emaciated.	Putrid.	Two.	Very numerous.
3	Good.	Full.	None.	Abundant.
4	Good.	Full.	None.	Abundant.
5	Good.	Full.	One.	Abundant.
6	Good.	Shrunken.	Two.	Very numerous.
7	Emaciated.	Much shrunken.	None.	Very numerous.
8	Thin.	Shrunken.	None.	Very numerous.
9	Thin.	Shrunken.	None.	Very numerous.
10	Emaciated.	Distended.	Many.	Very numerous.
11	Thin.	Rather full.	Several.	Abundant.
12	Thin.	Rather full.	None.	Very numerous.

In regard to this list there is just one possible inaccuracy which it is only right to indicate. The birds were eviscerated by my cook, and laying out the entrails of the last six —all of which were more or less impoverished birds—it was rendered doubtful to myself which of these referred to the numbers 7 and 10 respectively, two of the six belonging to the three thoroughly diseased birds. The doubt rested chiefly as regards No. 10. The bird marked No. 2 in the table was extremely emaciated. I had selected this as the most diseased of all. The intestinal canal and cæca of the birds were thoroughly and exhaustively examined from end to end in every case. The cavity of the proventriculus was also inspected in one or two instances, but, as regards entozoa, it only yielded negative results. There were no Trichosomes.

On looking to the additional facts thus established, it will be seen at a glance that whilst, on the one hand, the presence of tapeworms is only occasional, the presence of strongles is, on the other hand, invariable. The only difference, as between impoverished and healthy grouse in this latter respect, appears to be that, in the case of birds out of condition, we shall always be likely to encounter a relatively larger number of these nematode worms. It is merely the difference between thousands and tens of thousands; but this disparity, if considered in association with the varying strength of constitution of individual avian bearers, will be amply sufficient, in my opinion, to account for either impoverishment or retention of health, as the case may be. That in some seasons the tapeworms may acquire ascendancy, and thus become a

true cause of mortality amongst the grouse is quite possible; and, under any circumstances, their presence will be likely to aggravate a disorder, whether the latter be proven to be due to another form of parasitism (as happens in the present epidemic) or to disease arising from causes altogether independent of entozoal infection.

Amongst human parasite-bearers the same phenomena display themselves. There is a nematode entozoon which people often carry about with them without suffering the slightest inconvenience; nevertheless a solitary example of this same parasite has been known to occasion lunacy. It is likewise, not unfrequently, the cause of death. Smaller forms of the same tribe of parasites are capable of reducing the strength of their human bearers, precisely after the fashion of *Strongylus pergracilis*. I think I have made out a strong case against my newly discovered parasites; and I have no doubt from this and other collateral evidence that avian hosts are just as liable as human bearers to be "eaten up of worms."

Lest any persons, after perusing the above remarks, should feel hesitation as to the propriety of eating the next specimens of grouse sent to their table, I may add that I have alike partaken of the so-called healthy and diseased grouse from the Cawdor Moors. Putting aside the truly wretched appearance which the emaciated birds displayed on the dish, there was really little to object to. The diseased bird marked No. 2 had a rather stronger flavour and was decidedly softer, without being watery, than the fresh and plump bird marked No. 1. This difference, however, was not due to the diseased condition, but from its having been longer dead. One of the other diseased birds was comparatively dry and insipid. Both were eatable, there being no new or disagreeable flavour attached to either. Several of the good birds were as fine to look at, and as satisfactory in their culinary qualities as any of the many grouse I have eaten this season.

In the month of December, 1872, I received a third batch of grouse from Mr. Stables, and also at the same time two white hares, one of the latter being a remarkably fine animal, whilst the other was so reduced in condition that its appearance when alive could only have excited commiseration, not to say disgust. The coat was woolly, thin, and scanty; its spinous and transverse vertebral processes projecting along the whole length of the back, and presenting the well-known razor-backed character which is met with in sheep far advanced with the fluke disease. The condition of this hare was even worse than that of the most emaciated bird.

Eleven of the grouse were carefully examined, and they yielded results of the same general character as those above tabulated. Some of them contained tapeworms, whilst all harboured strongles more or less abundantly. Thus, I have examined altogether twenty-nine grouse from the Earl of Cawdor's moors, and every bird was found to be more or less infested with this new species of nematode entozoon. On the other hand, only about one third of the birds harboured tapeworms, and of this comparatively small section only some three or four of the bearers contained the tæniæ in any considerable number.

In regard to the hares, I have to observe that the perfectly healthy looking animal contained no parasite of any kind; but the diseased rodent harboured one large fluke (*Fasicola hepatica*), and also a solitary tapeworm (*Tænia pectinata*). The last-mentioned entozoon was much broken up, but I judged it to have measured ten inches in length.

That the fluke had occasioned severe irritation, and had produced much suffering to the hare during life was proved by the *post-mortem* evidence. The liver ducts were much thickened, and in several situations were completely blocked by the formation of hard calcareous plugs. This gland was diminished in size, very dark in colour, and readily broke up when pressed between the fingers. It also imparted to the touch a gritty sensation when sliced with the scalpel.

It is, perhaps, not altogether surprising, that one fluke should be capable of producing so much mischief. When we consider the small size of the bearer and the narrowness of the common liver duct, as contrasted with the width of the entozoon, it is quite clear, indeed, that only a few flukes are quite capable of destroying hares and rabbits. However, a passage lately went the round of the newspapers in which Mr. Broad, V.S., of Bath, spoke of the livers of hares as being found "full of worms." What we are to understand by this expression I do not quite know, but, speaking from personal experience, I cannot remember to have found in any single example of duplicidental rodent more than six or eight of these trematode parasites.

Lastly, I have only to add a word by way of protest against the commonly received opinion that "when animals are weakened by disease parasites increase in an overwhelming degree, and are mistaken by the ignorant for the cause of the disease itself." So far from this being true, the very reverse is the case. Entozoa, when in large numbers (and sometimes, as we have seen, even when in small numbers only), are abundantly capable of giving rise to fatal maladies

(of various kinds) amongst mankind and beasts; and the emaciation consequent upon their invasion may be, and usually is, solely attributable to their presence. It will be a long time, I fear, before this old and erroneous conception of cause and effect is thoroughly got rid of. To almost every unscientific observer it appears quite certain that the emaciation of a badly infested host is the cause of the abundance of internal parasites; whereas, in all such cases (where other maladies do not happen to concur), the impoverishment of the blood and tissues is entirely due to the presence of the entozoa.

THE DISEASES OF ELEPHANTS.

By George Fleming, M.R.C.V.S., Royal Engineers.

It has frequently been a matter of disappointment and regret, though scarcely one for surprise, that our army and colonial veterinary surgeons should have done so little in making us more fully acquainted with the general and special diseases affecting the domesticated animals in the different and widely diversified regions belonging to the British empire. Of the maladies peculiar to these countries it may justly be said that we know very little, and of their nature or etiology we know still less; and thus it is that English comparative pathology has never advanced to any degree of completeness, and has yielded none of the benefits to science which it should have done, considering the splendid opportunities India and our colonies have afforded for so many years. The reasons for this are not far to seek, though they need not be alluded to here. It may be sufficient to remark, that India has been under the control and government of this country for more than a century, and veterinary surgeons, by hundreds, it may be said, have resided there for a longer or shorter period; and yet, so far as any published records go, those who have not actually been in that country are almost as ignorant of the diseases which affect the different animals employed therein, as if veterinary medicine was unknown to us, or members of our profession had never visited Hindostan.

This somewhat discreditable fact was rather strongly impressed upon me not long ago, when asked to undertake a share in the compilation of a Royal Engineer manual of field service, and I had to cast about for the necessary materials. As the work was designed for reference during war in any

portion of our vast dominions, and even beyond, my section had to embrace the management and medical treatment of all the animals utilised in these countries, and I must confess the task was no light one. But when I came to treat of India, particularly as regards the elephant and camel, I was more than astonished to find that we had nothing, or next to nothing, to which reliable reference could be made. Nearly all the information I required had to be sought for specially from that country, and it was not, or could not be, furnished from a professional source.

In all probability the case would have stood very differently had one or other of the great continental nations been as long in possession of India as Britain has. Their well-educated and thoroughly-trained veterinary surgeons would have vied with each other in exploring and making known the pathological treasures of that immense region, and comparative pathology would have been enriched with a multitude of valuable facts; while the knowledge obtained of disease would have proved of the greatest moment to the people of India, as well as to the governing country.

France, for instance, in Algeria, has shown what can be done in this way. Scarcely had that country been brought under the sway of the French than boards of agriculture, *commissions d'hygiène hippique*, &c., began their operations, the maladies of the useful animals were closely investigated by thoroughly competent men, and the Government did everything to encourage the veterinarians who undertook these researches. As a consequence, the affections to which animals are liable in that climate are, perhaps, as well known as those prevalent in France. In proof of this statement I have only to point to the numerous monographs in the *Recueil* and other publications, and to the classical work on the dromedary, by M. Vallon, published by order of the Minister for War, and for which the writer received 1000 francs from the Government.

Knowing all this, one may be pardoned for complaining at times of our backwardness and apparent apathy—an apathy arising not so much from individual as from general causes, whose operation has exerted such a baneful interest on our professional progress. That the apathy is not entirely individual is evidenced by the appearance, at wide intervals, of interesting papers, which certainly give us glimpses of the value and importance of observations on the diseases of animals in other countries than our own. Among the most noteworthy is the 'Essay on the Management of the Elephant, and its Treatment in Ordinary Diseases,' from the

pen of Lieutenant Ouchterlony, and which appeared in the *Veterinarian* for January.

The information contained in this essay regarding this most useful and expensive creature is particularly valuable, and must be of great utility to young army veterinary surgeons in, or about to proceed to, India, as it contains the only description of the management and ordinary diseases of the elephant which is to be found in the veterinary literature of this country, I fancy.

From all I can gather, the treatment of elephants in India is generally left to their native keepers, who appear to know as much of their diseases and the remedies for them as the cow-leeches of this country did of those of the bovine species in the Middle Ages. Therefore it is that any contribution to an exact knowledge of these matters, even though it does not pretend to any great degree of scientific learning, must be particularly acceptable, since it is scarcely to be expected that Government will always allow such high-priced and valuable animals to be left to the tender mercies of the "mahouts," but may consign their medical treatment to those whose studies and intelligence have made them the proper persons to undertake this duty.

As an appendix or supplement to Mr. Ouchterlony's essay, it may be useful to add what another distinguished officer has written with regard to this animal, as his remarks are also appropriate and interesting, as well as full of instruction for those members of the profession who may in time be called upon to inspect elephants as to soundness, and to cure their maladies. The remarks are to be found in a work on the 'Highlands of Central India,' published two years ago, and written by the late Captain Forsyth. I read them when they first appeared with the most lively interest, and feel certain that many readers of our professional Journal who have not had an opportunity of seeing the work will peruse them with much satisfaction.

Under the heading of "Selection and Treatment of Elephants," the author comments on the amount of ignorance prevailing respecting the animals in the following terms:

"There are few subjects on which so little is generally known as that of the diseases and unsoundness, and the general management of tame elephants. Although there are many elephants under the charge of officers of different public departments in India, as well as a good number which belong to private persons, it always seems to be assumed that to attain to any acquaintance with the nature of the animal and

its veterinary treatment is a hopeless task. The consequence is that their mahouts, or native keepers, than whom a more ignorant and careless class does not exist, are commonly allowed to do with them what they choose, very often to their serious detriment, and sometimes complete disablement. They profess to possess many secret specifics, most of which are useless, and only intended to extract money from their masters on the pretence of purchasing drugs, and many of them are founded on the grossest superstition. For instance, it is common among them to give the elephant a piece of a tiger's liver to make him courageous! and, in order to make him see well at night, to thrust down his throat the great yellow eyes of the brown horned owl torn fresh from the living bird!

"Having had much to do with elephants, both in my private possession and in the forest establishment, I am induced to put on record what I know of their management, not with the idea of furnishing a complete guide to their treatment, but in the hope that it may go some way towards obviating some of the mismanagement they are now so generally subjected to, and also be of assistance to persons engaged in purchasing elephants. In a rough country like the forest tracts of Central India, elephants, when properly looked after, are the most useful of animals, whether for riding purposes or for carrying baggage and other heavy work. When neglected, however, they are subject to numerous small ailments, which have led some persons to reject them for such services.

"On looking over an elephant, the most inexperienced eye would at once detect the presence of the disease called by natives *Zérbád*. There are two varieties of it, called *Asl* and *Súkhá*. The former is a dropsical affection, in which the neck, chest, and stomach, fill up to an enormous size. It occurs most frequently in newly caught animals, and is probably attributable to a sudden change of food. I once had an elephant attacked with it immediately after changing from wheat to rice, on entering a district where the former was not procurable. Generally, an elephant that has been two or three years in captivity is considered pretty safe from it. *Súkhá Zérbád* is usually developed out of the other, but sometimes comes on at once. It is a sort of general atrophy or falling away, and is characterised by a shrivelled, cracky skin, much emaciation, and weakness. It is apt to become complicated with troublesome sores in various parts of the body. In purchasing an elephant it is not likely that the presence of Zérbád would be overlooked, but without

care it is easy to buy an animal so recently caught as to be still likely to develop it. Such an animal should be got for much less money than one longer domesticated. The state of training the animal has reached will generally indicate the period of his capture. If thoroughly obedient to its driver, lying down patiently to let you examine its feet, &c., it will probably have been sufficiently long in hand to be pretty safe.

"This brings me to unsound feet—a most common failing in an elephant. It is of two kinds, called by natives Kándi and Sájhan. The former is a sort of canker, that begins on the sole and gradually eats deep into the structure of the foot, until at length it breaks out above the toe nails. In its earlier stages it is easily concealed by plugging the holes; and many of the elephants brought to the great fairs, like that of Sónpúr, are, in fact, affected with Kándi, though to outward appearance perfectly sound. It can generally be discovered by making the elephant lie down, and administering a series of smart raps with a stick all over the soles of the feet, when, if Kándi be present, the animal will be sure to show it by shrinking.

"Sájhan is what would be called 'cracked heels' in a horse. Its deep cracks, discharging matter, situated about the junction of the horny sole with the skin, can hardly be passed over in a bad case, though a slight one may escape observation. It is a serious unsoundness, being generally constitutional, and often rendering useless during every rainy season elephants that are subject to it.

"The eyes of the elephant are extremely delicate and appear to possess in an unusual degree a sympathetic connection with the digestive organs. Nearly every indisposition of the animal is accompanied by a clouding or suffusion of the eyes. Few elephants that have been long caught, especially if in the hands of natives, have perfect eyes. Heating food, or undue exposure to bright sun, is often followed by the appearance of a film over one or both eyes, which, if not attended to, and its cause remains in operation, increases till the cornea becomes quite opaque, and the animal loses its sight. The leaves of the peepul fig-tree, which form excellent fodder in the cold season, are almost sure to produce this affection if given for any considerable time in the hot season. I would not reject an elephant, otherwise suitable, merely because it had a slight film over the eye; for it is easily removed when attended to in time. But its presence would of course lessen the value the animal would otherwise bear.

"Another very tender point in the elephant is the back.

A highly-arched back is very liable to get galled; and such sores, when fairly established, are exceedingly obstinate. Such a back will almost always show traces of old sores about the ridge, and frequently they are only healed over on the surface, leaving deep sinuses below ready to break out on the slightest pressure. Such a back should be avoided, and a flat back, showing as nearly as possible a straight line from the withers to the croup, should be selected. Besides its immunity from galling, such a back always carries a load, or the howdah, well and steadily.

"The above are almost all the external points to which the attention of the purchaser requires to be directed. Old strains will sometimes affect the paces, but this can be seen at once. I have alluded, in the text, to the points of build and carriage that should be looked to in choosing an elephant. There is no critical test of the animal's age. The ears are always a good deal split and frayed at the edges in an old animal, but so they sometimes are also in young ones. The general appearance will, however, indicate the age sufficiently well for practical purposes. The full size and development is attained at from thirty-five to forty years, and from that age till about sixty, the elephant is in the prime of life. It is desirable to buy an elephant of full age if required for shooting, young animals being nearly always timid and unenduring. A very old or 'aged' elephant will be easily recognised by the loose, wrinkly state of the skin, deep hollows above the eyes, and very deeply cracked ears. I do not think that the number of concentric rings in the ivory of the tusk is a reliable criterion, though the natives talk a good deal about it.

"At the great Sónpúr fair, mentioned in the text, which is the principal market for elephants, the animals offered for sale are usually the property either of landowners from the districts of Bengal, or of Mahomedan dealers who move about between the places where they are captured and the chief markets and native courts. The former are much the safest to purchase, having generally been purchased young by the landowner, and brought up among his own people at his farm, with plentiful food and good treatment. It is quite a part of their business this buying of youngsters, which they prefer for their own riding, keeping them till of full size, and selling them at a good round profit. The dealer's strings, on the other hand, are too often made up of the halt and the blind. There is no end to their tricks. A dangeroms man-killer is reduced to temporary harmlessness by a daily pill of opium and hemp. Kándí sores are plugged, and Sájhan

cracks 'paid' with tow. Sore backs are surface-healed; and the animals are so bedizened with paint, and so fattened up with artificial feeding, that it is hard to tell what any one of them would look like if 'stripped to the bones.' Then the space is so confined, and the crowd so great, that very little 'trotting out' is possible; so that altogether buying elephants at such fairs is anything but plain sailing.

"The usual food of elephants in Upper and Central India consists of cakes of wheaten flour, baked without leaven, to a weight of about 2 lbs. each, and given with a slight spreading of clarified butter. In the South and East, where wheat is scarce, plain uncooked rice is given instead. The daily ration of a full-sized animal of, say eight and a half feet high, is 24 lbs. of flour or 32 lbs. of rice. When one of these sorts of food are substituted for the other, it should be done gradually; and when rice is first given a part of it should be boiled for some weeks. The above rations are for an animal in hard work. In the Government Commissariat Department, where great numbers of elephants are kept almost in idleness for a great part of the year, lower rations are given. But the treatment of these elephants is by no means a model for imitation. In a state of nature the animal takes an immense deal of exercise. Here they get no work to speak of between the close of one marching season (March) and the beginning of the next (November). They pass quite out of condition during this time, and many are lost from complaints generated by these sudden alternations of work and idleness. In the text I have urged the employment of these elephants during this season in the organized destruction of wild beasts. Of course, the amount of the ration will vary somewhat with the size of the animal, and elephants, like horses, have their idiosyncrasies in the matter of feeding. A sharp look-out requires to be kept over the mahouts at feeding-time, otherwise great part of the allowance will probably go to Moula Bux, wife, small family, and the several fathers, brothers, and cousins, who usually aim at getting 'half a seer of flour' apiece out of their great milch cow—master's elephant. About half a pound of clarified butter, and the same amount of salt, should be allowed daily with the food, and spice-balls should be administered once a week. Besides these rations an elephant devours an enormous amount of fodder. The principal substances given him are the branches of various trees of the fig tribe, bányán, peepul, and goolar. The leaves of the peepul are eaten, but should be avoided in the hot season, for reasons before mentioned. Of the others the inner bark of the larger branches, and the whole sub-

stance of smaller twigs alone are eaten. It is astonishing to observe the adroitness with which the elephant peels off the delicate inner bark in long strips, and rejects all the rest. This fastidiousness necessitates an immense supply of branches every day, and the elephant always goes out with his keeper to bring in as much as he can carry at a time. The bamboo is also eaten, but will not be accepted very long at a time. Other trees are also eaten in the jungle, but as they are seldom accessible to tame elephants, they need not be referred to. A long species of grass (*Typha elephantina*) which grows in many tanks and rivers during the rainy season, forms excellent fodder for elephants, who are very fond of it; and when they have been much pulled down by a season's hard work they should, if possible, be sent to pick up again where this fodder is plentiful. In the absence of the above descriptions of fodder, the stalks of millet, called 'Kurbee,' or even dry grass, may be given, but it will not satisfy them long without a mixture of green food. Sugar-cane is a great treat, and in moderate quantities is very good for them, particularly if in poor condition.

"Elephants should be picketed on dry ground, standing in damp being a great cause of diseased feet. They do not require any protection from the weather but the shade of a tree, and a *Jhool* or *Numda* (cloth of string or felt) thrown over them in cold nights. They should be bathed as often as possible in tanks and rivers; and a small quantity of clarified butter should afterwards be rubbed over their foreheads, ears, chests, and such parts as are liable to crack, or suffer from the rubbing of the accoutrements or from the sun. They should be allowed to drink as much water as they like. They are often very nice about it, and reject it when muddy or stagnant. The pad should be of full size and well stuffed with grass. The felt cloth that goes under the pad (Gadéla), should always be in proper repair, or a sore back is the certain consequence. Both these articles require to be renewed about once a year, if a whole season's work has been done. The smaller felted cloth on which the driver sits should be made large enough to project a little in front of the elephant's forehead, and protect him from a vertical sun. It is not the nature of the animal to remain out in the open in the heat of the day; and I am sure that he suffers from it if made to do so unprotected. If not allowed a tree to stand under in the heat of the day, an elephant always heaps all the leafy branches he can get on his head and back.

"After much marching on stony ground, the feet are apt to get tender from undue wearing away of the horny soles.

This is to be remedied by the process called 'chóbing,' which consists in the application to the feet of a boiling hot mixture of a good many ingredients, generally resembling coal tar. Its principal component is the gum resin of the Sál tree; but every mahout professes to have a mixture of his own, which he keeps a profound secret, and which it is as well to let him use so long as the desired result ensues, and it does not cost more than about five shillings. There is no doubt that the process is beneficial, the most foot-sore elephant getting round under it in about a week. It requires to be done about twice a year, if the animal is regularly worked on hard ground.

"In dropsical *Zérbád* the food must be reduced to a minimum, about 4 lbs. of wheat or 6 lbs. of rice: and if the latter be the diet it should be given boiled. No green fodder should be allowed, only dry grass or 'Kurbee.' A purgative should also be given; and the following recipe, which I got from a very experienced elephant doctor, is as good as any:

Croton seeds	1 ounce,
Calomel	1½ drachms,
Aloes	6 drachms,

made into a ball with rice flour and 'goor' (crude sugar). Most elephants take physic without any trouble. In a bad case the swellings will have to be tapped. Many mahouts know how to perform this operation. The skin should be pierced about the middle of the abdomen, where the greatest quantity of liquid is usually collected, and a fleam of one and a quarter inch blade will be required. The fluid which comes out is said to be infectious to other elephants if they are allowed to stand near it. The root of the *Mudar* plant (*Calatropis gigantea*) is often given by the mahouts in this disease in doses of one drachm twice a day, apparently with good effect. This is also their great remedy in the more advanced stage of the disease called *Súkha Zérbád.* It should be accompanied, however, by abundance of food, including green fodder and sugar-cane, plenty of bathing, and regnlar exercise.

"For *Kandi* in the foot, the horny sole must be pared down till the sinuses can be got at, and well washed out with warm water. The holes should then be filled with an ingredient composed of—

Tar	1 part.
Leaves of the Ním tree (*Melia Azidirachta*) .	1 part.
Gum of the Sálei tree (*Boswellia thurifera*) .	2 parts.

A piece of stout leather should then be fastened over the

open parts with small tacks driven into the adjoining horny sole, or tied on if there is no place for the tacks.

"*Sájhan*, or cracked heels, cannot be remedied unless the feet are kept dry. This alone will suffice to cure moderate cases. The following lotion was recommended me by the experienced friend above alluded to; but I never had occasion to use it myself. Take ½ lb. of dry tobacco, and boil it down in a quart of water till it becomes a pint. Then mix with it 2 lbs. of quicklime, with 4 ounces of bluestone, and apply at intervals to the cracks.

"For dimness in the cornea of the eye caused by heating food, change the diet, particularly avoiding peepul leaves. Give the elephant grass, if in season. In the earlier stage of the disease this treatment and bathing the eye with a weak solution of nitrate of silver (five grains to the ounce of water) will usually effect a cure. If a film has been formed it may generally be removed by blowing a pinch of very finely powdered glass into the eye once or twice a day.

"Sore backs are the most troublesome of all elephant affections to cure effectually. They must not on any account be allowed to heal up superficially, and should sinuses or a sac have formed, they must be cut and kept open until they heal up from the bottom. A downward orifice should, if possible, be secured to permit the escape of the matter. Cutting open a sore back is generally a terrible business, as the elephant, not realising the utility of the operation, fights against it with all his might. He must be well secured and held down, and a sharp razor is the best weapon to use. The wounds should then be thoroughly washed out with a solution of alum, and then filled with a stuffing composed of two parts of Ním leaves and one part of common salt well pounded together. If they should slough or throw up proud flesh, they must be touched with bluestone at intervals. This cleaning and dressing will have to be repeated at least twice a day, and the practitioner will have his hands full while it lasts in keeping the lazy elephant attendants up to their work. They will always, if allowed, let a sore back heal up superficially only to break out again on the first pressure. They rather like their elephant to have a sore back, as it saves them the trouble of loading it and going out to cut fodder. I have known them cause a sore back on purpose by inserting a stone below the pad; and I knew one case in which an elephant was destroyed by these ruffians, by the continued application of quicklime to a sore near the spine.

"Elephants are very liable to intestinal worms. They generally cure themselves, when they get very troublesome, by

swallowing from ten to twenty pounds of earth. They always select a red-coloured earth for the purpose. In about twelve hours after purging commences, and all the worms come away. When this occurs the hard food should be stopped for a week, fodder only being allowed, and a ball of spices should be given every day. Some elephants will not eat earth when they require it, and they are considered a very bad lot in consequence. I do not know how to treat them for worms. Should an elephant get wounded by a tiger, or otherwise, the places should be well cleaned and kept moistened with cold water. If they get foul apply Holloway's ointment (!!). The mahouts have a cruel practice in such cases of heating balls of elephant's dung in the fire and splitting them open, applying them hot and hotter to the wounds. I believe it to be as useless as it is barbarous. Fomentations and rest are required in the rare event of a strain.

"The above are the commonest cases that will call for treatment by the elephant owner. They seldom prove fatal (excepting *Zérbád*), but are very troublesome when not properly attended to. Besides these, elephants are subject to several obscure internal diseases, which fortunately are of very rare occurrence; but when they do occur usually prove fatal, from the difficulty of diagnosing or treating them. Among them are fever and inflammation of the internal organs. Bleeding can, I believe, be effected from some small arteries behind the ears; but I have never seen it done. It would probably offer the only chance of a cure in such cases.

"Occasional injuries and complaints will give an opportunity for the display of ingenuity in the application of remedies. One of the most singular operations of dentistry I ever heard of was the removal of a large excrescence on the back tooth of an elephant, which had grown into the poor brute's cheek, and almost prevented his feeding. One of the best mahouts I ever knew volunteered to remove it. He got a good thick log of wood, and made a hole through it large enough for his arm to pass. Outside he covered it all over with nails, leaving about a quarter of an inch of each sticking out of the wood. The elephant was made to lie down and was fastened with hobbles, while the log thus prepared was placed in his mouth like a bit, and bound with ropes across his neck. Twenty or thirty persons now sat upon his head and trunk (if these be kept down an elephant cannot rise from his side), and the operator introduced his arm through the hole and began to saw off the protuberance. He took several hours to effect it, the elephant all the while lying per-

fectly still, with the expression of a martyr in his upturned eye. The piece sawn off was as large as one's fist; and the animal got perfectly well very soon afterwards."

THE PRINCIPLES OF BOTANY.

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

(*Continued from p.* 97.)

THE last order of the cucurbital alliance which we have now to consider will, for the most part, comprehend those interesting plants known to us almost exclusively as garden specimens, namely, Begonias.

Authors have placed the natural order *Begoniaceæ* in this place with some degree of hesitation, but the objection to this is thus answered by Professor Lindley:

"The main objection to the association of Begoniads and Cucurbits in the same alliance arises from the great apparent difference in their placentation, that of Begoniads being axile and of Curcubits parietal; but a careful examination of the ovary of *Dipoclinium Evansianum, acuminatum, incurvatum,* &c., shows that distinction to be one of words rather than of essential structure. The ovary of such Begoniads consists of three carpels, whose dorsal structure is winged, and whose margins turn inwards for a considerable distance, each margin forming a plate or placenta, over which the ovules are arranged."

Any one who will take the pains to compare the drawings of a section of the fruits of a young cucumber and of the common greenhouse plant Diploclinium will at once see both the concord and discord of the opinions just expressed; but it will be far better to study the fruits themselves at different stages of growth, and, at the same time, an examination of the flowers of the two, and a study of their properties points to a nearness of alliance which a careless examination of the fruits might at first lead one to oppose.

As one of the best descriptions of the natural order Begoniacæ has been penned by Professor Balfour, we make no excuse for transcribing it in this place:

"BEGNONIACEÆ (*Bergoniads*).—A natural order of dicotyledonous plants belonging to the monochlamydeous subclass of De Candolle. Lindley places the order in his Cucurbital (cucumber) alliance. The order contains herbaceous

plants or succulent under shrubs. The leaves have an oblique form, and are placed alternately on the stem, having stipules at the base. The flowers have no petals, but consist of a single perianth, usually pink coloured, which is placed above the ovary or seed-vessel. Some flowers have stamens only, others pistils only; in the former the perianth has from two to four divisions; in the latter from two to eight. The stamens are numerous, and are collected in a head. The stigmas are three, and the fruit is winged with three divisions. Some of the plants produce buds, which are easily detached, so as to constitute living plants.

"The plants are common in the East and West Indies and South America; a few occur in Madagascar and South Africa. They are said to possess bitter and astringent qualities, and some have been used in the cure of fluxes of various kinds. The succulent acid stalks of several species are employed as potherbs like rhubarb."*

We have, however, no knowledge of the uses of the Begoniads in this country, either as food or medicine, though, from the flavours of some of them, we incline to the belief that a few of them might possess potent powers if employed as the latter.

We would, however, now direct attention to these favourite greenhouse-plants, on account of their curious forms.

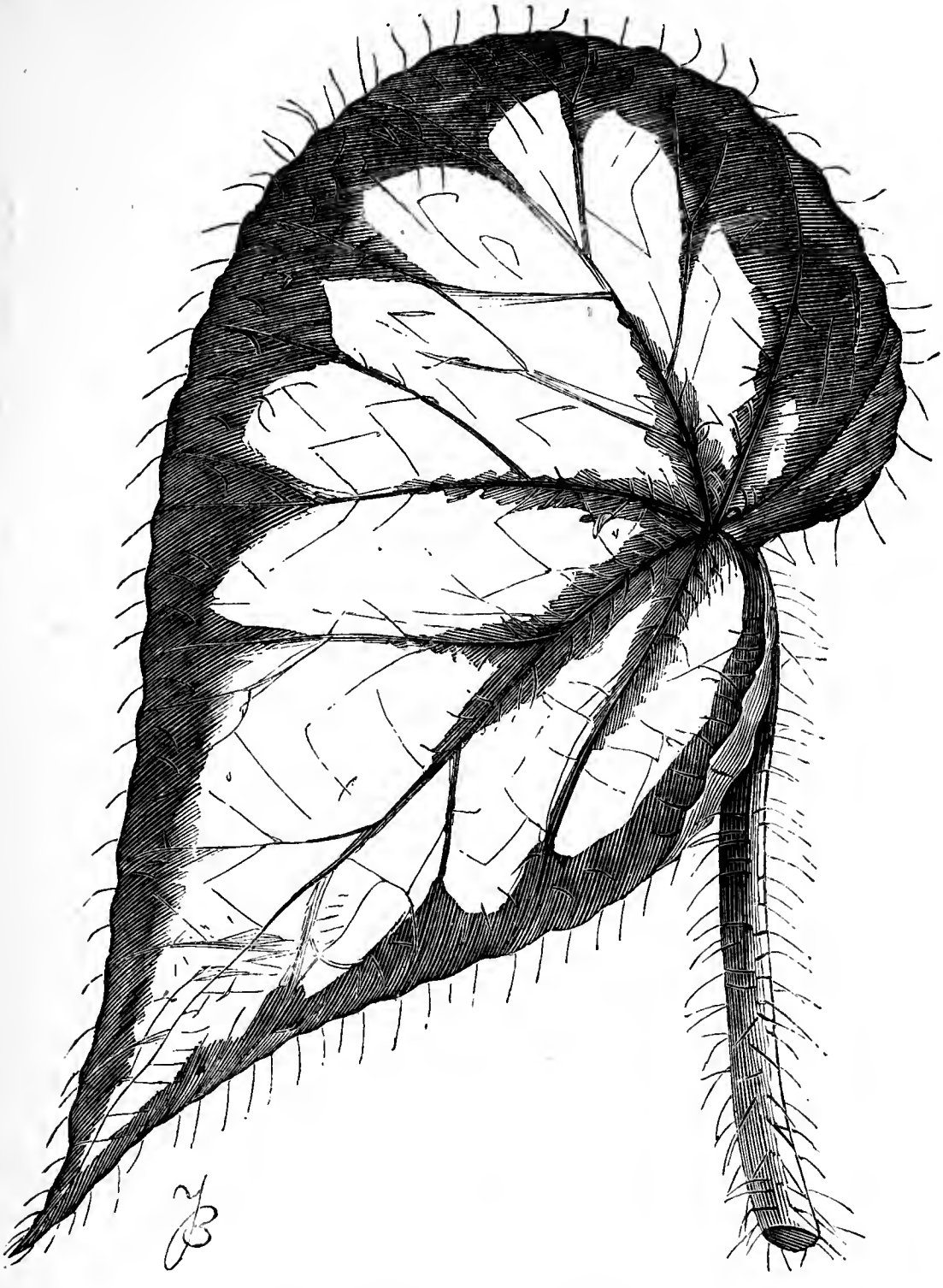
The bright-coloured flowers of some of the species and the ornamental foliage of others have made them favourites alike in the cottager's window and in the conservatory of the rich, where their peculiar disproportion of the basal lobes of their leaves at once attract attention.

In the genus Begonia, named after Michel Begon, a French botanist, the leaves are sometimes so large and shaggy as to have got for the plant the name of the "elephant's ear." Sometimes the left lobe is the larger and sometimes the right.

One of the cultivated forms, namely, *Begonia tuberosa*, has large leaves with thick, fleshy petioles; these, like the petioles of rhubarb, are agreeably acid, and may be made into tarts, while the roots or root-stocks are not only large and fleshy, like those of the rhubarb, but possess the same kind of astringent properties. We append a sketch of a leaf.

The *Diploclinium* (Begonia) *Evansianum* is remarkably like the one whose leaf is here figured for parti-coloured leaves—a character which attaches more or less to most of

* 'Treasury of Botany,' vol. i, p. 133.



Leaf of Begonia tuberosa, $\frac{1}{4}$ *nat. size.*
The margin a dark purple, the rest of the leaf a silvery white.

the species, but also for bearing separate buds or bulbels in the axes of the leaves, which readily grow to make new plants.

Taken altogether, then, the Begoniads form an interesting group of plants, which would seem to deserve attention, not only for their ornamental appearance, but for the possession of useful properties.

We finish this article by a few remarks upon a rather restricted alliance in that of the *Papayales*, in which we

have but two orders with only a few genera. The orders are distinguished as follows:

1. Papayaceæ.—*Corolla monopetalous.*
2. Pangiaceæ.—*Corolla polypetalous.*

We shall illustrate this with a few remarks upon the Papaw (*Carica Papaya*). In South America the tree is grown for its fruit, which is cooked and eaten by the negroes, but which, at best, must be doubtfully wholesome or pleasant.

It is stated that the whole plant contains an animalised substance in its juices, which renders it, in decay, more disgusting than even putrid meat.

Lindley says—"The tree has the singular property of rendering the toughest animal substances tender by causing a separation of the muscular fibre; its very vapour even does this. Newly-killed meat, suspended among the leaves and fruit, and even old hogs and old poultry, when fed on the leaves and fruit, become tender in a few hours."

We have known the same effects to be attributed to our common stinging-nettle, a few sprigs of which, put on a hare or upon meat, is said to make it tender in a short time, and though we cannot vouch for the accuracy of the statement, we may yet state that we have enjoyed some very tender game that had been so treated. If it be so the cause must be different from that of the Papaw, as, if it be true that the juice of the latter contains fibrine analogous to that of the fungi, it is possible that these fleshy elements surrounding real meat may exert a chemical influence on its fibre; it is, however, a curious question, and one which deserves more attention from the physiologist and chemist than it has yet received.

YEW-POISONING.

By J. Gerrard, M.R.C.V.S., Market Deeping.

Permit me space for a few remarks on Professor Buckman's communication on Yew Poisoning published in your last number. He is still, he says, "sceptical regarding the narcotic action of the plant," and records some instances in young cattle of symptoms and appearances which simulated those usually found in so-called yew poisoning, but induced by partaking too freely of "straw, cavings, and grass," articles of provender harmless of themselves in moderate quantities, but it

would seem, if partaken of too freely, capable of causing death by the mechanical irritation which they induce in the mucous membrane of the stomach. According to Prof. Buckman this is the *modus operandi* of yew. I do not consider the matter as one between Prof. Buckman and me; on the contrary, I regard it as having been satisfactorily determined long ago, for one cannot find in any botanical or toxicological work that the authors express any doubt on the subject, and popular opinion is unanimously in favour of the idea that yew is poisonous. It is just possible, however, that the several authorities may have arrived at conclusions without just premises, and assigned to the plant a property which it does not possess, and that Prof. Buckman is the first to doubt or disbelieve. We are all, perhaps, too ready to take things for granted, and to accept hypotheses for facts.

Professor Buckman, I presume, will not deny that there are certain agents, mineral and vegetable, which, when introduced into the animal body, induce in it a peculiar condition called narcotism, and which, if swallowed in large doses, invariably produce a certain train of symptoms, destroy the vital powers, and occasion certain morbid changes which are detectable after death; such agents being termed narcotico-irritant poisons. Most prominent among the symptoms are paralysis, tetanic spasms, and convulsions, and the *post-mortem* appearances are those of gastro-intestinal irritation and inflammation, with serous effusion on the brain and spinal cord. If any animals should exhibit these symptoms and the after-death appearances correspond, and, further, if they should be known to have partaken of any of the supposed poisonous agents which are found in abundance in their stomachs, "it is an obvious and fair conclusion—in the absence of positive proof in the shape of analysis—that they were poisoned by the agents, and it would be manifestly unfair to attribute such a nature and action to any of the ordinary articles of provender when the extent and universality of their use sufficiently testifies to the contrary.

I am at a loss to account for the death of the animals reported by Professor Buckman, unless on the supposition of some poisonous agent among the "cavings," or in the orchard which, in the depravity of their appetite and change of circumstances, they had rather liberally partaken of.

I cannot believe that the quantity of "cavings" an animal could take into its rumen in the time mentioned—"a few hours"—would produce such results. Overgorging of the stomach of ruminants is not an uncommon affair, but it is rarely fatal, unless it be produced by some poisonous

substances, or when the distension occurs from gaseous compounds as a result of decomposition. In these cases death takes place from the mechanical obstruction offered to the expansion of the lungs by the distended stomach, causing imperfect aëration of the blood and sometimes rupture of the diaphragm; or by absorption by the blood-vessels of the gases produced by the fermentation.

What is recognised in "country parlance" as a "stoppage," I believe to be an affection of a different part of the alimentary track to that which is involved in overgorging. It is characterised generally by insidiousness of attack, and slowness of progress, and is usually amenable to treatment, or very rarely fatal. Both cases differ very materially in symptoms and appearances from yew poisoning. The death of the ewe reported by the Professor may be accounted for on the supposition of some uterine disorder, causing sympathetic derangement of the stomach, the vitiated appetite being an effect of the disease. The overgorging of the stomach had little to do with the cause of death, unless the acorns had had time to develop their poisonous action.

Such has been my experience of the disorders of the stomachs of ruminants, after some ten years of fair country practice.

Regarding the poisonous effects of yew berries upon children, I can say nothing farther than that several well-marked cases are recorded by professors and practitioners of acknowledged ability, and referred to by all the forensic writers I have ever read, without one expression of dubiety.

The time which I have supposed to be required for yew to produce its poisonous effects (twenty-four hours) is amply sufficient to allow of its digestion. In the cases referred to the plant was found in all the compartments of the stomach and in the duodenum, where the most important juices would act upon it, and, indeed, where the process of absorption is most active on certain substances, among which we may reckon the active principle of the yew, whatever it may be.

Morrant Baker says, "Various odorous and saline substances taken with the food are soon found in the blood of the vena porta or other blood-vessels, or in the urine, but are not found in the chyle, or, if found there, not till they have passed into the lacteals. This is shown by numerous experiments, especially by those of Tiedemann and Gmelin, and Panizza. The substances used in the experiments were ferrocyanate of potash, sulphate of potash, several salts of lead and other metals, indigo, madder, rhubarb, camphor,

musk, alcohol, turpentine, &c. All these substances, therefore, appear to be absorbed by blood-vessels exclusively.

"The rapidity with which matters may be absorbed from the stomach, probably by the blood-vessels chiefly, and diffused through the texture of the body, may be gathered from the history of some experiments of Dr. Bence Jones. From these it appears that even in a quarter of an hour after being given on an empty stomach chloride of lithium may be diffused into all the vascular textures of the body, and into some of the non-vascular, as the cartilage of the hip-joint. Carbonate of lithia, when taken in five or ten-grain doses on an empty stomach, may be detected in the urine in five or ten minutes, or, if the stomach be full at the time of taking the dose, in twenty minutes."

Were death the result of mechanical irritation alone, the time would be far too short for its accomplishment.

It is a well-known fact that the stomachs of ruminants will receive and retain for a lengthened period materials such as bones, stones, nails, and other rubbish, which one would consider more likely to produce a fatal irritation than the leaves of the yew after being chewed. Moreover, cattle will eat gorse—*Ulex Europæus*—with impunity.

The denuded condition of the internal surface of the rumen, reticulum, and omasum, favours the idea of a chemical principle in the yew, and strengthens the supposition of the absorption of it by the blood-vessels of the lining membrane.

The last and most important question to be considered is, Do the cases recorded by me and referred to by Professor Buckman, answer all the conditions necessary to establish a *bonâ fide* case of narcotico-irritant poisoning? I am convinced they do, both in their *ante-* and *post-mortem* conditions, and I can come to no other conclusion but that yew is a *narcotico-irritant poison.* If the yew should act in this way in one case, it will do so in every other where a sufficient quantity has been partaken of, and this truth once established, objections to it are nothing.

OBSERVATIONS ON YEW POISONING.

By W. Bower, Jun., M.R.C.V.S., East Reedham.

In common with many others I have been much interest in reading the account of yew poisoning, as described by Gerrard, in the January number of the *Veterinarian*.

also Professor Buckman's reply to his statements. Professor Buckman says, however, that the evidence is still not sufficient to convince him that the yew, in the cases alluded to, acted as a narcotic poison, because in some cases which had come directly before his notice the plant had not been digested. I perfectly agree with Professor Buckman so far as that distension and irritation of the stomachs are frequently causes of death in ruminants, but at the same time I hold that death does not necessarily result from these causes when yew has been partaken of by the animal.

I will now give the history of a case which I have always supposed to be yew poisoning, which occurred a few years since (at Kypton House, Weasenham, Brandon), and in which there was no gorging or filling the stomachs to repletion. I was called late one evening to the above-mentioned place to see some cows which were ill. On my arrival I found one cow dead, and two or three others giving evidence of ill health. My first question was, What have the animals been eating? as I felt quite certain they were all suffering from the same cause, and judging from the symptoms present, I was convinced that the illness had arisen from something which had been taken into the stomach.

Upon inquiry it was found that the gardener, early in the morning, had barrowed some clippings from a yew fence into the cow yard, and left them exposed. The quantity was small. The cows were seen eating it, and no more notice was taken of the circumstance.

I made a *post-mortem* examination, and never before or since opened a ruminant that had died suddenly with so little material in the stomachs. The abomasum apparently contained the greatest portion of the yew, and its appearance in this stomach was very much like that of crushed black pepper. The mucous lining membrane was but slightly inflamed. The contents of the omasum appeared normal. The reticulum was empty, and the rumen contained some yew, mixed with ordinary ingesta. It was not gorged, nor anything approaching thereto. As was to be expected the yew had not undergone any great change in its appearance in the rumen, save that of having been crushed by the animal's molar teeth when eating it.

I did not carry the *post-mortem* examination further, as I was anxious to lose no time in treating the other animals. Only one presented symptoms which at all alarmed me; she had been staggering and shaking for some little time Upon reentering the cow-shed, after making the *post-mortem* examination, I found her down and showing symptoms analogous

to those of a cow suffering from "dropping after calving." Indeed, she was in a comatose condition. I treated her with oleaginous purgatives and powerful diffusible stimulants, kept her very warm, and gave her plenty of mucilage. The next morning she was better, and as well as ever, or apparently so, on the third day.

The others had saline purgatives given, and all did well.

I have omitted to say that the first symptom observed by the cowman was a refusal to feed when provender was offered about the middle of the afternoon. I should also add there were other cows in the yard living on the same provender, and which might or might not have eaten of the yew, but nothing was seen wrong with them.

My object in describing these cases is that I feel sure Professor Buckman will be pleased to gain all the facts of this kind which are obtainable from members of the profession with regard to animals partaking of yew.

Pathological Contributions.

CATTLE PLAGUE.

It is reported from Taganrog that cattle plague has ceased in the township, but it exists in the surrounding localities.

The disease is also prevalent in Silicia, Moravia, Bohemia, Lower Austria, and Hungary.

From Austria the following information has been received. The local authorities at the Port of Fiume have issued printed notices, for the information of the inhabitants, that a military cordon is established at the boundary of the city, to prevent the importation of horned cattle, hair, hay, straw, and milk, for consumption or transit, importation by sea remaining free. These measures are rendered necessary by the progress of the cattle plague in the neighbouring countries and in Croatia.

At Bosnia the cattle plague still lingers, but without any serious mortality.

From Ragusa only one case of cattle plague is reported.

Cattle plague, however, continues to a great extent in Austria Proper, in the following districts:—Galicia, Buckowina, Moravia, Bohemia, Dalmatia, and in the Sclavonian Provinces.

Reports from Trebizond state that cattle plague has ceased in the neighbourhood of the town, but has broken out at Batouin, at the north-east angle of the province, close to the frontier of Russia.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of January, 1873, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	Number of Animals affected.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered at place of landing.
Hamburg .	Hartlepool	Foot-and-Mouth	4	...	...	...	4	4
"	Hull . .	"	24	...	...	...	24	24
"	"	Sheep-scab .	...	6	...	...	6	6
"	London .	Foot-and-Mouth	16	3	...	...	19	19
"	Newcastle-on-Tyne	"	5	...	...	...	5	5
Total . . .		Foot-and-Mouth	49	3	...	...	52	52
		Sheep-scab .	...	6	...	...	6	6
Total			49	9	...	...	58	58

"Privy Council Office, "ALEXANDER WILLIAMS,
"Veterinary Department, 12th February, 1873." Secretary.

FOOT-AND-MOUTH DISEASE.

THE decline in the number of attacks has been very decided during the last few weeks in nearly all parts of the country. Fresh outbreaks are reported by the *Chamber of Agriculture Journal* in Cumberland and Westmoreland, Worcestershire, and also in the neighbourhood of Driffield.

SHEEP-POX.

OUTBREAKS of sheep-pox are reported to have occurred in several districts of Parma. All precautions have been taken to prevent the spread of the disease.

Sheep-pox also exists in several districts in Pomerania.

SEPTICÆMIA.

At a recent meeting of the Académie de Médécine, M. Bouley, Director of the Alfort Veterinary College, renewed the discussion on septicæmia by a reply to M. Chassaignac, who at the prior meeting had characterised the wonderful results announced by M. Davaine as incredible and useless. "I must avow frankly," observed the speaker, "that I, too, was at first seized with profound astonishment at the marvels displayed before us, and my first sentiment was one of doubt and incredulity, and it was in that sense I addressed the Academy."

In place of opposing mere sceptical assertions, however, M. Bouley requested M. Davaine to repeat the experiments in his presence, and from their results became convinced of the accuracy of his statements. Six watch-glasses were placed on a table. Into the first 100 drops of water were placed, and to these was added one drop of blood from a septicæmic rabbit; the whole was stirred so as to produce a solution of $\frac{1}{100}$. One drop of this was placed in the second glass containing 100 drops of water, and a dilution of $\frac{1}{10,000}$ produced. In the third glass, a drop from the second gave a dilution of $\frac{1}{1,000,000}$. In the fourth glass, a drop of the third dilution added to the 100 drops of water produced a dilution of $\frac{1}{100,000,000}$. In the fifth glass, similarly treated, there was a dilution of $\frac{1}{10,000,000,000}$, and in the sixth glass, a drop of the dilution gave a trillionth ($\frac{1}{1,000,000,000,000}$). Matters being so disposed, four rabbits were inoculated respectively with the first, second, third, and fourth dilutions, a horse with the second, and a guinea-pig with the first. Next day all the rabbits were dead, the guinea-pig fell ill but recovered, and the horse sustained no harm. Since that time he has too frequently seen the efficacy of these minute dilutions to have any doubt of the fact whatever. Incomprehensible it may be, but of the fact there can be no doubt. M. Bouley communicated an account of numerous experiments which he has performed, showing that dogs also can be killed by the septicæmic virus derived from the rabbit, and that such virus derived from the horse possesses much less virulence than that furnished by the rabbit.—*Medical Times and Gazette.*

Facts and Observations.

Physiology of Human Bile. — By v. Wittich ('Pflüger's Archiv f. Physiologie,' vi, 181—184).—Von

Wittich criticises a statement made by Ranke in his *Physiologie*, viz: "The bile of the pig, as Nasse has shown, possesses the power of converting starch into sugar. Neither the bile of other animals nor of man possesses this property." He points out that he and Jacobson had already shown that this was not the case. The difficulty in regard to human bile is the possibility of obtaining it quite fresh. Von Wittich has been fortunate enough to obtain bile, perfectly fresh, and in sufficient quantity for experimentation, from a patient labouring under a biliary fistula opening externally.

Careful calculation of the amount poured out gave an average of 22·2 c.c. per hour, and 532·8 c.c. in the twenty-four hours.

Boiled starch mixed with from twenty to thirty drops of bile, and left for an hour at the ordinary temperature, gave a distinct sugar reaction with copper sulphate. The bile, mixed with absolute alcohol as long as it exhibited turbidity, left on filtration a residue which, on being treated with glycerin, yielded an extract which after twenty-four hours, possessed an energetic diastatic action. Still more active was the alcoholic precipitate of the extract dissolved in water. Human bile therefore appears undoubtedly to contain an active diastatic ferment.—D. F.—*Journal of the Chemical Society.*

Peptic Action of the Pyloric Glands.—Considerable difference of opinion exists amongst physiologists in regard to the action of the secretion formed by the glands of the pyloric region of the stomach. On the one hand, Fick and Friedinger consider that their secretion has no digestive properties, whilst, on the other, Ebstein and Grützner maintain that it possesses in a very high degree the power of converting albumen into peptones. V. Wittich has just published in the last part of Pflüger's *Archiv* (i., 1873) the results of his investigations, which coincide with those of Fick, and are opposed to those of Ebstein. V. Wittich does not think the weight of albumen dissolved can be taken as a measure of the amount of pepsin in the fluid, since a disproportionately small quantity of pepsin will dissolve an inordinately large amount of albumen. He is rather disposed to rely on a comparison of the rapidity of action as a means of estimating the amount of pepsin present, the temperature and other conditions being alike; and his experiments performed on pigs and rabbits have satisfied him that in these animals at least the pyloric glands furnish no pepsin.—*The Lancet.*

THE VETERINARIAN, MARCH 1, 1873.

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

THE ORIGIN OF CONTAGIOUS DISEASES.

SPONTANEOUS origin of anything may always be assumed, and cannot easily be disproved. When a number of animalcules are formed in a fluid which did not shortly before contain them, it saves a world of inquiry if it can at once be allowed that they were developed out of the lifeless constituents of the material in which they now exist. So, if pleuro-pneumonia or foot-and-mouth diseases appears in a herd of cattle which have not been exposed to direct contact with diseased animals, the difficulty of explaining the manner of communication is directly removed when the theory of spontaneous origin is accepted.

Infection is a fact which the public mind is not slow to realise; but the presence of an infecting germ in the beginning is a fact which people generally are not inclined to receive. There is no objection to admit that a disease once generated in an animal's system may spread by infection, but when the evidence of communication is incomplete, it is convenient to refer the origin of the disease to circumstances which affect the animal's health or comfort.

Foot-and-mouth disease is a good instance to the point in question. The affection arises in places remote from the great lines of cattle traffic. No association of healthy with diseased animals can be traced, or even reasonably alleged; but hardships have been suffered, long journeys have been taken, the beasts have been shut up in the badly ventilated holds of vessels; and what more can be required to cause fever, with a few blisters on the tongue, and sore feet?

Very few persons talk in this way about cattle plague, because that disease is clearly a stranger to this country. When it appears, it has been introduced from Russia or

somewhere further east, and, being rigorously dealt with, it is quickly extirpated, and does not recur, unless as the immediate consequence of the importation of diseased animals, or of the poison which emanates from their system.

Foot-and-mouth disease, however, is an affection common to all parts of Europe, always present to some extent in certain districts, sometimes extending with rapidity, at others remaining as an enzootic, and exciting little or no attention. Outbreaks occur in many parts of the country without detectible cause, no explanation can be offered of the manner of conveyance of the virus of the disease, and hence the easy solution of the difficulty by reference to spontaneous origin.

To endeavour to prove that infectious maladies cannot be spontaneously developed would be a hopeless task, the more so as it is impossible to escape from the dilemma which is established by the question—How did the first case arise? But the pathologist may be content to know that all the positive evidence is in favour of the conclusion that contagious diseases do not arise naturally in this country. There are always centres of infection, and from them diseases will spread with a rapidity proportioned to the favorable or adverse character of the surrounding circumstances; but the circumstances do not, according to observation, produce the disease when the infecting germs are absent.

The greatest hardships may be endured by animals in transit, to the derangement of their general health and detriment of their condition; but in seasons when foot-and-mouth disease does not prevail in the country or district whence the animals are sent, they remain free from it. The longest and roughest voyage, with the most severe privations, may result in death from exhaustion and serious bodily injury, but in respect of infectious disease there is a clean bill of health. If, however, disease exists in the locality whence the animals are removed, the greatest care in transit fails to prevent the development of the affection.

Before the beginning of 1872 the neighbourhood of Hamburgh had been for some time comparatively free from foot-

and-mouth disease, and, notwithstanding winter voyages, very few diseased animals were landed in this country from that port. In January of last year the affection spread extensively round Hamburgh, and, precisely as we expected, large numbers of diseased animals were shipped to England. All through the most favorable weather of spring, summer, and early autumn, cattle, sheep, and pigs suffering from the disease were landed by hundreds. Now that the disease has declined in Hamburgh, although the same ships are used, the voyages are less expeditiously performed, and more losses are incurred from injury consequent on rough weather, very few cases of foot-and-mouth disease are detected.

Precisely the same thing has been noticed with regard to Ireland. While that country remained free from foot-and-mouth disease cattle, sheep, and pigs were brought to the country with less attention to their comfort than has been recently given, and yet nothing was heard of foot-and-mouth disease; pleuro-pneumonia and Irish stock became almost convertible terms, but in regard to the other disease Irish stock were for some time held innocent, until in 1869, and again in 1871, we sent diseased cattle there. In May, 1871, centres of infection were established, from which the malady spread so quickly that by the end of the year it was known to prevail in every one of the counties in Ireland, while hundreds of Irish cattle landed in this country carried the infection far and wide.

Recently, Irish pigs suffering from foot-and-mouth disease have been landed at Bristol, in such a condition that no doubt could be entertained as to the existence of the affection when they were shipped in Ireland, and yet, in the face of this evidence, it is suggested that foot-and-mouth complaint does not exist in Ireland, and that it must consequently be produced by the foul air of the holds in which the animals are confined; and this theory is by some persons accepted in total disregard of another fact, that animals on deck are as commonly the subjects of the disease as those which are placed below.

Whatever may be the origin of infectious diseases, there

can be no question as to the manner of their propagation; having arisen, they extend by virtue of the peculiar properties which are acquired by the solids and fluids of the diseased animal's body. If the germs of the disease are so minute that they can be carried in the air, then diffusion is all the more certain and extensive; if they are of grosser material, they must be conveyed from the diseased to the healthy animal in some more palpable way; but in whatever way the transference takes place, the fact remains that all contagious and infectious diseases spread only when the germs of the disease are in some way conveyed from an infected animal.

Extracts from British and Foreign Journals.

THE VALUE OF "NATIVE GUANO."

The Reports just tendered to the Metropolitan Board of Works by Mr. Bazalgette and Mr. Keates, the engineer and chemist appointed to examine the working of the celebrated A. B. C. process at Crossness are very damaging to the prospects of the company. Mr. Bazalgette states that during a period of three months, during which the inspection lasted, 142 tons of the so-called native guano were manufactured at a cost of £895. At this rate the manure costs £6 6*s.* 4*d.* per ton, "exclusive of rent, interest on capital, depreciation of plant, and other incidental items." The manager of the company objects to this calculation that a portion of the expense—that for pumping,, for instance—was accidental, and should not be counted in the cost of the manure. But even if an absurdly liberal deduction be made on this score, the manure, it is evident, could not cost less than £4 per ton.

Mr. Keates reports that the finished manure contained nothing of any value but 0·929 per cent. of ammonia and 0·48 per cent. of phosphoric acid, and that at the present market price of these substances, the manure is therefore worth something less than £1 per ton.

We confess we are not much surprised at these results. In September, 1871, Mr. Crookes reported that the amount of ammonia contained in the effluent water was almost exactly the same as that of the filtered sewage before precipitation. This report, strange to say, has been issued in the form of a pamphlet by the company! We should have thought that they would have burnt it at once.

Mr. Keates reports more favourably of the sanitary than the commercial value of the A. B. C. process. The effluent water was almost invariably bright and free from disagreeable smell, and only putrefied to a slight extent on keeping. There would evidently be no harm in discharging such water into a river, provided, of course, that the river was not to be used for water-supply. Fish, we are informed, thrive in the effluent water, and altogether it may be freely admitted that the A. B. C. is an excellent clarifying process, although we are forced to deny it any value as a means of utilising sewage.—*The Lancet.*

BLOOD-POISONING IN MAN AND ANIMALS.

By Nathaniel Alcock, Assistant-Surgeon 35th Regiment.

A farmer in the south-eastern part of Ireland had lost three cows from a sudden and inexplicable illness which terminated fatally in from twenty-four to forty-eight hours. No cattle-plague existed in the vicinity, nor had he added any strange animals lately to his stock. A fourth cow, which presented no signs of the disease on Friday evening, was attacked in the night, and died on the day following. A veterinary surgeon was summoned, and the farmer, a young, healthy, and most intelligent man, opened the carcase for inspection. In so doing he wounded his right thumb slightly against a spiculum of bone, but proceeded with the dissection regardless of the scratch. No clue to the nature of the disease was found, except an enlarged and engorged condition of the spleen. All other organs were apparently healthy, and the veterinary surgeon thereupon pronounced the cause of death to be "splenic apoplexy." Among the lookers on at the examination of the cow were a sow, a terrier, and a greyhound, and when the spleen, which was fixed on as the offending organ, was cut up for minute investigation, they devoured the pieces that were thrown aside. On the following evening, about 4 o'clock p. m., the sow was found dead, and later on in the night the terrier also. On the next

day (Monday) the farmer felt some pricking in the scratch, and was a little "out of sorts." On Tuesday he found himself "sickening," and had pain in the thumb, but still thought it would wear away. On Wednesday, however, he was in a state of high fever, and his arm had swollen considerably to even above the elbow.

He now sent for a doctor, who, recognising the extreme gravity of the case, suggested a consultation, and I have been put in possession of the medical particulars by the surgeon who was then called in, and who subsequently brought me into personal communication with the patient. The swelling of the arm was very great, the axillary glands were much inflamed, and around the wound a vesicle of reddish serum had formed. Two similar vesicles had risen on the left arm, and a third on the chest. The distress of the patient was extreme, his pulse was very quick and weak, and he was evidently being rapidly poisoned. Believing that all treatment would be unavailing, it was agreed by the surgeons to try the effect of large and frequent doses of quinine. Accordingly, after the application of a poultice to the inflamed arm, quinine gr. v., with acid. hydrochlor. dil. ♏x., was ordered to be given every third hour.

On the afternoon of the following day they revisited the patient, and were inconceivably astonished to find him sitting up in bed, no longer anxious, but now assured of his certain recovery; the fever, and all other concomitants of blood-poisoning, were rapidly subsiding, and the local symptoms disappearing in proportion. The intervals between the doses of quinine were doubled, and the medicine continued.

On the ensuing Sunday, the fourth day of the treatment, he was up, and was soon after at his usual occupation.

The greyhound, the only survivor of the three animals that had eaten of the spleen, was found on inquiry to have been extremely ill, though but little cared for during the danger of its master; and, on being looked at, large dark spots like dried-up bullæ were seen on the flanks and belly. It ultimately recovered. The disease continued still among the cattle, destroying in all ten cows and two calves.

Here, then, is an instance of a poison communicable by infection from beast to beast, being transferred by inoculation to the human system, producing there the most violent symptoms of blood-poisoning, and yet being suddenly and unexpectedly neutralised by the introduction into the same system of quinine.

Dr. H. Thompson, Surgeon to the Tyrone County Infirmary, details in the *Dublin Quarterly Journal* the case of a

medical man who in the discharge of his duties contracted typhus fever, which passed into the most severe maculated form with complete nervous prostration. On the eighth day his condition was considered by his professional brethren to be perfectly hopeless, as he was sinking despite the free use of stimulants and nutriment. In the early morning of the ninth day, quinine in three-grain doses was resorted to, at Dr. Thompson's suggestion, as an experimental measure. In consequence of some alarming excitement being produced, the attendant omitted the medicine after the second dose. On the morning of the next day it was resumed in five-grain doses every three hours. On the day following (the eleventh) decided improvement had taken place, and on the thirteenth he was out of danger. Dr. Thompson writes—"The resolution of the fever may be said to have been complete on the second day of the exhibition of the quinine, and on the thirteenth day of the disease, the change having commenced on the eleventh, which is not one of those periods commonly regarded as critical *in the natural course of the disease.*"

Thus, in two distinct varieties of blood-poison quinine appears to have successfully antagonised the destroying virus; but whether it acts directly by catalysis, or throws a protecting shield over the vital elements at the expense of which the morbid matter carries on its enormous self-multiplication, remains for further research.—*Medical Times and Gazette.*

THE LATE AMERICAN EPIZOOTIC AMONG HORSES.

Dr. Albert Fricke, in a communication to the *Philadelphia Medical Times,* records the results of his observations of horses attacked with the disease which lately caused such havoc among these animals in America, with some post-mortem examinations, and the results of several microscopic examinations by Professor Joseph Leidy and himself. One of the most remarkable features of the disease was the rapidity with which it spread over the continent, appearing first in the far East, and in less than eight weeks reaching the sea-borders of Louisiana and Georgia, and it is still travelling west and south. This rapid spread, together with the symptoms of the disease itself, were very suggestive of its being closely allied to, if not identical with, the well known influenza of the human family. But Dr. Fricke seems to have arrived at the conclusion that the diseases are not identical, and that the horse disease depends upon a

blood-poison far exceeding in virulence that which induces influenza. In the first place, the sum total of the mortality among the affected horses was great, and the symptoms in the graver cases were altogether of a much more formidable character than are encountered in influenza affecting our race. Dr. Fricke mentions that few horses escaped being attacked, and that out of 30,000 horses in Philadelphia, according to the official reports, over 2250 died in less than three weeks. The breathing in the horse in bad cases assumes a spasmodic character, and the distressed animal refuses to lie down almost to the last moment of life, and finally dies from exhaustion. Sometimes, about the middle or end of the third week, if the case progresses unfavourably, œdematous swellings make their appearance, the hair of the mane and tail falls out, the lining membrane of the nostrils becomes deep purple, and the animals become very feeble, with little hope of recovery. The disease exhibits well-marked anatomical characters in the mucous membrane of the nares, pharynx, glottis, larynx, and trachea, either by great congestion and injection of the vessels of the membranes lining these parts, which become covered with mucus or pus, or by the production of patches of false membrane. Dr. Fricke concludes, from these and other observations, that the disease is closely allied to the epidemics of diphtheria in the human family. The acute anæmia so generally observed is, he thinks, another evidence of its diphtheroid character.—*The Lancet.*

ON DISINFECTANTS.

DR. BAKEWELL.

(An Extract from a Lecture on "Small-pox.")

As regards disinfection, I can only say that while I think the use of the ordinary disinfectants good as deodorisers, I have no faith whatever in their protective power. After the examination I have made of the dust of small-pox wards, it which quantities of minute scabs were always found, I cannot believe that any atmosphere that can be breathed by a human being can destroy the small-pox germ. I do not dispute that it may be destroyed by sulphurous acid, though I should be sorry to trust to that without heat or moisture as well; but I feel certain that it cannot be destroyed by any quantity of it in which we could breathe. The same may be said of the other disinfectants. In fact, I believe the best use of disin-

fectants in small-pox wards or rooms is to make such a stink that the place must be ventilated. For this reason I prefer those that have the most unbearable smell. First comes sulphurous acid, then chlorine, then the black carbolic acid —and I defy anyone to stand a combination of carbolic acid and small-pox smell without abundant ventilation. Condy's fluid is perfectly useless as a disinfectant of the atmosphere, though very good for bathing the varioles with. I used to carry a little bottle of iodine with me to smell at when there was any very bad case to examine closely. I don't think it was of much use, but it was more agreeable than confluent small-pox.

The best way to disinfect clothes and bedding used by small-pox patients is to burn them. This is the safest plan. If this cannot be done, they should either be baked or boiled —it does not much matter which, so long as either is done effectually. I do not think any small-pox germ will survive a temperature of 212° for half an hour

For disinfecting rooms, fumigation (with all apertures closed) with burning sulphur should be done first. The room must then be stripped of its paper, if papered; the floor well scrubbed, and washed over with solution of chloride of lime or of zinc; walls and ceiling thoroughly lime-washed; and then the doors and windows thrown open for a couple of days and nights, if possible.—*Medical Times and Gazette.*

ON A FERMENTATIVE ACTION OF THE BLOOD.

By E. Tiegel.

The author attempted in vain to separate the hepatic diastatic ferment by treating dried and pulverised livers with glycerin or with solutions of various salts. When dog's liver was rubbed up with solid sodium chloride and washed with saturated solution of salt, the latter portions of the filtrate were free from sugar, but showed a decided diastatic power when digested with starch-mucilage.

All attempts to separate the ferment from this solution failed, as all precipitants seemed to destroy its activity. The hepatic appears to differ from the pancreatic ferment in being insoluble in glycerin. When blood-corpuscles are in process of destruction, the blood has a decided diastatic power, and converts both glycogen and starch into sugar, but it has no such action either when the corpuscles are perfectly intact or when they are completely destroyed.

This property is shown by mixing blood with glycogen solution and adding sodium glycocholate or ether to destroy the blood-corpuscles. It also acts as a ferment during its coagulation. Solid glycogen is not changed by the blood, its conversion occurring only when in solution. The author supposes that the conversion of glycogen into sugar in the liver is due to a destruction of blood-corpuscles taking place in its capillaries, the glycogen probably existing partly in a dissolved state, and being transformed in the capillaries rather than in the hepatic cells. This view is confirmed by an experiment which he made at Kühne's suggestion, in which he found that the glycogen taken up by water passed through the portal vein of a rabbit's liver became converted into sugar if blood were present in the liquid, but did not do so if the blood were completely removed. He distinguishes three kinds of diabetes. 1st. When the glycogen is not increased, but the destruction of blood-corpuscles is more rapid. To this class belong Harley's method of injecting chloroform, ether, alcohol, or ammonia into the portal vein, and the author's experiments, in which he occasionally succeeded in producing diabetes by injecting very slowly $\frac{1}{4}$—$\frac{1}{2}$ c.c. of ether into the vein of the ear and repeating it at intervals. 2nd. When the glycogen is not increased nor the destruction of corpuscles more rapid, but more glycogen is dissolved in the liver. An example of this is the production of diabetes by injection of 1 per cent. salt-solution into the arteries. 3rd. Artifical increase in the amount of glycogen by injection into the vessels.—T. L. B.—*Journal of the Chemical Society*.

Analysis of Continental Journals.

By G. Fleming, M.R.C.V.S., Royal Engineers.

THE CATTLE PLAGUE IN GERMANY IN 1870.

The losses occasioned by the cattle plague in Germany in 1870 have been published in the official report of the Chancellor of the Empire, Prince Bismarck, presented at the third session of the German Reichstag. This report, however, does not include the losses among the cattle of the army commissariat parks, which must have been enormous.

PRUSSIA.—Government of Berlin	118	head.
„ „ Potsdam	621	„
„ „ Frankfort-on-Oder	28	„
„ „ Stralsund	340	„
KINGDOM OF SAXONY	212	„
GRAND DUCHY OF MECKLENBOURG-SCHWERIN	205	„
PRUSSIA.—Government of Coblenz	1875	„
„ „ Wiesbaden	39	„
„ „ Trèves	3227	„
GRAND DUCHY OF OLDENBOURG	246	„
PRUSSIA.—Government of Cologne	348	„
„ „ Dusseldorf	169	„
GRAND DUCHY OF HESSE	44	„
Total	7473	„

If to this be added some isolated eruptions at the end of 1870 and commencement of 1871, and which really belong to the principal invasion, there is a total of 8122 head in 230 localities. Of these animals 921 died, 2610 were killed as diseased, and 4484 as suspected. The amount of the losses sustained in the army during the war in France is unknown, but the commissariat contractors lost in Germany alone 2104 head. There is no mention of the sheep sacrificed, though the number has been somewhat considerable.

The losses occasioned by the same disease in Alsace-Lorraine have been still more severe, for in the department of the Bas-Rhin alone the official statement gives 6104 cattle and 160 sheep for the period 1870-71, corresponding with the invasion of the German troops; and 582 cattle and 944 sheep for the second period, when the same troops returned. The list of indemnities for the Bas-Rhin amounts to 1,622,249 francs. Zundel believes that for the other two departments of the annexed territory—Lorraine and the Haut-Rhin—the loss is also very great; in the first, he estimates that 5000 cattle and more than 3000 sheep, and in the second 1400 cattle, perished. The indemnity to cover this loss he reckons to be one million and a half of francs.—*Recueil de Méd. Veterinaire*, October, 1872.

CONTAGIOUS PLEURO-PNEUMONIA IN BAVARIA.

Since 1867, owing to the very severe measures adopted, this disease had almost entirely disappeared from the southern part of Bavaria, when, at the commencement of 1872, irruptions of the malady were observed at very brief intervals, and it was difficult, often even impossible, to find a clue to

their occurrence. Although the number of diseased animals in each commune was very small, yet there were eleven communes belonging to four districts infected towards the month of June. From the researches undertaken by H. Adams and his colleague H. Mayrwieser, it was discovered that the disease had been imported by Italian herds from the Tyrol, which were infected before their departure, as some of them became ill in three or four weeks after their arrival, and others only after a long period.

This disease frequently passes from the Tyrol into eastern Switzerland, especially into the cantons of Appenzell and Saint-Gall, and demands, therefore, the enforcement of severe measures. The Tyrol is, like Wurtemberg, a region in which there is much risk in buying cattle, owing to no steps being taken to extinguish the disease. Indeed, in Wurtemberg the spontaneity of the disease is believed in, and inoculation is recommended to modify its ravages.—*Wochenschrift d'Augsbourg*, 1872, *Recueil.*

DEATH OF PROFESSOR FÜRSTENBERG.

Continental veterinary medicine has sustained a heavy loss by the decease of Herr Fürstenberg, professor at the Agricultural Academy of Eldena. Not altogether personally unknown in England—he was deputed by the Government of his country to visit England in 1865, in order to report on the cattle plague—this gentleman's name has been very frequently brought before his colleagues on the Continent in connection with his very valuable and highly scientific contributions to veterinary literature. Among these are to be noted researches on calculi and other concretions; pleuro-pneumonia; scabies; the diseases of the mammæ, &c. He was also favorably known as a writer on veterinary hygiene and zootechny; and in addition to being a man of science, he was no less distinguished as an able practitioner—one always actively employed in raising the status of his profession. Recently, he had been engaged in making osteological comparisons between existing animals and those whose remains are discovered in the lacustrine and antediluvian strata.

He died very suddenly on the 15th of last September, on his return from attending the Veterinary Congress at Frankfort.

CENTRAL VETERINARY MEDICAL SOCIETY.

THE ordinary meeting of this Society was held at 10, Red Lion Square, on Thursday, February 6th, the President, F. J. Mavor, Esq., in the chair.

At the commencement of the meeting an animated discussion took place on "Osteo-Porosis," a subject which had been introduced and partly considered at the previous meeting. The chief points incidental to the affection which were touched upon had reference to the enlarging of the joints, supposed deficiency of the earthy salts in the bones, and the character of the herbage and soil in those districts where the affection exists. Many questions being raised on these and other points, which the report on the affection which had been received from Melbourne scarcely alluded to, a committee was appointed to prepare a series of questions on the subject, and forward them to Mr. Mitchell for his reply thereto.

Mr. Fleming introduced a method of roughing shoes, as shown to him by Count Pratasoff. It consisted in square holes being punched in the shoe to receive a cube of steel, the projecting face being drawn out and sharpened like an ordinary stud. These studs were fixed by being simply tapped with a hammer, the weight of the horse's body being sufficient to retain them *in situ* when once properly fixed. Mr. Fleming had seen them kept in for three weeks without difficulty. They were as easily removed from the shoe as they were fixed, by tapping them with a hammer upon their sides.

The President said that his late father had adopted a similar method, and also himself up to the present day, the only difference being in the form of the stud, the shank of which was made to curve over the upper surface of the shoe.

Mr. Martin (Rochester) laid before the meeting a portion of a bladder of an aged grey horse, which during life was subject to a frequent slight hæmorrhage from the penis. He had cast the horse and injected an astringent mixture into the bladder, which checked the flow for a few days, but, fearing to cast him again, and neither astringents nor tonics having any beneficial effect, the horse was destroyed. The *post-mortem* examination disclosed an ulcerated condition of a portion of mucous membrane of the bladder. Mr. Martin next desired to learn the opinion of the fellows on the adoption of Mr. Broad's system of treating laminitis, as he was frequently called upon to attend cases of the disease. He was anxious to adopt efficient remedies, and had

therefore given Mr. Broad's shoe every chance, combining with its use the exercise advised. He had not, however, found its use to be advantageous.

Mr. Martin added that he had brought several specimens of laminitis from cases in which the shoe had been used. He believed that the use of the shoe often tended to encourage the descent of the pedal bone and the convexity of the foot rather than otherwise. He had therefore abandoned it, and preferred instead to reverse the position of the old shoe, and let the heels bear the greater weight.

In this latter plan he was supported by several of the fellows, some of whom advocated the animals being placed in boxes strewed with tan.

The President said his object in introducing the specimens of laminitis at the last and present meeting was to ascertain the opinion of the fellows as to the seat of the disease, for he felt that in the early stages of it local without constitutional remedies were useless. He also wished to know whether they believed with him, that it originated through disordered function of the pneumogastric nerves.

Mr. Fleming said there were two causes to deal with, plethora and overwork. The latter he could not ascribe to nervous origin.

Mr. Cox said that in the majority of cases local causes produced the disease, but metastasis was another cause. The malady had often its origin in rheumatism.

The meeting was prolonged to a late hour before being adjourned.

Present:—Fourteen fellows and one visitor.

JAMES ROWE, Jun.,
Hon. Sec.

P.S.—In last month's *Veterinarian*, page 152, last line but one, *for* "osteo-porosis" *read* "osteo-sarcoma."

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE annual meeting and dinner were held at the Queen's Hotel, Leeds, on Friday, the 31st ult., the President, Mr. J. S. Carter, of Bradford, in the chair.

The following members were also present, viz.—Messrs. T. Greaves, M. E. Naylor, James Freeman, Joseph Freeman,

F. J. Day, Ferguson, Fearnley, Fallding, Cuthbert, and the Secretary. Mr. Steel, 12th Lancers, was present as a visitor. Apologies for non-attendance were received from Messrs. Dray, McTaggart, Anderton, Walker, Faulkner, Nicholson, John Freeman, Bale, Patterson, and Prof. Williams.

The minutes of the previous meeting were read and confirmed.

The Treasurer brought forward the financial statement, which showed a balance in favour of the Society of £108 15*s*. 11*d*.

Mr. James Freeman gave notice that at the April meeting he should propose, "That the summer meeting of this Society be held by adjournment from Leeds to Hull during the Royal Agricultural Society's Meeting."

The President delivered the inaugural address, commenting principally upon the advantages and usefulness of veterinary medical societies. He also gave the history of two very interesting cases that had occurred in his practice recently, one of the cases being the presence of a fibrous tumour in connection with the ileum of a horse, giving rise to symptoms analogous to those of enteritis; the other case was one of a diseased brain in a horse. The pathology of these cases furnished ample food for discussion, in which most of the members joined.

The ninth annual dinner then took place. After full justice had been done to an excellent repast, the usual loyal and patriotic toasts were duly honoured. A number of toasts appertaining to the profession were also fully commented upon.

Mr. Greaves asked for the views of the members upon the three following subjects, viz.—1st, that it is necessary to place veterinary surgeons upon the examining board as occasion may require; 2nd, that the examiners should be appointed for five years; 3rd, that the preliminary examination should be carried out by the Royal College of Veterinary Surgeons. After discussion, the members present, with one dissentient, declared themselves in favour of these subjects being carried out.

During the evening the *President* in a few suitable and complimentary sentences presented to the Hon. Sec. "a black marble timepiece, surmounted with a bronze female figure," from the members of the Yorkshire Veterinary Medical Society, as a mark of esteem and appreciation of his long services as their Hon. Secretary.

The *Hon. Sec.* returned his heartfelt thanks, and entirely reciprocated the kindly feelings of the members. He was sorry that his efforts to induce the 140 or 150 veterinary surgeons in Yorkshire to join the Society had not been more successful; but such was the apathy and indifference of the great bulk of the members of the profession that it was utterly impossible to get them to join in any movement having for its object the advance-

ment of the veterinary art, and the elevation of the social status of the members of the profession.

A well-earned and most cordial vote of thanks to the chairman ended an enjoyable and happy evening.

WM. BROUGHTON,
Hon. Sec.

WEST OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

A GENERAL meeting of this Association was held at the Christopher Hotel, Bath, on Wednesday, 15th January, Mr. Barford, of Southampton, one of the Vice-Presidents, being in the chair.

Amongst those present were—Mr. T. D. Broad; Mr. J. Broad, of Bristol; Mr. Collings, of Exeter; the Hon. Secretary, Mr. Dring, Bath; Mr. Fletcher, Bath; Mr. S. James, Frome; Dr. Aust. Lawrence, Clifton; Mr. J. James, Corsham; Mr. James, Thornbury; Mr. Stephens; Captain Robertson; and Mr. Vicary, Bath.

Prior to the general meeting the members of the Association met with a hospitable reception at the residence of the President, Mr. Broad, who at the meeting read a paper on the "Pathology and Treatment of Diseases of Joints," which was illustrated by an extensive collection of specimens and apparatus.

Mr. Broad made some general remarks on the objects of the Association. They wanted, he said, to make veterinary surgeons desirous of improvement, and to awaken in them a spirit of inquiry and a thirst for further knowledge, which must inevitably be an advantage to themselves as well as their employers and the poor dumb animals they are called upon to treat. In the minds of the great majority of veterinary surgeons throughout the country the laudable desire of acquiring a greater amount of scientific knowledge in connection with their profession had not as yet been awakened; and if this Association could, even in part, substitute interest for indifference, it would render a service to the country.

GENERAL OBSERVATIONS ON THE DISEASES OF JOINTS, MORE ESPECIALLY THAT OF THE HOCK.

Pathologically we define lameness to be disease or derangement of some part or other of the apparatus of locomotion. In estimating its nature and importance, we have to take into con-

sideration that we have to deal with varied structures distinct in their formation, their functions, and their pathology, but all so united for a special purpose, that disturbance of any of them is sufficient to derange the exact working of the whole. The study of diseases of the joints, therefore, involves to a greater or less extent that of the affections of the osseous system, the foundation, as it were, of the articulations; of cartilage and fibro-cartilage, interposed between the bones to play the part of buffers; of fibrous tissue or ligaments, of synovial membranes with their synovia, as well as of connective and adipose tissues, which serve as packing material to fill up the hollows.

The Hock.

External to the hock, but still playing an important part in its mechanism, are various tendons, as well as synovial bursæ, the pathological conditions of which, in their relation to this joint, will be brought under notice. It is well known that the hock is the most common seat of lameness in the hind extremities of horses which are used at paces beyond a walk. As the anatomy of the hock is well understood, it will not be necessary to occupy any time in describing it; we may, therefore, proceed to the practical part of our subject.

Capped Hock is the name given to any enlargement of the point of the hock, the result of a bruise, most commonly produced by horses rolling in their stables, especially if they have not much bedding. Some horses are much more in the habit of rolling than others. Capped hock is also produced by kicking at the sides of the stall. When recent it is the result of inflammation of cellular tissue and effusion of serum into that structure of the cap formed by the skin and connected to the outer covering of the broad tendinous expansion which plays on the os calcis. In severe cases, arising from repeated kicking, there is often an effusion of lymph, which may either become organized or degenerate into pus, or a tumour varying in its consistence may be the result. In whatever state the disease may exist, it has rarely any communication with the bursa beneath the tendon on the point of the hock.

Treatment.—In the early stage reduce the inflammation by constant application of cold water and hand rubbing, should that not produce entire absorption of the effused material, then apply carefully with a feather about once a week on both sides of the hock over a large surface, omitting the affected part, not less than one ounce of tincture of iodine, the strength of which is four ounces of iodine to twenty ounces of methylated spirit.

Capped elbow is pathologically the same condition as that of capped hock, and is caused by the animal lying upon the heels of his shoe; therefore the first step in the treatment is to put on a

very short shoe, the heels of which must be rounded off the same as for hunting. It is also often necessary that the horse should have buckled on the foot at night a soft pad, which covers the heels of the foot and shoe, although I have many times known capped elbows to be produced on horses which have not had shoes on for months, simply from lying on the heels of their feet. The early treatment of capped elbow is the same as that for capped hock. If an abscess or cyst has formed, open it freely in a pendent position; afterwards, if any thickening remains, apply tincture of iodine over a considerable space on the arm, but not on the part nor inside, as that would make it very sore and interfere with the animal's moving. If a tumour has formed, and is not connected to the elbow with a wide base, dissect it out; if it has a wide base pass a seton through it, and keep the tape in as long as any deposit remains, which is often a very long time, in consequence of its lowly organized structure. In renewing the seton it may be necessary to pass it through a lower part of the tumour, in consequence of the partial absorption of the enlargement. The application of iodine round the tumour at the same time will assist in its removal. If the tumour is very large, and cannot be dissected out, it is better to remove it by sloughing, for which purpose I puncture the tumour in two or three places, and insert into each puncture a very small quantity of Hydg. Bich. or arsenic. After the sloughs have been removed repeat the Hydg. Bich. or arsenic, if necessary, judging the quantity by the effects of the former application.

Thoroughpin is an enlargement of the bursa between the os calcis and tibia, occasionally communicating with the general synovial cavity of the joint; it is generally produced by some excessive action.

Treatment.—Should there be any appearance of acute inflammation, bathe with cold water, after which apply pressure by means of a spring truss, which is the treatment I have adopted for about thirty years without a failure. The average time for treatment with entire rest is from four to six weeks. If the animal is kept at work, and the truss applied only at intervals, it will still succeed, but require a much longer time. In those cases where the bursa communicates with the joint, and the result has been a bog-spavin in addition, pressure does not answer. The treatment in this latter form will be that of bog-spavin.

Other bursal enlargements and chronic thickenings, the result of inflammatory action, such as are commonly situated about the fetlock-joint, and occasionally to a considerable size on the front of the knee of hunters, can be more certainly and effectually removed by the use of spring trusses properly fitted than by any other treatment with which I am acquainted.

Bog-spavin is essentially the result of synovitis, there being an increased amount of synovial fluid in the joint which causes the capsule to bulge on the inner and anterior part, that being the weakest. In some cases the inflammation of synovial membrane is acute and the fluid is soon absorbed, but more frequently it is of a subacute character. The balance between effusion and absorption being deranged, there is a chronic filling of the joint by synovia, which has a tendency to become more or less viscid in its nature, and consequently less easily absorbed. During the time the horse is working or being exercised the fluid becomes more or less absorbed, in some cases so much so that the disease may not be noticeable until the horse has been standing some time.

Treatment.—In acute cases allow rest, purge, and bathe with cold water, after which, if necessary, apply extensively the tincture of iodine. Firing and setoning used to be much more often resorted to than at present in the treatment of bursal enlargements. High-heel shoes ought never to be used in these cases, for if used for any length of time they are apt to produce a more serious disease than the original one, viz. contracted tendons. The late Mr. Duck, of Marlborough, told me some ten years since that he had for many years treated thoroughpin and bog-spavin by the application of a small quantity of sulphuric acid to the centre of the enlargement, thereby producing a slough of the skin, which was very effectual and did not leave much blemish. In the treatment of bursal enlargements a long rest is of great importance. In some rare instances hard tumours form at the seat of bog-spavin, and occasionally become ossified. On the table before you is one, two inches in diameter, which I dissected from the hock of a cob. The case did well, and but little blemish was left.

In inflammation of joints the result of sprain or concussion there is often a great tendency to an adventitious growth of fibrous tissue, which subsequently becomes converted into a kind of cartilage, and by a further change into bone. Small bony tumours are occasionally found on the substances of fibrous tissue floating loosely in the stifle, also in the hock-joint. In severe injuries of joints, whether from concussion or blows, there is often more or less ostitis or periostitis, as frequently shown by the throwing out of ossific matter and by its depriving the articular cartilages of their proper nutriment, whereby they become ulcerated. Such results are frequently the effects of a kick, especially when near the stifle or some other joints, the symptoms of which for the first week or ten days may not to the inexperienced appear to be serious, as the animal may be scarcely lame or suffer much pain until the bone becomes so much inflamed

that it may be quite impossible to prevent ulceration of the articular cartilage, which in my opinion is invariably the result of ostitis, and not the effects of synovitis.

Treatment of injuries to or near joints, also open joints.—In a loft over one of my stables I have a large cistern, twenty feet from the ground floor, connected with which is an india-rubber tube and brass tap, from which I can regulate a stream of water the size I wish to be directed on to the injured part. In cases where I apprehend serious danger I have the water so applied the whole of the day, and continued for a month if necessary, that is, if I see there is sufficient pain in the part to induce the animal to hold his foot off the ground more or less. Should the pain continue longer than about that time I then have recourse to blistering over a very large surface round the injured part, and repeat the blister as often as may be necessary. If the joint is one that will admit of a linseed-meal poultice being easily applied by night I employ one. Only in the most severe cases is it necessary to continue the douche for a month, but under this treatment, cases often recover which would not be cured by any other means. In the absence of a cistern or water-pipe, &c., I use a small watering-pot, by taking off the rose and plugging up the hole with a cork out of which there has been a piece cut to allow of the flow of a small stream of water. In severe injuries it is often necessary to put the horse into slings, more especially if the injury be to a hind leg. Also to remove all the shoes to prevent laminitis.

Laceration of the fibres of the tendon or muscle of the flexor metartarsi is not an uncommon occurrence. The symptoms in severe cases are such as to induce the inexperienced to think that a fracture of the thigh exists in consequence of the loss of power of the muscle. The leg can be completely straightened in a backward direction, the animal having no power of flexing it, there being no antagonist to the gastrocnemii, the tendon of which is in a state of relaxation as soon as the foot is lifted from the ground; the leg appears also to be quite quite loose and danging. The most serious cases are those in which the muscle is ruptured or very extensively lacerated; such cases require several months' rest. I have known the injury to occur in cart-horses, carriage-horses, and hunters, as the result of some violent exertion. Generally there is not much swelling, but when the fibres of the tendon are lacerated there is more or less enlargement in the front part of the angle of the hock; when the injury is in the muscle there is more swelling, but higher up.

Treatment.—Repeated blisters, with long rest in a loose box. Tenotomy is a very useful operation when properly managed and sufficient time is allowed for the new part of the tendon to be

well formed. A fore leg requires from three to six months and a hind leg from six to nine months for recovery. Before casting the horse for operation have the foot put into shape and the heel lowered; if it be a hind leg have a shoe with a projecting toe-piece, without calkins, nailed on firmly; make a very small incision on the inner side, much the same as for unnerving, about midway between the fetlock and knee; then with a fine bistoury, such as surgeons use, divide the tendons, taking care not to injure the vessels and nerves nor other portions of the skin. After the tendons and fibrous tissue are divided, and the leg put into a normal position, put in one or two wire sutures. The operation is then complete and the animal fit to walk home quietly a distance of five miles, if necessary, and to be turned into a field, requiring no treatment whatever for the next month, when it may be necessary to again put the foot in order. If it be a hind leg it is generally necessary to keep the toe-pieced shoe on until the horse is fit for work.

Curb is produced by some inordinate action of the hock, more especially in young horses when in bad condition. In its simple form it is an enlargement of the sheath of the tendons, so that the one passing over the distended part of the sheath is raised out of the straight line. It may be attended with lameness, but it is more commonly not, unless the sprain or injury be of a more severe character; or if the horse with a simple curb be repeatedly overweighted or overpaced, in that case the sheath and tendon become sprained and inflamed, and the fibrous structures of the tendons and other tissues in connection become thickened and enlarged.

It has been stated by different writers that curb is the result of an injury to one or other of the ligaments. Such a statement cannot be borne out either by theory or the scalpel, as in dissecting curby hocks I find that the ligaments are the last structures to become involved in the general thickening. Enlargement is the earliest indication of curb, and often without any lameness. On the contrary, injury to ligaments in connection with joints is attended with a considerable amount of lameness, but without swelling, and scarcely any heat. Take, for instance, a sprain of one of the branches of the suspensory ligament.

Treatment.—Generally very simple; scarcely ever necessary to do anything more than apply repeated blisters. I apply them over a much larger surface than is generally done. In the case of valuable horses I have for many years used pressure in the reduction of the enlargements, and for that purpose I now use two pads, one on the curb, the other on the point of the hock, the pressure being applied from two buckled straps about one inch wide. It is very common to work horses during treatment.

Curbs do not often produce permanent lameness. Patten shoes were formerly much used in the treatment of lameness. I very seldom have recourse to them for any lameness, excepting very severe sprains of the tendons, and then only for a few days, until the acute pain has passed off.

Spavin.—Bone spavin may be defined to be an exostosis on the inner and lower part of the hock. When situated very low down it is the result of periostitis of the head of the metatarsal bone, and unconnected with the cuniform bones, and, as a rule, does not produce lameness; but the ordinary situation of bone spavin is in connection with the metatarsal and cuniform bones, and is the result of periostitis and ostitis, and may have been the effects of such a low form of inflammation as not to have produced lameness. But the disease to which we are more often called upon to treat is of a much more formidable character, as it frequently happens that bones which were before slightly movable have already become more or less anchylosed.

On the table before you are a large number of specimens in which there is no enlargement, yet the cuneiform bones are anchylosed. These are the cases which have in times past given rise to differences of opinion in courts of law as to whether there was spavin or not. Articular disease of the hock most commonly commences between the cuneiform bones, and next to that between the metatarsal and lower cuneiform bone; the lower articulation of the astragalus and the upper of the cuneiform do not often become involved unless the disease is very extensive, yet I have known cases when this joint has become anchylosed and no lameness remaining, only a lessened power of a flexion of the hock. I have many times dissected the hocks of horses which have never been known to be lame or in any way enlarged at the seat of spavin, yet from the defective flexion I have suspected and found the cuneiform bones to be anchylosed, and am satisfied that ostitis of a low but persistent character is often produced and followed by anchylosis of the cuneiform bones; also periostitis resulting in an enlargement termed spavin without producing lameness or anything more than a lessening of the flexion of the hock.

Among the causes of spavin is hereditary tendency, many animals having an ossific diathesis, as shown by the disposition to throw out splints, ringbones, spavins, &c., without having been overworked, and in some cases before they have done any work. It is not the badly shaped hock which most frequently becomes affected with spavin; on the contrary, it is often the one which is most perfect in shape and action, as horses with such hocks are generally good goers, and are often taxed to their utmost power, either for the purpose of showing what they can

do or from a want of judgment on the part of the rider or driver in going at too great a pace for too long a distance on hard roads, also pulling up too suddenly.

Bad shoeing is a predisposing cause, as by it the foot and leg are often thrown out of the natural position, especially by the use of high calkins, which tend to produce concussion.

In the early stage of the disease it often happens that the lameness or stiffness is very slight, and only observable when the horse is first brought out of the stable in the morning or when he is first made to turn over from one side of the stall to the other, and these symptoms may often be temporarily removed by a dose of physic or a week's rest in a loose box. The same remark also applies to many chronic cases when anchylosis is going on; the inflammation being of such a low character, there is very little pain attending it, but when the horse is put to fast work the inflammation becomes more active and the pain more acute.

Pathology.—In the early stage of articular disease there is a congested state of the vessels of the bone or bones of the hock, and if sufficient rest is not allowed for the vessels to recover their tone, inflammation of a persistent character supervenes, and the nutrition of the bones is then interfered with, as well as the secretion of synovia. This stage of the disease causes an aching pain, which interferes more or less with the action of the animal. Now, this state of things may exist for months with but slight lameness, and that of an intermitting character, or only to be observed for a few yards when the horse leaves the stable in the morning. If the animal is not properly treated and this inflamed state be allowed to exist for a long time, the destructive action commences by softening and enlargement of the central cancellated structure of the bone, the cells break up, absorption takes place, producing the first stage of molecular death, or what is termed dry caries, the progress of which depends much upon how the animal is used. Granular degeneration of the interosseous ligaments and articular surface of the cartilages commences, and soon afterwards a yellow plastic matter is thrown out, gluing the diseased part of the two bones firmly together. In this stage of the disease there will generally be more or less lameness or stiffness until the cartilaginous surfaces are nearly or entirely liquified and absorbed, and replaced by a bony matter; this is at all times a very slow process. The vessels of the bones throw out, from their roughened surfaces, bands of lymph, which by a further process become converted into bone, forming an anchylosed joint. If during this destructive and reparative process the horse is much worked, periostitis will be set up, so that in addition to the process going on between the articular surfaces of the joint

there will be a large amount of periosteal disease, which may extend more or less to all the bones of the hock.

I find it stated by Billroth, Rindfleisch, and other recent writers on pathology, that ulceration of the cartilages of joints is generally the effect of disease of the synovial membrane. I differ from that theory, having made some hundreds of dissections of joint disease, and found almost invariably that ulceration of the cartilage commences about the centre of the joint, consequently not near the synovial fringes which are situated around the edges of the joint.

Treatment.—In the early stages of the disease, when the bones may be presumed to be in a state of congestion or inflammation, place the horse in a loose box, give physic and apply cold lotions or water, and do not allow exercise or work for several weeks. If the lameness still continues, anchylosis has probably commenced; it will then be necessary to apply a blister or seton, or to fire over a large surface. I prefer the pointed iron, as it does not leave so much blemish as deep firing with an ordinary iron, but the dots, when deep, ought not to be closer than an inch, or there will be danger of sloughing. I prefer setoning to firing; the action of the seton can be continued longer; if the tape be changed occasionally, and the wound properly attended to, there will only be a thickening of the skin and subcutaneous structures, which after a time will become absorbed, leaving no permanent blemish. After setoning or firing not less than three months' rest is necessary. Should the lameness not then be removed, and the horse a valuable one, continue the treatment; but if the lameness is not much, and the horse not valuable, and it is possible or convenient to put him to work which will not require him to go beyond a walking pace, it may be done with benefit, as it tends to increase the reparative process and assist the union of the diseased surfaces of bone by the formation of new bone-cells; in fact, its action is in a modified form the same as firing or setoning.

I have on different occasions known horses to be out of work and under treatment for spavin for nearly a year and yet continue lame, but upon putting them to slow work for a few weeks they have entirely recovered from the lameness, but with more or less loss of flexion of the hock. If this course of treatment be fully carried out there will be but few animals which will not get free from lameness and become useful, although some of them may require two years to complete the anchylosing process. The amount of lameness attending the process, even when the horse is worked, differs very much; in some cases there is no positive lameness, only more or less stiffness or want of flexion; in others there is only occasional lameness, and that more especially after a

long journey, or one done a little quicker than ordinary, or if such horses are kept in stalls, they show the stiffness much more than when in loose boxes. In cases where there is much lameness, and the animal is compelled to work fast and hard, the disease is very apt to extend beyond its ordinary limits, involving more or less the whole structure of the joint. "Sidebones, ringbones, and spavins," with or without anchylosis, are often formed independently of lameness.

In forming an opinion respecting the soundness of a horse whose hocks are not perfect in appearance, or exactly fellows, you will be guided in a great measure by the manner in which the animal uses them, and that more especially if you are satisfied that the horse has been in regular work.

Mr. Dring, Mr. Barford, Mr. Fletcher, Dr. Lawrence, and other gentlemen, contributed to the discussion which followed, at the close of which a hearty vote of thanks was accorded to Mr. Broad for what the chairman described as an eminently practical paper.

Dr. Lawrence exhibited under the microscope a collection of specimens of animal tissues, in which great interest was manifested. In the evening the members dined together, with their President, Mr. Broad, in the chair.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting of this association was held at the Blackfriars Hotel, Manchester, January 7th, 1873. W. Whittle, Esq., ex-President, in the chair.

Members present:—Messrs. T. Greaves, W. A. Taylor, J. Hopkin (Manchester), Jas. Taylor (Oldham), W. Woods (Wigan), W. Bromley (Lancaster), J. Bostock (Altrincham), and E. Woolner (Heywood).

The minutes of the last meeting were read and confirmed. Messrs. Ferguson (Warrington) and Roberts (Manchester) were unanimously elected members. Mr. Woods nominated Mr. G. Morgan (Liverpool) as an honorary associate.

It was proposed, seconded, and unanimously carried, that the President and Secretary, for the members, draw up and forward to Mrs. Haycock a letter of condolence on the death of her husband Mr. Wm. Haycock, a late member of the society.

Mr. Hopkin then referred to the case of a horse that could progress in the walk and trot moderately sound, but when at rest was continually putting one fore foot on the top of the other, the

muscles of the forearm and shoulder at the same time becoming as hard and tense as a piece of board.

It was thought by some of the members to be a case of disease of the spinal cord, whilst others thought there must be a diseased state of the motor nerves supplying the affected muscles.

Mr. Bostock next described a case of lameness in the region of the shoulder. In this case there was a soft circumscribed swelling which gradually changed its position.

It was thought by the members present to be a collection of serous liquid that followed the course of the muscles.

After the discussion, the election of officers for the current year took place, when the following gentlemen were elected:—President, W. A. Taylor; Vice-Presidents, Messrs. A. Lawson (Bolton), W. Whittle and Jas. Taylor; Treasurer, E. Woolner; Hon. Secretary, T. Hopkin.

The annual meeting of the association was held at the Blackfriars Hotel, February 12th, 1873. W. Augustus Taylor, Esq., in the chair.

The following gentlemen were also present:—Messrs. Blakeway (President of the Midland Counties Association); R. Reynolds (President of the Liverpool Association); S. P. Constant (5th Royal Dragoon Guards); Heselden (Royal Artillery); T. Greaves, P. Taylor, A. L. Gibson, J. Lawson, A. Lawson, W. Dacre, S. Locke, J. A. Taylor, M. J. Roberts (Manchester); G. Heyes, Kenny, Elam, Leather junior (Liverpool); A. Lawson (Bolton), ex-President; Fearnley (Leeds); Whittle (Worsley); Woods (Wigan); Woolner (Heywood); Bromley (Lancaster); Buckley (Blackburn); Bostock (Altrincham); Ferguson (Warrington); Mather (Hapenhey); Lowe (Bolton); Taylor (Oldham); Brooks, Whitefield, J. Taylor Hughes and the Secretary.

The President delivered the following address:

Gentlemen,—This is the eleventh anniversary of the Lancashire Veterinary Medical Association. Since the formation of the society in December, 1862, many changes have taken place, not only affecting the interests and welfare of members of this society, both individually and collectively, but the profession in general.

Much has been written and said respecting the social position of the veterinary surgeon. His position in society has been the cause of discussions and arguments, the results of which have shown that he has little to be proud of and much to be ashamed of. This admission will by some be considered an unjust degradation on my part. It may be, but until the opposite is proved beyond doubt I shall remain inconvincible. That a reformation of the social standing of the veterinary profession is

desirable—aye, and indispensable to its advancement—is the belief of all who have the interests of their calling at heart. This is not to be effected by a wholesale demand upon the education of intending students, nor by a sudden increase in the severity of the final professional examinations, but by a gradual advancement in all matters conducive to a healthy result. The individual social position to be occupied by a veterinary surgeon will depend partly upon his talent and skill as a professional man, and much more upon his education and gentlemanly habits. The position to be held by the profession will depend upon the willingness and determination of each individual member to uphold and protect its honour and integrity.

The education of the veterinary student is a theme upon which much diversity of opinion has been and still is expressed. There are gentlemen who advocate an extensive acquaintance with the different branches of knowledge, believing it an utter impossibility for a veterinary student to possess too great a knowledge of classics, mathematics, or mechanics; and, I regret to say it, there are gentlemen, though in point of numbers I believe them to be few, who have given forth to the profession their views that a veterinary student should only be educated during the scholastic period of his life, in the rudiments of some of the subjects just named. The impetus which has lately been given to the education of the working classes ought to arouse the attention of members of societies similar to ours, not only to the state of their own education, but also to that of those who have to follow them; and should they find improvement necessary, let that improvement not be restricted, let there be sources formed whence all may acquire additional knowledge, and let that knowledge extend widely over the different branches of learning. It is an erroneous idea to suppose that a veterinary student may possess too much classical or mathematical knowledge. This, I believe, has arisen from a fear that a highly educated pupil would not stoop to perform many minor operations and duties which would be required of him during an apprenticeship. If a young man possessed of a good education *wish* to become a veterinary surgeon, and I lay great stress on the word wish, for some "would like" to be veterinary surgeons who do not in reality care one tittle about the manner in which they study to gain the diploma, and little more how they practise when in possession of it; but, I say, if a young man love the science and practice of the veterinary art, and *wish* to hold a respectable and honorable position among its members, he will gladly avail himself of every opportunity to increase his knowledge, and will not allow any details to escape his notice. Where there is a will there's a way, and where there's listlessness there's oftentimes a blank.

Of late years a preliminary educational examination has been instituted at the veterinary colleges previously to the admission of a student. This examination, which at first was little more than formal, it is, I believe, the intention of those in authority to gradually increase in severity until a certain point is attained. Of course it is not necessary for those who hold certificates of examination such as "the Oxford or Cambridge local," to subject themselves to the preliminary examinations at the colleges. This institution has done good by preventing some few entering upon a study for which they were little or not at all prepared, and who would, had they been admitted to the college, have spent both time and money to little or no purpose.

Since the appointment of Professor Simonds as Principal of the Royal Veterinary College the period of collegiate study has been lengthened, and great and material changes have taken place, not only in the general routine and daily instructions, but also in the subjects lectured upon. In addition to the subjects previously lectured upon, botany as relating to medicine has been introduced, and this is accompanied by field excursions during the summer session. The addition of botanical lectures will be of great service to the veterinary student during his collegiate study, and the knowledge thus gained will be appreciated in after years, especially by those whose fortunes lead them to practise in the country. Professor Cobbold, a most eminent man, has been appointed to the chair of botany. Besides his lectures on this subject he gives a series of lectures upon a very important branch of veterinary pathology, namely, parasitic diseases. These two subjects, having a special relation to each other, render the learned professor's lectures at the same time most interesting and edifying.

With the extension of the period of study at the Royal Veterinary College there has also been an increase in the number of subjects to be studied, so that I do not see that much advantage will accrue to the student by such extension of time. Previously to the increase of subjects there was not sufficient time for a student to thoroughly investigate and master the whole of the subjects then lectured upon, and I fear the late extension of time together with a corresponding increase in the number of subjects will only leave the student in much the same position he was in before, with this exception, that he would have a certain knowledge of botany and parasitic diseases which he would—under other circumstances — perhaps not have acquired. Is it possible for a student to investigate and make himself thoroughly acquainted with the subjects of anatomy, physiology, and pathology of the horse and other domesticated animals; chemistry, materia medica and therapeutics; botany

and helminthology, in the space of sixteen or eighteen months? It may be possible, but only with a few. I think the time ought to be further extended, say to four sessions, and I am of opinion that the examination should be conducted on a similar system to the one in vogue at the medical schools, *i. e.* that at the termination of each session an examination in one or more subjects should be instituted. In opposition to this, arguments have been brought forward to the effect that students—knowing what subjects they would be examined in—would "cram" themselves for the occasion, and as a result would forget much of the matter they had *crammed* their brains with. I do not see why this argument should hold good, inasmuch as we all know that at scientific and other examinations there is always a certain amount of cramming; indeed, I think that when a student knows that at the expiration of the session he must submit himself to an examination in one or more subjects he will apply himself in great part during the whole of the session to the subjects named, and not as some students, who, when two sessions was the required time to be spent within the college before being eligible for examination, worked very little during the first session, leaving a great deal to be done during the second, and who, with the help of continued "cramming and grinding" for a few weeks prior to the examination, managed to pass. The latter system is, I think, to be the most deplored.

Respecting the examinations, I hold that they should be *vivâ voce,* written, and practical; and further, that the examinations at the three colleges should be conducted by members of one examining board, and the members of the board elected by the Council of the Royal College of Veterinary Surgeons. Let each school pursue its own course of instruction. I am therefore in favour of one charter for the three colleges—London, Edinburgh, and Glasgow. This I advocate because students attending the colleges would then all undergo a similar examination, and the successful candidate be in possession of one universally recognised diploma, without the necessity, as at Edinburgh and Glasgow, of undergoing a second examination for the diploma of the Royal College of Veterinary Surgeons.

Veterinary literature has during the last two or three years received from the pens of able authors many valuable additions. To those gentlemen who have sacrificed valuable time to the compilation of works calculated to increase our knowledge, improve our minds, and elevate our thoughts, I say to those gentlemen we are very much indebted; to two or three of them we are more particularly indebted for their valuable productions, and to all our sincere thanks are due for their indomitable perseverance and energy. May they continue in the same praiseworthy course, and

may many more follow their illustrious example. Whilst dwelling upon this topic I cannot refrain from expressing regret at the decease of a gentlemen who was a member of this society until attacked by an illness from which he never recovered, and which was the cause of his withdrawal from our ranks. I refer, as most of you will surmise, to the late Mr. William Haycock. He was a man who had at heart the interests and wellbeing of his profession, and who laboured incessantly in the prosecution of veterinary science. As an author he was of no mean order, and in one of his works is to be found much valuable information relative to veterinary homœopathy. Alas! his name is numbered with those of the past.

This society is now ten years old, and we are met here to inaugurate the eleventh year of its existence, it being one of the oldest, if not the oldest provincial society, thus showing that the formation of veterinary medical societies is comparatively of recent date. The objects and uses of these associations have been so thoroughly paraded and explained, and are generally so well known, that it is unnecessary for me to describe them here.

With respect to our position as scientific men, I would ask, have we profited by these associations to any great extent? I fear not as much as we ought to have done. That they have been the means of bringing together many gentlemen who, perhaps, would not have known of each other's existence, and that they have improved the minds, given subject matter for thought, and amended the practice of individual members, I do not deny; in fact I maintain that any association which by discussion at its meetings shall enlighten the minds of its members is deserving of the highest praise. Yet I feel that our societies are now *in statu quo*, and that we do not advance as we should. What have we done during the last ten years? Have we improved our position publicly? If we have, how is it that our advancement does not meet with a greater appreciation of our increased talents in the way of remuneration for our services?

At our quarterly meetings we assemble for the purpose of hearing, in the majority of instances, an essay read on some subject of interest to us as scientific men, and most of those present take part in a discussion from which some benefit must be reaped. Would not these gatherings be much more instructive and interesting if, instead of troubling some one to write an essay, a member or members would bring pathological specimens, giving a concise history of each case, to be followed by a general discussion. Gentlemen in active practice, having little time to spare for writing long essays, would willingly and easily jot down a few remarks to enable them to give a short description of any case of disease they might wish to bring before the notice of the meeting.

Such a programme, I think, would be far more acceptable to the majority of members than our usual one. Of course a sprinkling of essays would add fragrance to the scientific bouquet.

Could not these associations collectively prevail upon the Council of the Royal College of Veterinary Surgeons to investigate the reasons why policemen are appointed inspectors of cattle in districts where contagious and infectious diseases are prevalent, and where veterinary surgeons could be easily found who would perform the duties of an inspector of diseased cattle far superiorly to a policeman, who cannot possibly know anything of the nature of disease. The fact that policemen are appointed to positions of national important—positions which ought to be occupied by veterinary surgeons—is lamentable. It is a disgrace to our profession. It is, I fear, an ignominy to which we shall be more or less always subjected unless the profession rise up in arms to assert its claim. Then, peradventure, the veterinary surgeon would receive a little more attention, and probably be preferred to policemen for posts of such national importance as inspectorshps of contagious and infectious disease in cattle.

There is a subject to which I must sorrowfully and reluctantly refer, and which I, as president of this society, deem it my duty to mention. About eighteen months ago there appeared on the horizon a dark cloud overhanging and threatening the welfare of this society. It grew darker and darker, increasing in size until it burst, when a storm of such violence as will not be soon forgotten by those who witnessed it. Upon the subsidence of the storm our society was compelled to note the loss by resignation of three valuable members. This shock to our little craft has caused a laxity in the attendance of members at the quarterly meetings. Still she rallies and battles with the tide, but, alas! makes no headway, her buoyancy lacks support, her timbers cringe and creak, and an unkind whisper asks the question, Shall we sink? The answer, gentlemen, I leave in your hands.

A cordial vote of thanks was accorded to the President for his able and practical address.

After the inaugural address the annual dinner took place, and a very pleasant evening was spent, and what added materially to the enjoyment of those present were the faces of so goodly a number of visitors, who one and all appeared anxiously to wish the association and profession at large advancement and prosperity.

SEDBAR HOPKIN, *Hon. Sec.*

PARLIAMENTARY INTELLIGENCE.

CONTAGIOUS DISEASES (ANIMALS) ACT.

House of Commons, *February* 14*th*.

Mr. Clare Read moved for a select committee to inquire into the operation of the Contagious Diseases (Animals) Act, and the constitution of the Veterinary Department of the Privy Council. He stated, as showing the importance of this matter, that within the last twenty years the price of beef and mutton had almost doubled, while that of pork had remained almost stationary. No doubt this was partly .to be accounted for by the increase of the population; but the principal causes were the cattle plague of 1865, and the continual outbreaks since that period of pleuro-pneumonia and foot-and-mouth disease. Last year in Norfolk alone there were 200,000 cases of foot-and-mouth disease, involving a loss of 2,800,000 lbs. of meat; and there had been a computation that in the county of Hereford the money lost amounted to £100,000. He was quite of opinion that the Privy Council should have power to send down inspectors to farms on which there were animals suffering from contagion, with authority, not only to order those animals to be slaughtered, but all animals that were contiguous, and that the compensation should be paid, not out of the county rates, but out of the imperial exchequer. He quoted statistics showing that pleuro-pneumonia was greatly on the increase, and complained that the veterinary department were above receiving any suggestion, He expressed his belief that the hold of the ship was the place where the foot-and-mouth disease was generated, and suggested that this might be prevented by better ventilation. He also complained of the injurious delays in the transport of cattle on railways, and instanced one case in which some animals which were sent off from Norwich to Deal on the Monday morning did not arrive till 2 o'clock on the Wednesday afternoon, having had no food or water in the interval; and another case in which some heifers sent to him from Aberdeen on the Monday did not arrive till the following Thursday. He suggested that it was greatly to the interest of the community to encourage the dead meat trade, which the butchers seemed to be prejudiced against, and that it might be regulated like the fish trade was—by telegraph. The expense of the Act was from £10,000 to £12,000 a year, and it had been stated by the chairman of the Central Committee that the money might as well have been thrown into the sea. In the Committee he proposed he hoped to see several Irish members, looking at the enormous amount of cattle imported from Ireland. In Norfolk alone they took 40,000 Irish store stock annually, and it was most essential that they should have the views of Irish breeders before them. He, therefore, proposed a slight alteration in the notice of motion, namely, to extend the inquiry to the Cattle Dis-

eases Act of Ireland, and into the constitution of the veterinary department of Great Britain and Ireland.

Mr. Bassett seconded the motion, observing that this was a question affecting the consumers as well as the breeders, and giving examples from the statistical returns of the enormous havoc made among cattle by the disease.

Mr. Denison, on behalf of the railway companies, pointed out that much of the delay arose from the packing of cattle in railway trucks by the drovers, so that after they had been taken out, watered, and fed, it was impossible, from the increased bulk, to get them into the trucks again.

Mr. Barclay bore testimony to the admirable way in which the local authorities had worked the Act. He observed that the total value of the cattle of Great Britain was £115,000,000 sterling, double the value of the registered shipping, supplying animal food to the country to the value of £45,000,000 sterling, while the imports amounted to only 12 per cent. of the whole production, which would show the magnitude of the interest to be dealt with. He believed that if the energetic measures adopted in Scotland were used in the north of England and other parts the disease would be almost exterminated. He thought it would be advisable to have only one local authority in each county, in order to simplify the working of the Act. (Hear, hear.) The opinion of the Scotch as well as of the Norfolk farmers was, that the great source of the disease was Ireland; and he thought the best mode of dealing with that evil was to have all cattle inspected prior to their embarkation at the Irish ports.

Mr. J. Howard said there could be no question that the Contagious Diseases Act was a well-conceived and vigorous attempt to deal, not only with imported, but also with established disease among our live stock. But there was a prevalent opinion that the Veterinary Department of the Privy Council had been inert, and had not taken adequate steps to trace the origin of the disease. During the last summer and autumn the Royal Agricultural Society prosecuted an inquiry into the causes which produced foot-and-mouth disease among the cattle imported from Ireland, and it was satisfactorily proved that the system of inspection was totally inadequate for its purpose, and that the provisions of the Act were systematically ignored across the Channel. (Hear, hear.) During the last year, in the small county of Bedford 38,000 animals were attacked, and 800 died; the total money lost not being less than £60,000. He was glad to find that the Government had consented to the appointment of a Select Committee, and believed it would prove satisfactory to the public.

Mr. W. E. Forster said, when his hon. friend Mr. Read brought forth a similar motion to the present one last year, he told him that he considered it too late then for such an inquiry, but that in the next session he would not only assent to, but welcome it. While he was conducting the Bill through the House he was congratulated on acquiring so much power; but he replied that he felt that

would be like a rope round his neck, and would be rather strongly pulled before he had done with it. (Laughter.) In a matter affecting such varied interests, it was impossible to avoid a great deal of conflict on both sides. One reason why he welcomed inquiry was that he wanted to give his hon. friend (Mr. Read) an opportunity of supporting the charges made by him against the Veterinary Department, being convinced that after they had been thoroughly sifted he would be candid enough to withdraw them. If there had been any fault on his own part it was not for want of attention, for the result of his responsibility was that he had only had a fortnight's holiday this year. (Hear, hear.) As regarded rinderpest, his hon. friend was mistaken in supposing that several animals having cattle plague had been imported into this country. Eight vessels had come to England with cattle plague on board, but only one animal that was affected had been landed, and the precautions taken were sufficiently stringent to prevent any extension of the disease. He must claim credit for the department, inasmuch as during the last three years, with cattle plague raging in France, Belgium, and Germany, they had succeeded in keeping away that disease. As to Russian cattle, not a single animal had been allowed to go into the interior. The hon. gentleman (Mr. Read) said that more vigorous steps ought to have been taken in Yorkshire. The very instant telegraphic intelligence reached London of the existence of cattle plague, one of the inspectors was sent down and the most stringent precautions were adopted. (Hear, hear.)

Mr. C. S. Read said he did not charge the Veterinary Department with being remiss; but said that either there, or somewhere else, there was a certain amount of inactivity.

Mr. Forster said that with regard to Yorkshire he must express his sense of the determined way in which the local authority of the East Riding put the Act into operation. He thought that the fact that the Act did not give power to slaughter animals that were at a little distance from those that were infected was one which it would be very desirable for this Committee to consider. (Hear.) He should be glad to be guided by the information which the Committee would obtain; but he was rather sanguine that it would be shown that the department had carried out faithfully and to the utmost of its power the Act as it was passed. No doubt the Act gave a great discretion to the Government in regard to cases in which it should compel the immediate slaughter of the animals, but he was strongly of opinion that it would be found very difficult to change from that practice without great inconvenience to the home consumer. With respect to the home disease, they entered upon the first practical legislation for the prevention of such disease when they passed this Act. He was of opinion that the time had come when there should be a careful inquiry into what had been done with a view to decide whether they had better go further in the course hitherto pursued, or whether they ought to some extent retrace their steps. (Hear, hear.) His own impression was that the restrictions in the Act were of use in stopping the home disease, especially the very dan-

gerous disease of pleuro-pneumonia, if put in force by the local authorities throughout the country; and one point which the Committee would have to consider was, whether the present permissive legislation ought to be replaced by more extended and compulsory powers. (Hear, hear.) As regarded the foot-and-mouth disease, complaints had been made against the department on account of the spread of that disease; but they would before the Committee be able successfully, he thought, to defend themselves, and to throw back the charge partly upon the Act not being strong enough, and partly upon the local authority not carrying it out. (Hear, hear.) He was glad that his honorable friend had proposed to inquire into the operation of the Act in Ireland, and he hoped that the Irish members themselves would be found willing to support any restrictions which might be considered necessary, for nothing would do more good to Ireland as a producing country than that more care should be taken of the cattle at home. (Hear, hear.)

Mr. Downing had no objection to the inquiry being extended to Ireland, because he believed it would be found that much exaggeration prevailed in regard to cattle sent from that country. In the county which he represented he had not heard of a single case of a beast dying from the foot-and-mouth disease, and they had had no rinderpest in Ireland. (Hear, hear.)

Mr. Pell observed that much of the evil complained of arose from the want of uniformity in the orders issued by the borough and county authorities. (Hear, hear.) Whatever was the cause, there was a good deal of the foot-and-month disease found amongst the cattle that came over from Ireland.

Motion agreed to.

SUPPLY OF HORSES.

HOUSE OF LORDS.—THURSDAY, *February 20th.*

Their Lordships met at five o'clock.

The Earl of Roseberry, in proposing an address praying her Majesty to appoint a Royal Commission to inquire into the condition of this country with regard to horses, and its capabilities of supplying any present or future demand for them, said that since he had given notice of his motion he had been inundated with communications, including one from Lord Ossington, written to him from the bed of sickness. A letter had also been addressed to him through the press by a gentleman of whom it might be said that he had "given up to horses what was meant for mankind." That gallant officer stated that "the facts from practical knowledge bearing upon the state and condition of our national stud convinced him that in 1873 there was a greater number of horses of every description in England than ever was known, and that in their respective classes and vocation they were superior to their predecessors." If that was the gallant Admiral's opinion he believed that he stood alone in it. The gallant Admiral went on to

say that there were but two classes profitable to breed—Suffolk-bred horses and thoroughbred stock. If that was so, what comfort was it to those who required horses for ordinary purposes? A farmer could not ride a racehorse to market, because it was too expensive; and the same objection would apply also to his riding a carthorse—it would be expensive in time, which was money. The only practical remedy which the Admiral had to propose was given in these words:—"Put the same tax on racehorses as on other horses of luxury, and then pray leave us alone." The result of fifteen years' absolute control of Newmarket—the result of a powerful mind applying itself to a subject with which it was quite competent to deal—was a suggestion that, in order to increase the number of ordinary hores, the duty on racehorses should be reduced from £3 17*s.* to 12*s.* 6*d.* If that were done, we might hereafter be able to say, "True, we have lost our horses, but we retain our racing." (A laugh.) Though he had no personal interest in the matter, he could not join in the fashionable denunciation of the turf as selfish, immoral, and as provocative of gambling. It was the custom of hon. gentlemen, well-meaning, but possessed of little practical acquaintance with the subject, to go down to the House of Commons and inveigh against what were somewhat absurdly called "our Isthmian games." If, in the month of September, an apprentice robbed his master's till, grave magistrates bewailed the fact as a lamentable illustration of what was owing to the St. Leger. If, in the month of May, an old woman was run over at a crossing, her misfortune was attributed to the Derby. Against such denunciations he would set the words of a gentleman who had certainly no prepossessions in favour of racing, and who said, "Of itself, it is a noble, manly, distinguished, historical, national amusement." That was a description which must be accepted by noble lords on both sides of the House as above and beyond suspicion, for it proceeded from the Prime Minister. (Hear, hear.) If noble lords still had doubts, he wished that like him they could have seen two noble lords, eminent for their character and their virtues—Lord Palmerston and Lord Fitzwilliam—running their horses on Doncaster Town Moor, without a bet upon them, or any interest beyond that of testing their respective merits. While racing was carried on in that spirit he should consider that it was as innocent an amusement as large numbers of persons could possibly enjoy. Hunting and shooting were only for the wealthy, but there was no one so poor that he could not visit a racecourse. (Hear, hear.) He believed that gambling was on the decline, and that there were few owners now who had as much "on" their horses as would form the stake at an ordinary rubber of whist. As for putting down gambling by abolishing races, they might just as well—to quote the words of the French wit—think that they could abolish rain by suppressing gutters. (Laughter.) As for the notion that it was the business of the Jockey Club to supply the country with horses, he must remark that what was sauce for the goose ought to be sauce for the gander, and that they might just as well call upon the Royal Yacht Club to furnish her Majesty's

navy with ships of war. (Hear, hear.) As regarded the scarcity of horses, he could only say that last year he saw in London three racers sold in less than three minutes for £27,000, the cheapest of them fetching 6000 guineas. The scarcity in question he attributed to various causes, amongst which foreign exportation bore a conspicuous place. Within the last six years, it was no exaggeration to say that 14,000 mares had been shipped from Hull and Harwich alone. Valuable old breeds, and notably the coach-horse, the hack, and the roadster, had all but disappeared. He proceeded to read extracts from Lord Ossington, Lord Portsmouth, Mr. Chaplin, and others, in confirmation of his position that horses were never known to be so scarce and dear as at the present time. Even as to cart-horses, he learned from the Great Northern Railway, which employed 13,000, that they were now paying 70 per cent. more for them than they were ten years ago. In Wales there had been an increase in the number of horses, but not so great an increase as might have been expected considering the wonderful development of wealth and industry. In Ireland the number had fallen from 602,894 in 1862, to 540,745 in 1872. In England the falling off in 1871 alone, in brood mares and horses for agricultural purposes, had been no less than 14,867, namely, from 977,707 to 962,840; whereas the tramways alone ought to have appeared for at least as great an increase. The gravity of these facts in the event of war need not be dwelt upon. In 1871 the Department required 2000 additional horses for the autumn manœuvres, and of this number 1250 had to be imported from France. At the end of the manœuvres, when the animals had to be resold, they were in such a plight that the Government had to submit to a loss of £20 per head. It is calculated that in the event of a war we should require 2000 more horses to mount the cavalry, and 4000 more to complete the horsing of the artillery. But he was told that it would take three months to get together half that number at double prices; and though a poet was said to be born, a charger required to be made, and the time it took was five months. It was stated that the autumn manœuvres would have to be given up this year unless the Government were prepared to propose a very much larger estimate. As in the case of coal, the matter was extremely urgent. Our navy was supplied with fuel from America, and the old joke had become fact—people were literally sending coals to Newcastle. In like manner England, once renowned as a breeding country, was obliged to import her horses. Surely such a state of things demanded the most comprehensive and searching inquiry that it was possible to make. (Cheers.)

Earl Granville warmly complimented the noble earl on his speech, but said that, so far from Admiral Rous being in a minority of one, there was not another person in the world who agreed with him. There could be no doubt as to the rise in the prices of horses, but the chief reason for it was the extraordinary competition occasioned by the recent sudden and unexampled development of the wealth of the country. He had the greatest possible doubt

as to the alleged degeneracy of our horses; but, supposing it to be true, no greater blow could be aimed at breeding than to prohibit exportation. It was quite a mistake to suppose that racehorses could not be used for other purposes. Five years ago he was at a country house in France, the owner of which did all the work on a farm of 2000 acres, and all the road work, with thoroughbred horses of between two and a half and five years old. This gentleman, for the sake of securing exercise for his animals, had even taken a posting contract. He had 600 horses, and he was the only foreigner who had ever won the Derby. The noble earl said that the old British coach-horse was extinct. (Hear, hear.) He (Lord Granville) was heartily glad of it; for he infinitely preferred having his carriage drawn by quick-steppers than by the handsome cart-horses which used to be employed, and which could do no more than five miles an hour. (Cheers.) Look at the park. Why, the number of horses there had latterly quadrupled; and though there was a percentage of these animals which he did not admire—(a laugh)—particularly those upon which so many affectionate husbands and fathers put their wives and daughters—the majority were quite equal to any that ever existed, even the celebrated hackneys of which we heard so much, He would appeal to the noble marquis, who had deservedly been one of the most popular of masters of hounds, whether the fields in his younger days were one fourth or one fifth of what they were now. Now there were often as many as 500 horses out, 200 or 300 of which would carry thirteen, fourteen, or fifteen stone at tremendous speed, and over most difficult country. Surely they were as good as the old-fashioned English horses—the date of which, by-the-bye, he could never ascertain—(laughter)—and which would only dawdle at the rate of seven or eight miles an hour. He believed that, so far from people being less particular now, they had become infinitely more fastidious. A great deal of the language that was talked about the points of horses was all nonsense. (A laugh.) Dealers had always said that it was impossible to find a good horse. Nowadays they would say, as they had always done, "Formerly I could go down to Shropshire any week, and bring home ten or twelve first-class animals, whereas now they are not to be had for love or money; and it was only by the most exceptional piece of luck that I was able yesterday to pick up a very perfect horse, which I am about to show you." (Laughter and cheers.) It might very well happen that the returns were not quite accurate; but he believed that the Custom-house officers took note of horses exported in any considerable number, and what did their figures show? Why, that in 1870, 7200 were shipped to other countries, and in 1871, 7172; whereas, in 1872 the number fell to 3383. The number of racehorses in the kingdom in 1831 was 961; in 1851, 1390; and in 1871, 2473. The horses which paid duty were, in 1831, 338,000. In 1851 they fell off to 311,000; but in 1871 they rose to no less than 859,000. (Hear, hear.) As for the army, with a million horses suitable for the purpose, it could not be supposed that in case of emergency the

Government would have any trouble in getting any number they might need; or that, if necessary, they would hesitate to take powers to seize as many as they might want. Admitting his noble friend's facts to be all accurate, the noble earl had completely failed to show what his Commission was to do. Was it to set up breeding establishments all over the country? In 1831 the French complained that half their cavalry was mounted on foreign horses. The Government established studs, and in 1831 it could boast that all its military horses were home bred; but twenty years later, General Fleury reported that the system was a failure, and had extinguished private enterprise, and it was therefore abandoned. In Algeria every encouragement had been given by the Government to the breeding of horses, but there the system had also proved a failure. In India we had ourselves, after eighty years' exertions, succeeded in completely extinguishing private enterprise, and in mounting our troops at £285 per horse. If, on the other hand, the Commission should recommend the putting of an export duty on brood mares, he could conceive no greater discouragement to breeding. He would venture to suggest to his friend that he should withdraw his motion and substitute for it one for a Select Committee. That Committee might be composed of men fond of horses and men fond of agriculture, with, he hoped also, some political economists, and he thought that its inquiries would prove both interesting and useful. (Hear, hear.)

In answer to Lord Howard de Walden,

Lord Granville added that he had received his information respecting India from a member of the Council.

Lord Roseberry having assented to the noble earl's suggestion,

The Duke of Richmond expressed his pleasure at the result of the debate, for he was unable to see what a Royal Commission could have done. He entirely agreed with Admiral Rous as to the superiority of the present breed of horses.

The motion was then withdrawn.

SMITHFIELD CLUB.

REPORTS OF THE JUDGES ON THE SLAUGHTERING OF CATTLE BY MEANS OTHER THAN THE POLE-AXE.

LORD POWIS'S PRIZE.

Read at the Council Meeting of the Club, Feb. 4th.

Mr. J. A. Garton, 117, Metropolitan Meat Market, reported that—"Having seen three additional trials I am still of the same opinion, and much prefer the use of the pole-axe. The first trial at Markham's slaughterhouse I think was a failure, and I may say the same of the second trial at Bonser's slaughterhouse, seeing that in each instance the pole-axe had to be used to finish the beast. Although in the third trial at Noon's slaughterhouse the cane was used in addition to the dirk, yet it had not the desired effect, viz. that of destroying life so quickly as when used with the pole-axe. I also think that the pithing process is detrimental to the meat, seeing

that the blood gets congealed in the upper part of the neck. This opinion, I believe, has been also expressed by Mr. Humphries. I can only add that after many years' practical experience, I give the pole-axe the preference to any instrument I have ever seen used as being the most effectual in destroying life."

Mr. Arnold, surgical instrument maker, Smithfield, reported:—"With reference to the mechanical construction of the instrument exhibited and used by the inventor, I much question if it be practicable to employ an ordinary spiral wire spring of sufficient power to penetrate the skull of a beast without rendering it almost a matter of impossibility to draw up or set the spring, on account of its great amount of resistance. If the spring or springs be made the requisite strength, then some other means would have to be devised for setting the instrument ready for action. If the animal was at all restive the trigger might be accidentally touched, which would render the operation somewhat dangerous."

Professor Simonds reported:—"I fully agree with the opinions expressed by Mr. Garton and Mr. Arnold in their respective capacities; and further, on scientific grounds, I cannot advocate the division of the spinal marrow—pithing—by the use of a dirk or any other kind of instrument in preference to the direct destruction of the brain by the pole-axe. In the one case—pithing—the brain with the origin of all the nerves of special sense is left unharmed, and therefore in its normal condition as the *primum mobile* of the animal organism; in the other its functions are at once cut short, and with this, life itself. In other words, the head in pithing remains alive while the rest of the body is slowly dying, when the operation is expertly performed; in the other the stunning effects of the blow, even when the skull is not broken in, so completely arrests the function of the brain that the body is deprived of sensation if not immediately of life. Failure with the pole-axe is rare. Failure with any kind of pithing instrument must in practice prove frequent. Humanity shrinks from contemplating the different conditions of animals dying under these different circumstances."

ROYAL COLLEGE OF VETERINARY SURGEONS.

EXAMINATION.

A Special Meeting of the Court of Examiners was held on the 12th of February, in accordance with the resolution of the Council, for the admission of candidates holding the Highland and Agricultural Society's certificate, when Mr. William Smith, of Dumboola, Ceylon, underwent the necessary examination for the diploma, and was admitted a member of the body corporate.

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Communications and Cases.

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.G.S., F.L.S., &c. &c.

(*Continued from p.* 186.)

We now commence a description of that division of the large Exogen class, to which the term *Hypogynous Exogens* has been given, the definition of which is that *the stamens grow from the base of the ovarium*, as distinguished from the *Perigynous Exogens*, in which *the stamens are growing upon some body surrounding the fruit*, and *Epigynous Exogens*, when these organs grow from the apex of the fruit; and of the three cases we would recommend as examples the following:

Hypogynous flower.—Common stocks and gilliflowers, buttercups.

Perigynous flower.—Roses, apples, pears, plums, primrose.

Epigynous flower.—Dandelion, daisy, bedstraws.

These, it will be seen, can easily be got at in town or country, and will well repay for an examination of the insertion of the stamina. Professor Lindley, speaking of this subject, says:

"The hypogynous insertion of the stamens has been regarded by the French school of botanists as one of very great systematical importance, and it does seem to collect together a large mass of plants, the genera of which have a great resemblance to each other. If we assume that the entire separation of the calyx and corolla from the stamens is

an indication of those organs being in hypogynous plants of less importance than usual, then the character acquires a physiological value not previously assigned to it, and such appears to be the case; for it is only among hypogynous exogens that we find a total absence of floral envelopes, as in the Piperal and Chenopodal alliances; it is among them that the presence of petals seems to be of least moment as the character of a natural order, for in 12 alliances out of 14, petals are either constantly or frequently absent, and in one only are they often combined into a tube; in all other cases such a circumstance is exceptional." *

The learned author just quoted goes on to show that alliances in this division are approached in different directions by those of the other sections, but this is only what we may reasonably expect, as there is really no hard-and-fast line in nature; but the whole that we so systematically divide approach each other by imperceptible degrees.

The hypogynous exogens are by Lindley divided into fourteen alliances, of which the one to be now described is defined as follows:

VIOLALES.—*Stamens entirely free from calyx and corolla; flowers monodichlamydeous; placentæ parietal or sutural; embryo straight, with little or no albumen.*

If a common violet or pansy be taken as an example, the value of the above points will be duly appreciated.

This alliance possesses twelve natural orders, of which the following may well claim our attention:

1. *Flacourtiaceæ.*—Bixads.
2. *Passifloraceæ.*—Passion-flowers.
3. *Violaceæ.*—Violets.
4. *Crassulaceæ.*—House-leeks.

1. The *Bixads* may be represented by the *Bixia Orellana*, a plant remarkable for the fact that its seeds are covered with an orange-red, waxen kind of pulp, from which the true annatto or annotto of the shops should be made, which substance is used for the colouring of cheese. The genuine should consist of the pulp of the Bixia, for which the following is the direction for its preparation:

"Boil annotto in a solution of pearlash until it will dissolve no more; then add oil of vitriol, previously diluted with 20 times its weight of water, until no more colouring matter is thrown down, but not enough to make the liquor taste sour; wash the precipitate with a little cold water, then drain and dry it.

"*Remarks.*—This is the pure colouring matter of annotto,

* 'Vegetable Kingdom, p. 325.

and possesses all the properties of the best annotto in a concentrated form."*

But though we deprecate the artificial colouring of cheese or butter, even with the genuine article, still less could we recommend the use of the following, which is the usual stuff sold in the English markets for colouring dairy produce, nay, we have reason to believe that even this make up, sold by "respectable people," is still further mixed with the vilest ordure by the less scrupulous, and sold as fine annotto.

"ANNOTTO, COMMON, *Syn.* REDUCED ANNOTTO, *English.*

"ANNOTTO.—Egg or flag annotto 24 lbs., gum tragacanth 10 lbs., starch 6 lbs., soap 1½ lb., red bole or Venetian red 1 lb., water q. s.; mix by heat in a copper pan, and form into rolls."†

It is, however, time to leave this dirty theme, which we do with the advice to repudiate high or artificially coloured cheese.

2. The *Passionworts*, as represented by the passion-flowers of our gardens and hot-houses, are known to all. They are surrounded by the halo of superstition, from being supposed to symbolise all the events of the Passion of our Lord—the cross, the stigmata or wounds, the crown of thorns, &c. Professor Lindley says:

"Passion flowers are the pride of South America and the West Indies, where the woods are filled with their species, which climb about from tree to tree, bearing at one time flowers of the most striking beauty, and of so singular an appearance that the zealous Catholics, who discovered them, adapted Christian traditions to those inhabitants of the South American wilderness, and at other times fruit, tempting to the eye and refreshing to the palate."

As Dr. Masters is still more particular in describing the superstitious reverence attached to this plant, we quote the following from the 'The Treasury of Botany:'

"These singular and beautiful plants are chiefly natives of tropical America, a few being indigenous in Asia. The name was applied from a resemblance afforded by the parts of the plant to the instruments of our Lord's passion, and its attendant circumstances. Thus, the three nails—two for the hands and one for the feet—are represented by the stigma; the five anthers indicate the five wounds; the rays of glory or, as some say, the crown of thorns, are represented by the rays of the 'corona;' the ten parts of the perianth represent the

* 'Cooley's Practical Receipts,' p. 80.
† Ibid., p. 80.

apostles, two of them absent, Peter who denied and Judas who betrayed our Lord; and the wicked hands of His persecutors are seen in the digitate leaves of the plant, and the scourges in the tendrils.* But setting aside superstition, it must be admitted that the Passiflora are very beautiful both in form and colour, while some of them possess a most fragrant perfume. It is said that the fruit of many species is highly agreeable, but though it often ripens in this country even against a sunny wall, we have never tasted the fruit of any species that could tempt us to eat one, and we, therefore, cannot recommend them for the dessert.

3. *Violet worts* are well known from the spurred flowers of the violet and pansy which are among the commonest flowers both of the field and of the garden, those of the former possessing just those qualities which make them capable of adaptation to the florist's wants from the delicious perfume possessed by many of them, and the charming variations both in colour and form which they can be made to assume.

The Violeæ belong to Europe, Asia, and America, and some or other of the forms have a medicinal reputation wherever they occur. They are more or less emetic in their roots, while the flowers are reputed laxative.

The tincture or infusion of the flowers of blue violets are employed by the chemist as tests, acids changing the blue to red, and alkalies to green.

4. *The House-leek.*—As represented by the *Sempervivums*, *Sedums* and others forms a most interesting natural order, most of which are small but curious thick-leaved plants which attach themselves to rocks and other dry situations.

The Sedums or Stonecrops are so called from their growing upon stones and old walls. They are considered as cooling and refrigerant, on account of the quantity of watery juices which their thick leaves contain. At the same time the Sedum acre receives its specific name from the biting nature of its juice, from which the plant has got the name of wall-pepper. Again, acting upon the doctrine of signatures, our country people use these plants in arthritic complaints, as from their growing in stony places they are supposed to be capable of breaking up calculi.

But the most interesting example of the acting upon this doctrine that we have met with is that of the employment of the leaves of *Cotyledon umbilicus*, wall pennywort or navel-wort by the rustics in weakness of the bowels.

* P. 850.

In order to the due understanding of this we give a drawing of the leaf of the plant, as it is of a very peculiar form.

Leaves of *Cotyledon Umbilicus,* showing the central depression.

Now, here it will be seen that the form of the leaf is what botanists term peltate, and on its upper surface is a depression somewhat in shape like that of the navel-pit. Here, then, is the signature which pointed it out as a remedy for weakness of the so-called stomach. Is there any external ailment in the umbilical region, the good wife anoints the place with the juicy leaves of the navelwort, and if the complaint be internal, a "tay" or infusion of the "stamped" or crushed leaves is to be taken as a never-failing remedy.

We recollect when once botanising in Wiltshire we stopped at an old wall opposite some cottages, and soon became busy in selecting a fine example of the navelwort, when no less than three old women came out to watch our proceeding, and to beg that we would not destroy it, giving us at the same time, at our request, an account of its various uses and supposed virtues.

Mrs. Lankester tells us that—"This curious little plant is applied by the peasantry in Wales to the eyes as a remedy in some diseases, and by the herb doctors in the west of

England it is recommended in epilepsy, but with about as much efficacy as most such prescriptions. Its use as a remedy in epilepsy was recently revived in legitimate medicine, but it has obtained no permanent reputation as a remedy."

The truth is, the plant is perfectly innocuous, and, as a rule, so is the whole order, and so they may be innocently enough employed as dressings to cut-wounds, a very common use for the larger leaved species, which are, indeed, grown on cottage roofs and walls for the purpose. Taken as herb tea for stone or external weakness they will, perhaps, not do harm, but it must sometimes be pitiable to find persons' time wasted in the employment of simples upon a principle, or rather want of principle, as simple as the simpletons who place such implicit confidence in them.

YEW POISONING.

By the same.

I HAVE again to thank Mr. Gerrard for some additional remarks upon my notes concerning "yew poisoning."

Of course I shall not enter the list with him as a controversialist in his own but not my profession, but when he says I am "the first to doubt or disbelieve" in the nature of yew poisoning as commonly understood, he will I am sure excuse me if I put him right upon this part of the subject.

Pereira says, "The poisonous properties of yew were known to the ancient Greeks and Romans, and have been fully established by modern experience, *although some few writers have expressed doubts concerning them.*"*

Old Gerarde in adverting to the fact that the ancients believed it to be fatal to sleep under the yew and that its berries were poisonous, says, "All which, I dare boldly affirm, is untrue; for when I was young and went to school, divers young schoolfellows, and likewise myself, did eat our fils of the berries of this tree, and have not only slept under the shadow thereof, but among the branches also, without any hurt at all, and all that not one time, but many times."

At one time it was even asserted that vessels made of the wood of yew imparted an evil effect to the contained fluid, but Evelyn quaintly remarks that "the toxic quality was

* 'Materia Medica,' 4th edition, vol. ii, part I, p. 334.

certainly in the liquor, which the good fellows sipped out of the bottles made of this tree, and not in the nature of the wood."

From remote antiquity, then, it will be seen that opinions have been conflicting with regard to the subject. Still it is an interesting matter for investigation, and one which ought to be settled. I am not in a position to deny or to affirm that a decoction of yew may be poisonous, but I cannot help thinking that yew leaves, and especially in a dried state, where not digested, must cause mischief by some other method than that of acting as an irritant narcotic poison.

In my previous communication upon this subject when speaking of barley cavings I meant to refer to the *awns*—*i. e.* the beards of the barley—and not to acorns as causing much of the irritation from which my calves and sheep suffered.

ASCITES IN A COW.

By Thomas D. Broad, M.R.C.V.S., Bath.

June 12th, 1872.—I was requested to go to E. Brooms, Esq., to examine an aged cow, bred from an Alderney and shorthorn, and supposed to be in calf, and her time of gestation up; she fed well, but was an immense size.

Upon examination I could not detect any calf, or any of the ordinary appearances of calving, beyond her large size, notwithstanding the statement of the cowman that he had seen the calf moving a fortnight previously. I told the owner that there was a large quantity of water in the abdomen, whether she was in calf or not. In the course of the following fortnight I saw her two or three times, and found that she was getting such a size that when down she could not easily get up. I informed Mr. Brooms that it was possible that tapping may relieve her, but there was a danger of hæmorrhage from rupture of the abdominal veins when the pressure from the water was removed; however, there was no other remedy, and I tied her to some rails in the field, and made a short incision through the skin with a scalpel about ten inches in front and a little to the right side of the udder. I then passed a trocar through the abdominal parietes and drew off thirty gallons of fluid, which did not appear to distress her; but, on the contrary, she appeared quite relieved, and fed as though nothing had occurred. The operation was performed in the morning, and about eight or nine in the evening she died. On the following morning my pupil made

a *post-mortem* examination, and found the abdomen nearly or quite as full of fluid as before the operation, also a large coagulum of blood from rupture of one of the abdominal vessels. The whole of the peritoneum lining the abdomen, covering the intestines, and uterus (which was empty), was more or less covered with patches, about the size of the palm of the hand, and from half-an-inch to two inches thick. In the centre the result of exudation of lymph into the sub-peritoneal areolar tissue, which lymph had degenerated into a kind of cartilage; there were also patches of about the same size showing the vessels highly injected.

In the treatment of ascites in the dog I find that iodine has often an extraordinary effect in producing absorption of the fluid, but during its administration it is not unusual to see more or less paralysis produced, but it soon passes off by the iodine being withheld for a short time.

When death takes place shortly after tapping in cases of ascites or hydrothorax, it generally results from the cavity becoming quickly refilled with serous fluid, which, by withdrawing a large quantity of albumen suddenly from the blood, effectually prostrates the animal. Good nursing, generous diet, and rapid assimilation of nutritive matters can alone enable an animal to withstand depletion of this kind.

TREATMENT OF STRONGYLES IN THE BRONCHIÆ.

By the Same.

In the treatment of this disease I have found the following mixture more successful than any other. For calves, from six to nine months old, give Oli. Lini. Oss., on the succeeding day Veratrum Alb. Pulv. ʒij in ℥iv of Oli. Lini., and again on the third day Oli. Lini. Oss. Repeat the doses in about a week if necessary. In weak calves the medicine occasionally produces convulsions, but those symptoms soon pass away.

From the Report of the Central Veterinary Medical Association I find that some of the members are very unfortunate in the treatment of laminitis. If they fully adopted my plan of treatment they would not have had specimens to produce at their meeting. I have not had a case under treatment during the last twelve years which has not turned out satisfactorily. The time required for the treatment of an ordinary case of acute laminitis is from three to ten days.

YEW POISONING.

By Edwin Taylor, M.R.C.V.S., Bury St. Edmund's.

I have perused, with much interest, the cases of yew poisoning related by Messrs. Gerrard and Bower, and also Professor Buckman's opinion. I do not attempt to deny that the leaves of the yew produce a narcotic action upon the system, but I am inclined to the opinion that the narcotic action is not the sole cause of death, but that death arises from mechanical obstruction in the stomach and lungs. For, when the leaves of the yew are taken into the stomach, and mixed with the other ingesta, fermentation is quickly set up to a great degree, a very large amount of gas is generated producing distension of that organ, which, pressing upon the diaphragm, causes congestion of the lungs, asphyxia, and death. Having had some experience in cases of poisoning by yew, I am forced to come to this conclusion. I will now relate them.

In the year 1867 I was summoned early one morning to see some bullocks on a farm five miles distant; the man stated that four were found dead by the yardman when he came in the morning, before my arrival; I found eight more in the yard. I was informed they had all broken out of their pasture during the night, and had got into a plantation in which were several yew trees, and some of the beasts were found dead in the plantation; all of those which I saw were enormously distended with gas. I immediately made a hurried *post-mortem* upon two or three of them, and found large quantities of yew quite undigested in their stomachs, and to those I attributed the cause of death. The symptoms of the others were dull, dejected appearance, staggering gait, injection of the visible mucous membranes, with quick, heavy breathing. Two of the beasts had distension of the stomach to an enormous degree, probably from having taken more of the plant than the others had, and they also laboured more in their breathing; I immediately introduced the trocar into the rumen of each of them, which gave exit to a large quantity of gas, relief immediately followed, and to all of them I administered Magnesia Sulph. 1 lb., with Carb. Ammonia ʒij; the others not showing any symptoms of distension, I did not introduce the trocar, gave orders that no food should be allowed all day, but in the evening they were drenched with gruel; the next day the medicine had operated well upon all of them, and they required no further treatment.

In 1869 I was sent for again to the same farm, to see some cattle, eleven in number, that had got at the same yew trees. Upon my arrival I found one dead, and, on *post-mortem* examination, I found a large quantity of yew-leaves in the stomach, the others showing the symptoms which I had previously observed; but in this instance there were more that had distension of the stomach. I gave to each the same quantity of Magnesia Sulph. and Ammonia as before, and introduced the trocar into all their stomachs, and in each case a large quantity of gas was eliminated, and I am glad to say that all these beasts recovered.

Again, in 1867, I was sent for in great haste to see a bullock that was thought to have died from cattle plague, about four miles off; he had been on a pasture with eleven others, which had been hired by a neighbouring farmer for them to graze upon. Upon making a *post-mortem* examination, I found a large quantity of yew in the stomach, which was greatly distended. I then searched the pasture, and found a quantity of yew-trees in a cluster, which had evidently very lately been partaken of by the bullocks. I at once had the remainder of them walked home to the farm, a distance of two miles, and as soon as possible they each had the same dose of medicine given them; the next day they were all purging from its effects, and they also all recovered. Whether or not they had all partaken of the yew I cannot say, but I thought it best to be on the safe side, and treat them all alike. I ought perhaps to observe that they showed no signs of distension of the stomach.

Now, from my experience I have come to the conclusion, if in cases of extreme distension relief is timely afforded by the introduction of the trocar, and the mechanical obstruction removed, with the assistance of aperients and stimulants, less cases of death from yew would take place.

I merely offer these remarks to induce others, when called in to attend similar cases, to give the trocar a fair trial.

VETERINARY TOXICOLOGY.

By John Gerrard, M.R.C.V.S., Market Deeping.

Arsenical Poisoning.

The acute toxic effects of this substance on ruminants are rarely observed, although cases of chronic arsenical poisoning, as the result of emanations from mines and manufactories, are not uncommon. The effects seem pretty uniform, how-

ever, in all animals, from whatever channel the poison enters, but the means of counteracting them are not so satisfactory.

The stomach-pump, although recommended by some authors, seems of doubtful utility, both on account of the extreme difficulty of application and the nature of the food; indeed, I am afraid it is only an instrument of the lecture-room and text-book.

The subjects of this communication were three cows, the property of Mr. James Barker, Deeping Fen, who, while engaged emptying out a corn-drill that contained a quantity of wheat and arsenic, had occasion to leave the field in which the cows were pastured, and found, on his return, that they had consumed a quantity of the poisoned grain—at least not less than a bushel among them.

The arsenic was in the form of arsenious acid, or the *white arsenic* of the chemist, and had been used for preventing the attacks of wireworms, in the proportion of a quarter of a pound of arsenic to a bushel of wheat, so that if they had been uniformly mixed the cows must have had a poisonous dose. I saw them about two hours after they had eaten the grain, but nothing could be observed amiss.

I proceeded upon the assumption that a poisonous dose had been swallowed, and at once administered to each Tinct. Ferri Perchloridi f. ʒij ppt. by Liq. Ammoniæ fort., washed and given moist. This was followed, in less than half an hour, by Magnesia Sulphas lb. j, in a pint and a half of warm milk, drawn from their own glands, as readiest and most accessible. I left ʒij of Mist. Opii, to be given in a pint of linseed oil two hours afterwards. They were watched over night, and on visiting them next morning, or about twelve hours from the time of my leaving the previous evening, nothing wrong could be detected; they had ruminated most of the time, and were grazing in the field as if nothing at all had occurred to them. I saw or heard of them at intervals for five days, when I declared them out of danger. Not so, however, for about the ninth day it appears one of them was observed falling off in her milk and indifferent to food; but no notice was taken of her until she refused all food three days afterwards. It so happened that the owner, a small farmer in the fen, called in an unqualified practitioner, thinking, of course, that the disorder, whatever it might be, was in no way connected with the poison. He, it appears, was his regular attendant in ordinary cases; but the eating of a quantity of arsenic being considered an extraordinary one, I was honoured with a call.

However that may be, the quack set to work by adminis-

tering his usual dose of castor oil, assuring the owner that "it was only a bit of an obstruction in the *faik*," and would soon be better again, but continued his doses until the second, third, and fourth had been given, when, on the morning of the third day of his attendance a rapid change for the worse was visible, and the owner determined to kill the animal to save the carcase. She was immediately slaughtered and the carcase dressed, but it was in such a bad and blackened condition that the butcher would not risk the chance of detection by forwarding it. Being well acquainted with the butcher, and able to vouch for his intelligence and veracity, I can submit to your readers such a detail of the condition of parts and appearances as will, I presume, convince them that the animal was a victim of the poison.

"The carcase had a yellow tinge, with a number of black spots pervading the substance of the flesh, when cut into, which produced a very peculiar smell, and which was greatly increased when the abdomen was opened. In that cavity was an enormous quantity of watery fluid, of a dirty-grey colour, estimated at over twelve gallons. It differed from the watery fluid generally found therein, being less bloody, and looked as if it contained small particles of food. The fat on the stomach was very dirty and very rough. On removing the stomach and bowels from the cavity, by forcing his hand between the *skirt* (diaphragm) and the stomach to secure the *gullet* (œsophagus) the butcher put his fingers into a small hole in the stomach, just before the '*hodge*' (omasum), which he greatly enlarged in his attempts to remove the '*belly*,' as it seemed easily torn, and looked as if '*grow'd to the skirt*.' The *entrails* were very black-looking, and had a roughened appearance in some places. The liver was large, and softer than usual. The kidneys were greatly enlarged and very soft, and in their interior was a quantity of white mattery fluid, which was also found in the bladder to a considerable extent. The lungs were of a dark greenish hue, very heavy, but 'were not *grow'd* to the sides.'"

Such, in brief, was the report of the butcher, and these statements, considered in connection with the history of the case, point to the conclusion that the lesions were the result of arsenical poisoning, and, if so, are pregnant with facts of pathological and toxicological importance.

The fluid in the abdominal cavity could scarcely be regarded as the result of peritonitis induced by the poison in the system, as the quantity and appearances negative the supposition; nor could it be considered as a dropsical effusion, the time being too short for its accumulation, and

the colour too dark and dirty. It seems fair to regard it as part of the contents of the stomach which had escaped through the opening in some part of it, probably the reticulum, and which induced the peritonitis terminating in the collapse, indicated by the sudden change in the case on the morning of the fifteenth day from the time of swallowing the poison. If this be so—and it is reasonable to regard it as such—it is a hitherto unnoticed or unrecorded occurrence, so far as I am aware, in veterinary literature. Ulceration is comparatively rare in the human subject, and perforation more rare, but both conditions are recorded; and whether the perforation in this case was caused by the eroding action of the arsenic, or whether it was the result of any other morbid action, it is impossible definitely to say. Judging from the peculiar appearances reported, the history of the case, and the time it was in the system, it seems highly probable that the metal was the cause.

The length of time the poison was in the system without producing its poisonous effects is worthy of notice, and suggests the questions whether this cow received all the poison, or whether the antidotes used saved the lives of the other two, but failed in this.

Previous to their partaking of the poisoned wheat they were in every respect healthy, giving a fair quantity of milk, and for at least nine days after they all seemed to feed and ruminate as if nothing had occurred, so far as any one could detect. I saw them on the sixth day after, and declared them out of danger. On the ninth day it seems the milk began to diminish and the appetite to fail in the one in question, while the other two have showed no difference whatever.

I think the likelihood is that the one received the greatest share of the poison, and that the antidotes used were ineffectual or in too small quantity to counteract its effects, or that the quantity partaken of by the others was so small as to produce no effects, or was neutralised by the antidotes given.

This view is strengthened by the fact that the victim was the oldest of the three, and in all probability would be the first at the tempting morsel, and secure the largest share in consequence.

No one saw them come to the grain, but the owner was only absent about twenty minutes, and knowing what was put in the drill and what came out, knew what had been devoured. It is scarcely possible, however, for one cow to have swallowed a bushel of wheat in twenty minutes, and

exhibit no symptoms of uneasiness, so that it is fair to infer that the others partook of it also, and owe their immunity to the probability of its not being uniformly mixed, or, as already stated, by the antidotes administered.

Whatever cause or causes may have contributed to their escape, no reasonable doubt can be entertained as to the cause of death of the one referred to.

The condition of the kidneys, said to be the principal organ by which arsenic is eliminated from the body, the liver, and lungs, complete the chain of evidence.

It is a strange fact, however, not easily accounted for, that the quantity of the poison capable of producing perforation of the stomach, and such effects on the various organs, could remain so long in the system and fail to develop its poisonous action, as it is regarded as one means of diagnosis in the human subject that ulceration has never been known to take place from arsenic or any irritant poison until symptoms indicative of irritant poisoning have occurred. It seems one of those anomalies in the action of medicine where nature seems to expend her last effort in the preservation of her subjects.

One great desideratum in the treatment of such cases, or in cases where a horse has eaten to repletion of barley or wheat, is a simple and effective instrument in the shape of a stomach-pump, by which the contents of the stomach could be liquefied and removed. If such an instrument could be devised or some of the existing ones simplified to make them more easily and effectively applied, it would outrival in public estimation the revelations of the microscope or thermometer.

REMARKS ON TWO RECENT DECISIONS REFERRING TO THE WARRANTY OF ANIMALS.

By A. E. Macgillivray, V.S., Banff.

Two rather important decisions as to the warranty of animals were given during the last week of January, by the Sheriffs of Forfar and Banff respectively, on which I consider it as well to offer a few remarks.

Commonly, and I may say virtually, the practicability of entering into any litigation as to the sale of any animal hinges on the existence or non-existence of a *written* warrant —the latter being hitherto a sort of *sine quâ non* in endea-

vouring to return, or compel refunding the price of any animal sold. The decisions in the two cases referred to above will, however, in future, materially alter the aspect and bearing of these very vexing and uncertain litigations.

In the one case a farmer sold a horse for £37 10s. to another farmer as a carriage and saddle horse, and in so doing gave no sort of warranty with the horse, but he was quite aware for what purpose and intent the purchaser wanted the horse. In a short time the purchaser discovered the horse to be suffering from *spavin*, and immediately sued the seller for repetition of the price. The Sheriff of Forfar found that, though no warranty was given, still the seller was aware of the purchaser's intention with the horse, and being cognisant of the spavin, knew that such a disease would impair the usefulness of the horse, and consequently ordained that the purchaser get back his money and the seller his horse!

If this decision be accepted in future as a precedent in such cases, it will considerably simplify the settlement of many a (hitherto) long-standing sore, and at the same time protect the innocent and honest man from the mischievous tricks of many an "artful dodger!"

In the second case to which I refer the defendant sold a cow for £16 without any warranty, but he said she was a nice cow, a healthy cow, and a cow that stood to calve in three or four days, and was consequently just the cow for the pursuer, who was in need of one to give milk. At the time of delivery the cow, unfortunately, was labouring under foot-and-mouth disease, caught in defender's houses. In a short time her lungs became seriously affected with tuberculosis, which had evidently been lying dormant in her system, and came to light under the sheltering wings of the foot-and-mouth disease. In addition to all this, it seemed very doubtful whether the cow was in calf or not; in fact, the local veterinary inspector gave it as his opinion that she was not in calf. Some time about the end of June I was requested to examine the cow, and having done so, I gave a certificate of unsoundness for some three months back, during which length of time I considered the cow had been labouring under tuberculosis. About the middle of July the cow became so much worse that I advised the pursuer to slaughter her, which was accordingly done. On *post-mortem* examination I found the cow to be about five months gone with calf, thus coming to calve about the 1st of December instead of the 1st of June!

The seller, in his defence, denied giving any sort of war-

ranty; said he knew nothing about her lungs being diseased; he never said when she stood to calve; &c., &c., &c. The seller also held that the cow ought to have been put into livery, and ought not to have been slaughtered.

A great number of witnesses were examined on both sides, and the evidence, as might be expected, was extremely conflicting!

The Sheriff of Banffshire, in giving his decision, stated the chief points to be considered were these—namely, that the defender was aware that the pursuer wanted a healthy cow, a cow near her calving, and, of course, a cow to give milk. He, knowing this, offers his cow, and the pursuer, on his word, purchases her. The defender denies any knowledge of the cow being diseased, and his denial is credited; but is the defender at all qualified to judge as to the healthiness of the cow? No! The sheriff does not expect him to be so; but the pursuer calls in a properly qualified veterinary surgeon, and his opinion is that the cow has been diseased for months, and the *post-mortem* examination confirms his opinion. Then there is the default of six months as to the time of the cow's calving, which is quite a serious matter in the case. The defender denies the propriety of pursuer's slaughtering the cow, but the sheriff finds that a veterinary surgeon ordered her to be slaughtered. Finally, considering the whole circumstances and proof, the sheriff gives decree for full amount claimed and the expenses.

I have merely given the outlines of these somewhat remarkable cases, and I leave it to the readers of the *Veterinarian* to say whether they are not *unique* in their way!

The chief point to be observed, in my opinion, is the *entire* want of any sort of warranty. In the case of the horse especially is this noticeably the circumstance prominently to be kept in mind. Hitherto, as I have already said, a written warranty has been a *sine quâ non* in entering litigation on such subjects. Are written warranties to be dispensed with in future? I should rather expect—not!

ON "INFLUENZA IN AMERICA."

By M. P. Greene, M.R.C.V.S., St. John's, N.B., Canada.

A malignant form of influenza, considered to be a new disease on this side of the Atlantic, broke out first in Toronto, Canada, on October 1st, 1872. It extended to other Cana-

dian cities thence to the United States, and finally made its appearance in this province and Nova Scotia.

The disease was one of an extraordinarily severe type, and in many places was rather fatal. In Rochester and Buffalo, U.S., the fatality arrived at an alarming extent, yet in New York and Boston, though the demand for horses is much greater, the percentage of deaths from the malady according to the press of those places was much less. The disease, consequent upon its being a stranger in this country, has received many strange terms; among them will be found catarrhal fever, typhoid, laryngitis, epizootic bronchitis, hippomalarious, Canadian horse distemper, and epizootic influenza, which I think is the most correct of all.

Influenza, doubtless, cannot be regarded as a new disease on this Continent, for a few cases of it came under my own notice some time before it appeared in its malignant form, and instances are recorded by veterinary surgeons who have practised for many years in America, of its attacking horses in some few and isolated cases. Yet, from what I can learn, I think it cannot be doubted but that it is the first time in which it appeared on this Continent as an epizootic.

Its outbreak in St. John's, N.B.—On October 13th I was called upon to attend at one of the livery stables in this city. On my arrival at the stable the proprietor informed me that one of his horses (a valuable trotter) had refused his food for the first time this morning, and that he was afraid of the epizootic (as he termed it) having attacked him. On inquiring into the history of his case I ascertained that he had not been out for over a week, and never unless the weather was fine, that his coat had been staring for two days previously, and that they put heavier clothing on him, thinking he was cold. He had not been heard to cough up to the time I got to the stable, and did not drink all his water that morning, which was a very unusual circumstance. On examination I found the following *symptoms* which led me to the belief that he was affected with a severe attack of influenza. *Symptoms.*—The animal appeared dull and dispirited; pulse 62 and weak, respirations much increased, 22 in a minute. The expired air was *not* much hotter than natural, equal temperature of body, yellowness of the visible mucous membranes, but absence of enlargement and of pain on pressure over the region of the liver, Schneiderian and conjunctival membranes highly injected, and an aqueous discharge from eyes and nostrils. He evinced pain on pressure to the larynx and gave a weak and painful cough, yet strange to say did not appear to have any difficulty in swallowing. The mouth

was hot and clammy, evacuations normal. On auscultation no increase in the bronchial râle, nor crepitation were detected, neither was there dulness on percussion nor pain on pressure in the intercostal spaces, indicating the absence of pneumonia, pleurisy and congestion of the lungs.

From the extraordinary quickness with which the respirations were carried on at so early a stage of the disease I was afraid that something more than an ordinary attack of influenza was approaching. Accordingly, and at the owner's request, I proceeded to examine the remainder of the horses in the stable, thirty-one in number. I found ten out of that number with yellowness of the visible mucous membranes, six of the ten had in addition a watery discharge from their nostrils, pulse slightly accelerated and soft, respirations normal; the Schneiderian membrane was a little injected. All of these horses ate and drank as usual; they were not heard to cough and there was no soreness of larynx. I should have mentioned that the first horse alluded to stood in a well-ventilated loose box at the furthest end of the stable. The ten others were in stalls in different parts of the stable, and with the exception of only two instances there were not more than two affected horses standing in adjacent stalls. All the eleven horses in this stable were ordered on warm and succulent diet and warm clothing. Disinfectants were used freely about the stable and manure heap; carbolic acid was the agent used. In the meantime a draught was administered to the first horse alluded to, composed of Spt. Æth. Nit. ℥iss, Liq. Ammon. Acet. ℥iij, Tr. Aconiti Flem. guttæ xv, Aquæ Oj. The throat and course of the trachea were stimulated with Lin. Ammon. It was found necessary to repeat the draught every eight hours.

On the evening of the same day I again visited the stable and found the animal in much the same state. On the morning of the 14th he was much worse, the pulse by now increased to 78 and very weak, the breathing more laboured and frequent; occasional griping pains were noticed, indicated by lying down and suddenly rising, pawing with fore feet, &c. Æther. Sulph. ℥j was added to the above draught as an antispasmodic, and in a very short time, indeed, a marked effect was produced. The æther was easily detected in the expired air, and the respirations and heart's action were much improved both in frequency and character. The horse was examined when in a quiet state, but during the spasm the pulse ran as high as 100 in a minute. The six horses from whose nostrils the aqueous discharge was flowing on the 13th were all coughing on the following morning. Their pulses were

more or less accelerated and the breathing a little increased, but in not a single instance were the symptoms so aggravated as in the first case.

The fifteen remaining horses in the stable now exhibited yellowness of the visible mucous membranes, as well as a staring coat. They ate as well as usual, and on the evening of the same day many of them were coughing. Some of the first lot that showed signs of the disease on the 13th partly refused their food on the next day, while others ate greedily. On the 13th there was not a single horse in the stable of thirty-two free from the disease, even to be noticed by the groom. Some of them required no treatment at all further than some nitrated water being left in the manger, while others had to be promptly attended to.

On the 16th there was scarcely a horse to be seen in the streets that did not show signs of the distemper by coughing and a discharge from the nostrils. All the livery stables were closed and private horses were laid up with the malady. To relate the symptoms of each case would be an unnecessary task, but I will relate briefly the principal interesting features of the disease and such cases as are worthy of special notice.

The suddenness of the attack alarmed the owners of horses very much, and caused them to be much more eager in seeking the services of veterinary surgeons at an earlier period than if the disease came on gradually. This circumstance enabled me to see a great many cases (over 250) at the outset, and without exception there was not a single horse that did not exhibit yellowness of the visible mucous membrane. I looked upon this symptom, together with some of the foregoing ones, as diagnostic of epizootic influenza. To return to the remarks connected with the outbreak, I may further add that the first animal alluded to continued to show indications of colic (although a laxative was administered which gently moved the bowels) at intervals up to the 18th, but not to an alarming extent. The other symptoms did not improve after the colic had ceased. There was a free flow of discharge of a muco-purulent character from the nostrils, and when he coughed he expectorated a quantity of viscid phlegm.

On the 20th there was a great difficulty in the breathing as though the animal was choking, and a gurgling sound which seemed to arise from the neighbourhood of the posterior nares accompanied it. The discharge, which had run freely for four or five days previously, and suddenly stopped on the night of the 19th, was supposed to be the cause of the sound and also of the laboured breathing. He was now made to

inhale the vapour of scalded bran, which was repeated four or five times a day for three days; after each fomentation nearly a pint of thick yellowish-green matter would be discharged. It relieved him very much, and altogether got rid of the noise in breathing. There was a considerable amount of debility existing as well as loss of flesh; diffusible stimulants were still being administered. He appeared to rally about the 23rd and continued to improve from that date. Tonics in the form of iron and gentian with strong ale were given daily for about a week. He gained in flesh quickly and was considered convalescent on the 2nd November.

This case illustrates the majority of those that came under my notice, and is the reason of my giving it in full.

In some instances the fæces were hard and coated with inspissated mucus; these generally were affected with spasmodic colic, which was believed to arise from the constipation. Mild aperients (Aloe Bbd. ʒij in bolus) were administered daily till an increased action took place in the bowels. This treatment to an extent prevented the return of colic, except in one case which terminated fatally. In this instance the horse had been affected with influenza for eight days before I saw him, and was attended by a *blacksmith*. He took colic on the 24th October, for which the blacksmith gave him one pint of gin with one ounce of red pepper (Pu. Capsici). The poor brute not being better but worse, on the following morning I was called in and considered him suffering from enteritis. I was led to that belief by his being continually in pain. Pulse 80 and weak; laborious breathing; profuse perspiration with cold extremities. During the previous evening and night he had been quiet and standing at intervals. At noon on the 25th he lost all power of standing, was continually in pain, his body was covered with sweat; he continued in this state till night, when death put an end to his sufferings. Large doses of opium and Æth. Sulph. were administered, also chloral hydrate in ʒij doses. Counter-irritation and fomentations were applied to the abdomen, but all to no effect. Enemas of tobacco smoke and tepid water were frequently thrown up the rectum, but with the like result.

A *post-mortem* examination was instituted on the 26th. Strange to say, no signs of inflammation nor petechiæ were observable either in the stomach, intestines or peritoneum, neither were there strangulation, intussusception nor rupture present. The only cause for death that could be assigned was the intestines, both large and small, being in an extensive state of spasm. Besides this there was a slight enlargement of the liver

and breaking up of its structure, engorgement of the vessels of the lungs. The mucous membranes of the respiratory tract were highly injected. In many instances those whose pulses were as high as 80 in a minute and breathing up to 40 per minute ate, comparatively speaking, well, yet there were others whose systems were not half so much disturbed that would not partake of food of any kind. The aqueous discharge as a rule very quickly ran on to one of a muco-purulent character; some cases did not present this symptom at all. At the height of the disease the pulse was intermittent, but not in every case. In some instances the liver seemed to be the principal part attacked, the patient would flinch on pressure being applied over that region. In such cases constipation and colic existed, as a rule, which doubtless was due to the paucity of bile.

There was a slight amount of cerebral disturbance in a few cases only, indicated by drowsiness, unwillingness to move, holding the head to one side and sometimes resting it on the manger. Diarrhœa existed in some cases, but not to a great extent. Such was the variety of symptoms assumed in different cases. The duration of the disease varied from five to fourteen days. It even extended on to twenty-one days in a few cases only.

Its results.—Pleurisy was the principal unfavorable termination, and followed those cases which were most protracted. Among the others which came under my notice were pneumonia, hepatitis, chronic softening and enlargement of the liver, chronic cough, roaring and whistling, and (the most fatal of all) purpura hæmorrhagica of a sthenic form. Its attack was sudden and victimised those horses that were least affected by the influenza.

I am unable to give the *post-mortem* appearances of the disease, not having met with a single death from influenza itself. Where death occurred it was due to one or other of the results which presented their several characteristic autopsical appearances.

The Causes and Pathology.—What can the cause of this vast outbreak of disease have been?

Is it due to contagion and infection, or to impure air arising from badly ventilated stables? Does it arise from exposure to cold or wet or sudden changes of temperature?

I believe influenza to be due to some peculiar poison existing in the atmosphere which when taken into the system causes a specific form of inflammation of the mucous membranes generally, but principally those of the respiratory tract, together with an impaired action of the liver. No doubt

animals are rendered more susceptible to the influence of such poison by exposure to wet and cold, sudden changes of temperature, or by being suffered to live in badly ventilated stables.

I was always under the impression that influenza was both contagious and infectious till the late outbreak; since then I have altered my views with regard to the contagion and infection of that disease. One among several facts which I could mention will bear me out in this question. During the month of July, 1872, a horse had been put to grass on Partridge Island in the Bay of Fundy. This island is three miles distant from this city. No other horse had been near the island from the date of his landing up to the time of the outbreak in St. John, N.B., and on the 15th or 16th of October, which was only two or three days after the first case was reported in this city, the horse on the island was affected with the most violent form of the epizootic.

Would not the morbific matter have become diluted to such an extent (after travelling three miles) as to be inert?

There are many instances in which healthy horses were isolated and every means of prevention tried by disinfectants, &c., and even with all the precautions that could possibly be taken the horses took the distemper.

Pathological Contributions.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of February, 1873, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign ports from which brought.	Ports in Great Britain to which brought.	Disease.	Number of Animals affected.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered at place of landing.
Hamburg .	Hartlepool	Foot-and-Mouth	1	...	...	...	1	1
,,	Hull . .	,,	9	...	...	...	9	9
,,	Newcastle-on-Tyne	,,	1	2	...	...	3	3
Total . . .		Foot-and-Mouth	11	2	...	...	13	13

"Privy Council Office, "ALEXANDER WILLIAMS,
"Veterinary Department, 13th March, 1873." Secretary.

CATTLE PLAGUE.

Cattle plague prevails, to some extent, in Salonica, and the fact assumes an importance which would not otherwise belong to it, owing to the exportation of cattle, buffaloes, goats, and sheep from that country to France. The Turkish authorities have issued an order prohibiting exportation; but it is stated that several French butchers have arrived for the purpose of making extensive purchases, and they are using their utmost efforts to induce the authorities to withdraw the prohibition.

Cattle plague continues in Warsaw, and has reappeared in Ragusa, owing to the introduction of pork from Herzegovina. The disease also exists in various departments of Austria Proper, and on the frontier near Trebizond.

According to the statements which have recently appeared in the public papers nearly 1000 cattle have been killed in the neighbourhood of Vienna only during the last three months to suppress the cattle plague.

Referring to the continued extension of the disease from the Steppes of Russia into other portions of that vast empire, and also into Western Europe, the *Lancet* of March 22nd says that—

"The *Voix*, commenting upon the labours of a commission charged by the Minster of the Interior to inquire into the means of diminishing the bovine pest, gives a sad account of the devastations of this epizootic among the Russian herds. It states that every government in the Empire, not even ex-

cepting Siberia, suffers continually immense losses by this formidable plague—losses all the more sensibly felt as they interfere most disastrously with agricultural work. Without referring to accidental causes of mortality, it is asserted that bovine pest alone causes an annual loss in Russia of not less than 300,000. This loss weighs heavily upon the productive forces of the Empire—that is to say, upon the sources of public wealth. In certain localities measures have been taken to limit the action of the epizootic, but these measures do not always succeed, partly because there exist sources of propagation of the epizootic of which the extinction does not depend upon the action of the zemtsos, and partly because the zemtsos do not hold the same opinion as to the best means to compass the end sought. Owing to this latter consideration, it often happens that the pecuniary resources of the zemtsos have been expended to no purpose. The *Voix* refers to the rapid and notable advance in the price of meat arising from the diminution of horned cattle, and from the risks undergone in the movement of cattle by reason of the extreme contagiousness of the epidemic. The Commission has for its object to study the existing law relating to cattle diseases, to examine the routes now commonly traversed by cattle in the ordinary course of traffic with a view to their regulation, to ascertain the opinions of local authorities as to the measures for arresting the epizootic, and particularly as to indemnifying owners for the cattle killed as a measure of safety, and, finally, to study the regulations as to commerce in cattle existing in adjacent countries. The *Voix* states that the report of the Commission will shortly be published, and it expresses a hope that the present year will see the adoption of measures calculated to limit, and perhaps ultimately extinguish, the ravages of this epizootic."

PLEURO-PNEUMONIA.

PLEURO-PNEUMONIA is reported to have broken out in the State of New Jersey, U.S., and to have caused the death of many cattle. We extract the following from the 'Chamber of Agriculture Journal:'

"Lung distemper, so fatal to horned cattle, and which caused serious havoc in the barony of Iverk and the Welsh mountains some three years ago, has again made its appearance in the south of the county of Kilkenny. Already ten

or twelve cows have succumbed, and as many more are ailing. In all cases the constabulary have been duly apprised, and it is hoped that the severe frost and snow will eradicate the dangerous disease from the country."

Facts and Observations.

Preservation of Fresh Meat.—M. Boussingault has recently published a paper in the *Comptes Rendus*, giving some striking illustrations of the value of applying a low temperature in the preservation of articles of food. He has found that beef tea, submitted to a temperature of 4° F. for several hours, has remained in a perfectly good condition for eight years. Samples of sugar-cane juice, similarly treated, have also been found in an excellent state of preservation after being kept for years. Both the sugar juice and the beef tea had been kept in carefully closed vessels. We have often thought that some better method than that of the Australian Meat Preserving Agency might be introduced, whereby perfectly fresh meat could be brought over from America by the fast Atlantic steamers. The carcases being carefully packed separately in the well-ventilated holds of the ship, a current of air circulating through, and the whole of the meat being packed in ice, ought to keep fresh during such a short journey. It might be better to pack the carcases in ice-safes. During the winter months, at any rate, some such scheme might be attempted. Occupying barely ten days in its transit, the meat should be perfectly fresh on its arrival, and would be more acceptable to the public than the insipid and comparatively tasteless meat packed in tin cases, and deprived of all fat, now so largely introduced into our workhouse and prison dietaries. The poor generally have a strong prejudice against this Australian meat.—*Medical Times and Gazette.*

Trichinæ in Hams.—The Prussian Government lately called attention to the presence of trichinæ in hams imported *viâ* Bremen from the United States, and warned purchasers from dealing in them.—*The Lancet.*

THE VETERINARIAN, APRIL 1, 1873.

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

THE SPECIAL COMMITTEE[1] ON THE CATTLE DISEASES ACT.

OUT of the inquiry which is now proceeding before a special committee of the House of Commons good results may be expected to arise. In its present form the Act which was passed in 1869 for the purpose of dealing with contagious diseases of animals is open to objection principally on the ground of defective construction of some of its chief clauses. Doubtless very considerable powers are given to the Privy Council, but they are limited precisely at the point where a limit cannot consistently be allowed, and hence the action of the veterinary profession has been fettered, when the interests of the country demanded that it should be most free. Cattle plague, sheep-pox, pleuro-pneumonia, and glanders, are diseases which, whenever they appear, ought to be extirpated by the employment of the severest measures of repression.

Foot-and-mouth disease cannot be fairly placed in the same position as that occupied by the fatal maladies above named, and that it is not considered to be of so much consequence is proved by the well-known fact that the commonest precautions against its spread are frequently neglected. The evidence which has been given before the committee on this point is to the effect that far more stringent measures than any which have yet been tried, would be required to eradicate foot-and-mouth disease, and that in the absence of such regulations the alternative course would be to cease to

[1] The Committee consists of—Mr. James Barclay, Forfarshire; Mr. Jacob Bright, Manchester; Mr. P. Callan, Dundalk; Mr. C. E. Cawley, Salford; Mr. Jas. Clay, Hull; Mr. J. Dent Dent, Scarborough; Right Hon. J. D. Dodson, East Sussex; Right Hon. W. E. Forster, Bradford; Mr. W. Johnston, Belfast; Alderman A. Lusk, Finsbury; Mr. A. M. Kavanagh, Carlton Co.; Right Hon. W. Monsell, Limerick Co.; Right Hon. Lord R. Montagu, Huntingdonshire; Mr. D. M. O'Conor, Sligo; Mr. A. Pell, Leicestershire; Mr. C. S. Read, South Norfolk; Mr. M. W. Ridley, North Northumberland; Sir. H. Selwin-Ibbetson, West Essex; Mr. W. Tipping, Stockport.

interfere with the movement of home stock except in reference to those animals which are the subjects of the disease, and which in the terms of the 57th section of the Act cannot be legally in a position where they would inflict injury on healthy animals. The point which has been brought prominently forward we commend to the consideration of the profession. It is suggested that all veterinary surgeons be compelled to certify to the authorities in all cases of contagious and infectious disease of stock which come under their notice. We do not propose now to discuss the point in its different bearings, but the idea is one of which we cordially approve. Long prior to the amalgamation of the states now composing the German Empire it was in force in many of them, of which Hanover may be cited as an example. Its practical working has been found to be nearly efficient, for by it the central authority is enabled to quickly put into operation the provisions of the sanitary laws applicable to Contagious Diseases (Animals), and thus to save much valuable property to the state.

Review.

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

The Charlier Shoe; its Advantages, Disadvantages and Use. (With Illustrations.) By William Pallin, Veterinary Surgeon, Royal Artillery. Dublin: McGlashan and Gill. London: Simpkin, Marshall and Co.

An apparently simple matter, the adaptation of a protective covering to the horse's foot, has long been a subject of controversy. Inventive ingenuity has been taxed to the utmost, and all conceivable forms of shoes—long, short, flat, curved, thick, thin, simple and complex—have been the result. Among others the plan invented or introduced by M. Charlier has excited much attention, and strong opinions have been given for and against it. On the one hand we learn that it leaves nothing to be desired, on the other that its use is ruinous to the horse's foot.

Mr. Pallin's little treatise on the subject avoids an

extreme view, and his opinion is worth consideration, as he speaks from observation. At page 8 he says—

"I have come to the conclusion, as the result of much experience, that the system is the most scientific, simple, as well as beneficial method for shoeing *some* horses, in accordance with the natural expansion of the foot. I say *some* horses, for I have found that it cannot be applied indiscriminately to all. For instance, heavy draught horses could not do their work as well in a Charlier Shoe as they do in the weighty high-calked shoe in present use; for they require a hold on the ground, and there is no doubt that we do sacrifice tendons and joints to the inordinate pressure called on by these appliances, which act as fulcrums. Still, in many instances, with draught horses, the legs and feet often wear out other parts of the body, and we can, to a certain extent, afford the results they cause. The case is different with light horses which are used for fast work, and whose legs and feet are generally the first to give way; and anything, be it ever so slight, which will abate the tendency to do so must be a benefit."

Our readers are doubtless sufficiently familiar with the form of the Charlier Shoe, and its method and principle of application, and will therefore appreciate the author's remarks as to its peculiar merit at page 10:

"Amongst the advantages of the Charlier Shoe, perhaps the one which first claims attention is its simplicity, which I look on as its great recommendation; and secondly, the comparatively small extent to which it interferes with the natural action and functions of the foot. To these I may add its *utility* in progression, and the prevention of many of the consequences of rapid travelling."

It has often been objected that serious consequences have attended the application of the Charlier Shoe to feet which have long been shod on the old system. Mr. Pallin admits, indeed points out, some of the ill-consequences, which he judiciously proposes to avoid by adopting the mode of prevention which he indicates in the following passage:

"For these reasons, the change should not be attempted with hunters in the middle of the season, and with harness horses the change should be made gradually. With hunters we should commence it in the middle of summer, or at latest when the horses are taken up for work before the season of cub hunting, previous to their being shod. They should actually be left unshod for a time; and if the feet are poor and would not bear it, tips should be applied, so that the sole and frog may become used to the ground pressure,

and their growth increased. After two or three shoeings the foot will become capable of withstanding the action of the hardest surface, and the shoes themselves become well bedded into the crust, so that it will be impossible for them to come off under ordinary circumstances. The sole will soon commence its increased growth, and thicken to an almost incredible extent, and thereby one of the difficulties in the use of the new shoe will be got over."

A short chapter is devoted to a consideration of some of the diseases of the foot likely to be benefitted by the Charlier Shoe, and another chapter which concludes the essay refers to the method of preparing the foot and applying the shoe.

Those who have not tried the system will find in Mr. Pallin's little book many reasons which will induce them to adopt it, and those who have tried and failed may discover the causes of their non-success, and be encouraged to a fresh attempt.

The statements of the advantages and disadvantages is the most candid which we have seen, and the author has best served the cause he advocates by avoiding all exaggerated praise of the new system of shoeing or sweeping condemnation of the older methods.

Extracts from British and Foreign Journals.

INFLUENZA AMONG THE HORSES IN AMERICA—HISTORY OF THE DISEASE, THE CAUSE, AND CURE.

By Prof. James Law:

(*Continued from p.* 138.)

The theory of a steady progress in one direction is disproved by the history of the present outbreak, and that of its simultaneous appearance over an entire continent or hemisphere, by the record of all recent visitations of influenza. It has sometimes been eight or ten months, or more, in spreading over a large country like Germany. Nor is its progress uniform. That of 1762 appeared in London in the beginning of April, in Edinburgh in the beginning of May, and in Cumberland, intermediate between the two towns, not until June. The present epizootic appeared in Toronto about the 1st October. Nine days later, there was scarcely a horse to be seen in the streets, and carriages could not be had for any price. On October 18th it prevailed in

Montreal, and generally in the Dominion. On the 14th October it had reached Buffalo. On the 17th Rochester had half its horses sick; on the 19th Lockport, Canandaigua, Geneva, Syracuse, and Albany were affected, while up to the 22nd Batavia, Auburn, and Utica were reported sound. It appeared in Jefferson County on Oct. 20th, but not in Oswego till Oct. 25th. On Oct. 21st it was reported in Attica, Wyoming County, and Steuben County, N. Y., and at Keene, N. H.; and on the 22nd at Boston and Revere, Mass.; at Lewiston, Me., and at New York, Brooklyn, and Jersey City. Yet Poughkeepsie was only attacked on Oct. 27th, and Kingston, Dutchess County, on Nov. 1st, though apparently in the direct course of the disease. It reached Philadelphia Oct. 27th, Washington on Oct. 28th, Columbus, Ohio, on Oct. 29th, Cleveland, Ohio, on Oct. 30th, Pittsburg, Penn., on Oct. 31st, Norfolk and Portsmouth, Va., on Nov. 1st, Goldsboro, N. C., and Charleston, S. C., on Nov. 30th. Yet it only showed itself in Binghampton, N. Y., on Oct. 28th; in Ithaca, still farther north, on Oct. 31st; at Titusville, Penn., and Port Jervis, N. Y., on Oct. 29th; at Nyack, N. Y., on Oct. 30th; at Kingston, N. Y., on Nov. 1st, and at Scranton, Penn., on Nov. 13th. It is useless to pursue the history. Facts like these cannot be easily reconciled to the idea of a uniformly diffused unwholesome condition of the atmosphere, nor to that of a steady progress from its point of origin by atmospheric means alone. Its progress from Toronto has been to the east, west, north, and south, and if it has been more rapid to the east than in other directions this may be explained by the prevalence of north-westerly winds, and by the more active commercial intercourse. The alleged cases of its appearance in ships in mid-ocean break down under investigation. In the instances alleged the ships had never been very far from shore, though technically a number of days at sea.

Much of the confusion in which the subject of causation is involved would be cleared up could we decide as to whether the disease is contagious. In other words, if the introduction of a sick animal into a healthy district well out of the former area of the disease leads to a speedy diffusion of the malady in this new locality, we must conclude that there exists a specific poison capable of being carried in the diseased body, and probably of increasing indefinitely there. And such a conclusion is utterly incompatible with the idea that it is caused by an unusual condition of terrestrial or atmospheric electricity, by ozone or antozone, by irritating or noxious gases or vapours, by high or low barometrical pres-

sure, by the increased attraction exercised on the earth because of the temporary relations of the planetary bodies, by inclemency of the seasons, or by excess of putrefying elements of the atmosphere. Now, if these conditions can be brought into extensive operation in a new locality by the mere arrival of a sick or infected animal—if it can be shown that the malady is communicated from one animal to another, and that it will spread rapidly in a new locality from a newly imported sick animal as a centre—we can only conclude that the malady is caused by a specific poison, of which the diseased system is at once the storehouse and the field for its fertile reproduction. Some of the conditions above referred to might serve to charge the body of the diseased animal with deleterious gases or vapours; but these, passing from the body in a healthy atmosphere, would be speedily diffused and rendered inert. The rapid and wide extension of the disease from a sick animal as a centre can only be explained on the theory that there exists a specific disease poison, capable of unlimited increase when it finds the proper food for its nourishment and growth in the bodies of susceptible subjects.

The important question then is as to the transmissibility of the disease from the sick to the healthy. Many and high authorities disbelieve its transmissibility. They see it breaking out where contact was impossible, and they see a wide area prostrated in a few hours or a day, and conclude that the disease is altogether atmospheric in its cause. But its progress is not like the progress of the wind, but wayward and peculiar. It shows a preference for places situated in the direct track of commerce, in the present outbreak, for example, for the towns on the New York Central and Erie Railways, while places a little aside are respected for some days later. It even shows a preference for the larger and more important cities, which have the most active commercial relations, as its first victims, while the smaller cities temporarily escape. It appears in London and Edinburgh long before the intermediate provincial cities are affected. It spreads throughout the Dominion of Canada ere it has much more than surmounted the barrier of the American frontier. It attacks Buffalo, Rochester, Syracuse, Albany, New York, Brooklyn, Jersey City and Boston, while as yet unknown in many of the smaller cities and towns along the channel of infection. It prevails in the larger cities of Washington, Baltimore, Richmond, Charleston, before it has reached many of the smaller towns in New York, Pennsylvania, and the New England States. Some of the best

authorities, including Barker, Haygarth, Williams, Watson and Parks, report instances of the spread of the disease in a new locality from persons who have just arrived from the infected place. And many veterinarians have adduced instances of its spread in a new region or stable immediately after the introduction of a horse from an infected district. The present epizootic furnishes cases in point. The malady appeared in Syracuse in newly arrived Canadian horses, and spread rapidly over the city, while many places around were clear. The earliest cases which I have been able to trace in Ithaca occurred in the livery-stables of Mr. Jackson, immediately after his return from running a mare in a more northern part of the State. In Pittsburg the disease broke out first in the livery stables of Messrs. Moreland and Mitchell, East Liberty, after the arrival of five or six horses from New York City, where the epizootic was then at its height. It rapidly spread through the city. From Washington the first note of alarm was on Oct. 28th, to the effect that sick horses had been brought into the city from the North, and on Oct. 31st it was reported to be generally prevalent. Additional instances of the same kind are to hand, but these are submitted in support of the doctrine of the presence in the animal body of a specific contagious element, capable of a rapid reproduction and diffusion.

The existence of a contagion being acknowledged, can we reach any definite conclusion as to its nature? Not in the present state of science. Here we leave the confines of the known and enter on the hypothetical. The prevailing theories concerning the virulent matter of specific fevers may be resolved into two: that which recognises the microscopic spores of fungi and other low forms of vegetable life as the infecting principle; and that which seeks the same morbid element in the infinitesimal granules of organic matter found floating in the air as well as in the fluids and solid structures of the diseased body.

The first-named theory, so strenuously supported by Polli, Davaim, Hallier, and others, is liable to the objection, when applied to influenza, that no specific vegetable germs have been found in the air or blood during its prevalence. Before the advent of the prevailing epizootic the writer subjected the floating elements in the air from stables and fields to miscroscopic examination and continued the investigation until the disease was at its height, but without detecting any important difference in the floating germs and particles obtained from first to last. This conclusion has been since thoroughly substantiated by the investigations of Dr. Wood-

ward, of the United States Army. The muco-purulent discharge from the nose contained only the common vegetable spores already found in the air. As the disease advances the blood abounds in microscopic granules, which are, however, indistinguishable from those present in that liquid in the course of other specific fevers, and may be held to indicate the activity of the morbid processes in the blood elements and tissues consequent on the presence of the fever poisons and the imperfect elimination of waste matters from the system. In the substance of the inflamed mucous membrane these granules or nuclei increase to an extraordinary extent, and present most of the same properties as regards absorption of colouring and other materials, and presumably of reproducing themselves, as naturally belong to the soft nuclei (germinal matter) of the various tissues of the body. These morbid nuclei are increased with extraordinary rapidity at the expense of the vital elements, liquid and solid, of the body, so that Beale and others have concluded that they either constituted the virulent principle or contained it. The theory which sustains the virulent nature of this *bioplasm* is that which at present accords best with the facts observed. It explains how microscopic masses of organic matter (granules), without any regular form, size, or structure, may float in the atmosphere indistinguishable from other inert granular matter, and yet, on gaining access to the body of a susceptible animal, may grow and increase at the expense of the native elements of such body, inducing some form of specific disease. That one kind of such *bioplasm* should produce influenza, and that only, while another utterly indistinguishable from it by any available means of observation should produce rinderpest, a third smallpox, and a fourth the contagious lung fever of cattle, is no more wonderful nor incomprehensible than that the healthy nuclei of bone should invariably build up the hard bone, while those of brain matter, though indistinguishable except in position, should always build up brain; those of muscle, muscle; or those of gristle, gristle. This theory, then, is we think, to be received as most accordant with reason and the present state of our science, but not as an indisputable truth.

Before leaving this subject it should be noted that in the advanced stages of the worst cases of influenza, the blood contains minute staff-shaped bodies (bacteria); but as these are often seen in the advanced stages of exhausting and typhoid diseases, when the blood is surcharged with effete organic elements, their presence is to be looked on as im-

plying an excessive and usually fatal impurity of that liquid rather than any characteristic of the specific disease.

Forms of the Disease.—The common or catarrhal type is manifested by general fever, with great prostration and weakness, sneezing, cough, and discharge from the nose. There is a pulmonary form, in which the lungs or heart is involved, and characterised by the same fever and debility, with marked difficulty in breathing. In another, or abdominal form, there is, superadded to the fever, debility and respiratory disorder, inflammation of the mucous membrane of the stomach and bowels, colicy pains, and the passage of stools coated with mucus. In still another form—the rheumatic—there supervene, on the febrile and catarrhal symptoms, pains, swelling, and stiffness of the jaws, neck, back, limbs, or joints, which may prove long continued and obstinate.

Under one or other of these forms all cases may be included. It will be observed that in all alike there is the febrile reaction, the marked debility, and the inflammation of the respiratory mucous membrane. The simple catarrhal form is thus seen to exist in all the varied types of the disease, and as it is the most prominent feature in the great majority of cases, it affords the readiest means of recognising the malady. If the symptoms given below as characterising the catarrhal form are met with during the prevalence of influenza in a country, there need be no doubt as to the nature of the case.

Symptoms of the Catarrhal Form.—In the prevailing epizootic, sneezing or a dry hacking cough has been almost invariably the first observed sign of illness. Careful observation detected at the same time a dry, staring coat, a tendency to coldness of the nose, ears, and limbs, in exceptional cases shivering, redness and dryness of the membrane lining the nose, an elevation of the body temperature to 102° Fahrenheit, and an unwonted sluggishness and dulness.

These symptoms became more and more marked for two days, at the end of which time the cough was deep, painful, occurring in paroxysms of four or five in rapid succession, and convulsing the entire body with the effort; the heat of the surface of the body and limbs was variable, but with a tendency to chill; the internal heat 105° Fahrenheit; the mouth was hot and clammy; thirst was intense; the membranes of nose and eyes of a deep red, usually with a tinge of brown or yellow; a watery discharge ran from the nose; a discharge from the eyes occurred exceptionally; the eyelids were partially closed; the eyes deficient in lustre and in-

telligence; the head was often pendent; the loins insensible to pinching; the beats of the heart, felt by applying the hand on the chest just behind the left elbow, violent and forcible; the pulse weak, easily compressed so as to become imperceptible, and numbering from forty-eight to sixty per minute; there were increased languor, stiffness, and indisposition to move, with, in some cases, an unsteady swaying from side to side when compelled to do so; the dung had become harder, firmer, and less abundant, and the urine scanty and of a deep yellowish-brown colour, or quite opaque from deposited lime salts; there was more or less sore throat, with some tendency to protrude the nose, and a fit of coughing was easily induced by handling the throat; the ear applied over the windpipe, or on the middle of the chest just behind the shoulder, detected an unusually loud and harsh blowing sound.

In from three to five days more the nose begins to discharge an opaque greenish-yellow liquid, and in favorable cases the cough became looser and less frequent, the heat of the body declined, the pulse became slower and firmer, the impulse of the heart against the left side steadily decreased in force, thirst diminished, the brightness of the eyes and the general vivacity returned, the appetite improved, and the discharge ceased, and health appeared restored about the tenth or fifteenth day.

In many cases, however, a favorable termination was retarded by some complication.

Symptoms of the Thoracic or Pulmonary Form.—At an early stage of the disease the heaving of the flanks, dilatation of the nostrils, and the pinched, anxious expression of the face bespoke implication of the lungs. In some there was only the loud, harsh noise over the lower end of the windpipe, resulting from simple bronchitis; in others there was that general wheezing heard over the entire chest, difficult breathing, extreme lifting of the flanks, wide distension of the nostrils, and dark purple or leaden hue of the membranes of the eye and nose, which betrayed inflammation of the smallest bronchial tubes; in others, with a similarly distressed breathing, there was crepitation heard on applying the ear over particular parts of the chest, and a dull sound, like that emitted on striking a solid body, when such regions were struck, indicating inflammation of the lungs. Pleurisy often supervenes, but in the writer's experience of this epizoötic it has been conspicuous by its absence. These are among the most redoubtable forms of the disease, and frequently terminated fatally by reason of the deterioration

of the blood, and the exhausting effect of the disease on an already weak and debilitated subject.

Symptoms of the Abdominal Form.—In most cases of influenza there is a great irritability of the digestive mucous membrane, as manifested by the frequently fatal action of purgatives incautiously administered. Oftentimes, after the discharge from the nose has been established, *muco-enteritis* will set in and overshadow the disease of the air-passages. There is great weakness and torpor, tenderness of the abdomen, frequent uneasy movements of the hind limbs, alternate lying down and rising, turning of the nose toward the flank, and the frequent passage of small pellets of dung, thickly coated with mucus, the membrane of the gut exposed at such times being of a deep red colour. The anus will sometimes remain constantly open, with frequent ineffectual straining. The urine is scanty, high-coloured, slimy, and sometimes bloody. There is ardent thirst, coated tongue, and unusual yellowness of the mucous membranes.

Symptoms of the Rheumatic Form.—Like the abdominal, this supervenes in the earlier stages of the catarrhal type. The stiffness and frequent cracking of the joints, in the early stages of the disease, testify to the partial implication of the joint capsules and fibrous structures of the limbs and body; and this may become the main feature after the disease has made some advance in its catarrhal form. This occurs mainly in cold latitudes, like Northern Germany, Norway, Denmark, and Scotland, and has been a frequent complication in the present disease in New York. There are swelling and tenderness along the course of particular muscles of the face, neck, back, or limbs, of joints or other synovial sacs, and extreme stiffness and inability to move.

Later Complications.—Short of proving fatal, the malady may terminate in some permanent disorder of the air-passages, such as roaring, heaves, short or thick wind. The heart is sometimes implicated in the primary disease, though often also as a complication along with the rheumatism. Inflammation of the fibrous valves, leading to their contraction and inability to close the orifices at which they are placed, is not uncommon, and, though the patient may apparently have become well and lively, there is left a modification of the natural heart sounds, a shortness of breath, and a liability to sudden death under any active exertion.

Another cause of deranged heart action is in the formation of clots of blood in that organ during life. An inflamed valve, the weakness of the circulation, and the excess of effete or dead particles in the blood, may one or all contribute

to this coagulation, which sometimes proves fatal in animals that might otherwise recover.

Besides this, the prostration and derangement of nervous power, and the weakness of the circulation, are often manifested in an intermittent action of the heart, without indication of any change of structure, and after the animal has ceased discharging, and become once more playful and lively.

Dropsies.—Sometimes result from such imperfect action of the heart, or general derangement of the functions of circulation and nutrition, though also, in some cases, from existing disease and inactivity of the kidneys. In other cases dropsical symptoms are associated with the so-called rheumatic manifestations, and are manifestly due to derangements in the local nutrition. But many of the so-called cases of dropsy which occurred in the large cities were examples of a disease known to English veterinarians as *purpura hæmorrhagica,* a disorder connected with the most extreme impurity of the blood, with breaking up of the blood-globules, and the escape of the various elements of that liquid into the tissues of the body, or through the mucous membranes and skin. This disease is largely the result of improper management, impure air, debilitating remedial measures, overwork, and the like, co-operating with a wasting disease in charging the blood with the most deleterious impurities, and at the same time lowering the vital powers. The swellings which take place in this affection are often rounded and circumscribed; they do not necessarily appear at the lowest points of the body, and, though sometimes persistent where they first appear, often shift about, the swelling of yesterday having been absorbed and replaced by one on some new part of the body to-day. These cases usually perish to the extent of about one half of those attacked.

Treatment.—One word on the subject of treatment. If a good veterinary surgeon is attainable, it is well to secure his services. The varied manifestations of the disease may tax his skill. If the ignorant pretender only is to be had, discard him, along with all the rubbish of secret remedies and quack nostrums which are being so diligently sold. Comfortable clothing of body and limbs, scalded bran, oats or barley, with a few carrots, turnips or potatoes, sound hay, scalded inhalations for an hour at a time of warm water vapour (not hot vaporized vinegar, fumes of burning tar, leather, or other irritants), fomentations to the throat, and subsequently a free application of the best mustard, made into a pulp with water; rest, quietude, and an abundance of pure air without cold draughts, will suffice in the majority of cases, and nature

itself will throw off the malady. But it will run its natural course, and while some cases are mild and regular others will be complicated and severe. It is the latter for which remedial interference is demanded, and this should be guided by a sound and well-instructed physician. Day by day it may be necessary to change the treatment with the varying phases of the disease, whereas the blind administration of a nostrum of which you know nothing, save that it is recommended by a man who sells it at from ten to fifty times its real market value, is too often the fruitful cause of the complications in question, and of fatal results.

Whatever medicine is given must be of a supporting and stimulating nature. In the early stages of the disease, liquor of the acetate of ammonia, in ounce doses, with a little belladonna and camphor, may usually be given with advantage four or five times a day. Later, when the nasal discharge is established, and the body temperature reduced, tonics, such as gentian, cinchona, and the preparations of iron, may be given. Counter-irritants should be applied to whatever part may have become the seat of inflammation, and other means employed to correct the various morbid conditions as they appear.

Probability of the Recurrence of the Disease.—The question of the probable reappearance of the disease attracts a good deal of interest. Some light might be thrown on this subject by a knowledge of its causes. But, as in the case of other specific fevers, we do not know the conditions necessary to generate the malady in a region where it did not formerly exist. The past autumn was unusually wet, and produced an unwonted amount of the lower forms of organic life, meats and vegetables have been preserved with difficulty, and fungi and moulds abounded. These conditions were, no doubt, favorable to the production, or at least to the perpetuation, of the poison, but they have often existed independently of influenza, and it is irrational to suppose that they alone are capable of producing it. The past history of the disease, however, shows that it may be expected to recur again and again, with intervals extending over a variable number of years, and with a scope which is not quite so simultaneous and universal, while epizootics like the present, which strike down all at once, and load our commerce with such a terrible, if temporary, incubus, are to be looked for at long intervals, and as altogether exceptional phenomena. While the disease is passing away, and our stock is returning to its customary good health, it is consolatory to know that few animals are liable to a second attack during the same

epizootic, though their having suffered now will not avail to save them when another epizootic shall supervene. The careful burning of the manure and disinfection of the stables is, therefore, probably a work of supererogation, the poison seeming to be speedily neutralized after it has affected the last susceptible victim. But it is far otherwise in those cases in which the great debility, the depraved state of the blood, and perhaps the hitherto hidden germs of glanders in the stables, have combined to produce that loathsome and fatal disease. In such cases the dictates of humanity and the sacredness of human life demand the prompt destruction of the animal which has become the generator of a deadly poison, and the thorough disinfection of the building, litter, clothing, harness, and stable utensils, in short of every article which may have come in contact with him.

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THE "NASAL DISEASE" IN THE HORSES OF AUSTRALIA.

The nature of the disease lately causing so much anxiety amongst owners of racing stock has not yet been fully explained. While chemical and microscopical examination of specimens are unfinished, it seems premature to offer opinions; and any remarks made at this stage of the inquiry must be based upon appearances as seen by the naked eye. These observations are doubtless valuable, and if judiciously discussed may aid in directing the more intricate part of the investigation.

It would, therefore, be well to refrain from applying to the affection any precise term, implying knowledge of its true pathology. Haste in this way usually is the first step in fixing erroneous medical notions respecting the causes of disease. The term *osteoporosis* will be found inaccurate, and cannot be retained. It has been adopted in the latest written treatise on veterinary surgery, the only one containing any notice of the disease. The term literally means bone-hardening, and it should not be applied to bone-softening, such as the disease in question really is. Besides, those diseases of bone tissue described as the *osteoporoses* by Rokitansky, the great German pathologist, who first applied the term, were local diseases of individual bones, without any general disorder of the system, called by him dyscrasia; whereas the disease in the horses referred to was an affection of the whole economy. On this ground Professor Varnell,

late of the London Veterinary College, who in 1860 described the disease, objects to the term *osteoporosis* as a fitting designation, saying, at page 651 of the *Veterinarian* for 1860, "Osteoporosis most correctly applies to the peculiar changes that had taken place in some parts of the bones of these horses, and to such an extent that we might almost venture, were it not for the altered specific gravity, to designate the disease by that term. But there are other portions in some of the bones that are evidently otherwise affected, and in which the morbid change is quite dissimilar." The same writer likewise objects to the term *mollities ossium*, and suggests that of fatty degeneration, in accordance with the observations of Sir James Paget. But all the forms of atrophy alluded to by the last-named eminent author occur in matured or in old age, although he adds, "I feel, however, that there is still much doubt respecting the relations of these affections; they are, perhaps, more nearly allied than, at first sight, they may seem; and I think some clue to their alliance may be obtained from the relation which they both have to the rickets of the young subject." Even Rokitansky says much chemical investigation is required yet before we can give any conclusive statement. Wisely, then, we should, like Mr. Varnell, in all we say and write upon the subject, be for the present "more interrogatory than assertive."

Although the disease may not be identical with what is described as *osteoporosis*, nor yet a true fatty degeneration, this much is almost certain, that the affection as seen here, in many young horses, is the same disease essentially that was described by Mr. Varnell, and transferred to Williams's text-book. The symptoms and *post-mortem* appearances, as described, closely agree with those observed here. The defective action in joint or limb, one after another of all four limbs becoming attacked, the tenderness, heat of joints, rigid loins, pain of back, enlarged facial regions, at first appetite and pulse not greatly disturbed, after a while constitutional disturbance, irritation, loss of appetite, and emaciation, l denoted unmistakably the true character being alike in both cases. Other general states of health also bear out the analogy. Again, when Mr. Varnell first saw the horses and was asked about the treatment, he says—"Not having the slightest idea of the cause which had given rise to the malady, and not understanding its pathology fully, I was unable to answer the question satisfactorily." Here, veterinary surgeons and medical men were all alike in precisely the same state of doubt and incertitude, whether they candidly said so or not. This also supplies another proof of

the similarity of the two affections. Another is found in the morbid appearances after death. A simple unsophisticated country lad gave the most graphic account of them. "The bones were all as soft as a pear, and boiled all to pieces; the ribs were so soft they could be easily cut with a knife, or they broke like a rotten stick." It was here the same. When the bones were placed in a cauldron to boil clean, they became so soft as not to bear their own weight, and the flinty lower jaw could easily be cut like a pear or a melon. It was thought there was no deficiency of earthy matter, and that the bones would bear boiling, a proof of the mistaken theory of the disease. The dark slate-coloured thin articular cartilages, eroded at points or coated with velvety tufts; softened heads of long bones; tendinous adhesions easily detaching the bone at point of attachment; periosteum easily stripping off; bones easily cutting, with oozing of blood from cut surfaces, as from a sponge; filling of cancelli with red gelatinous matter; the still compact unincreased size of shaft of long bones; the congested endosteum of areolar interspaces, or lining membrane of the spongy texture of the bones; the mottled appearance of the marrow—were all met with in the *post-mortem* examinations of Knavesmire and Retort, exactly as they were in the horses examined at the London Veterinary College.

In his difficulty of determining the pathology of the disease, Mr. Varnell solicited the aid of Professors Sharpey and Harley, who, seeing signs of a disease peculiar and unusual, desired to investigate its pathology more fully, just as several medical men have expressed a similar wish here.

The matter was brought before the Pathological Society of London, and after an animated discussion nothing was elicited to throw any light upon the cause which had given rise to the disease, which, apparently, was one that none of the members present were familiar with. The same thing has occurred amongst ourselves.

Professor Harley's drawings of the lower jaw-bone, in the *Veterinarian*, p. 577, vol. xxiii, exactly resemble the jaws of Retort and of Knavesmire; so also of the cartilages. Of the microscopical appearances we shall be better able to speak when Dr. Ralph has described the specimens left with him for examination; but the general appearances correspond. Thus, Professor Harley says, "The lower jaw-bone was considerably hypertrophied in its transverse diameter. The periosteum was readily detached, the osseous tissue was of a pink colour, and, on pressure, a quantity of blood oozed from its surface as if from a sponge. The osseous tissue was

elastic to the touch, and so soft that it could with facility be cut with a knife. The surface of the section had a somewhat fleshy appearance, but, to the nail, it conveyed rather the impression of cartilage." Now, all who saw the dissection of Mr. Filgate's horses will at once perceive the identity of the diseased state then seen with the one here pictured.

At only one point is there a break in the parallel. Neither Varnell nor Harley make any mention of one of the most striking features of the *post-mortem* findings. Mr. Varnell describes correctly the facial enlargement, and cuts down to it, but there stops. He says nothing of the immediate cause of it, a large mass of fibrinous deposit within the nasal passages. It was there, doubtless, but, perhaps to retain the skull entire, he did not cut into the cavities. It is this mass of fibrine, resembling a fibroid tumour of the antrum on each side, that imparts the peculiar aspect to the horse's visage, and suggests the most appropriate popular name for the disease. This mass of fibrine might be thought a true tumour of the antrum, and the starting-point of the train of morbid signs; but its simultaneous occurrence in both nares makes this doubtful. It can be more satisfactorily accounted for otherwise. The horse breathes solely through the nostrils, and hence during the rapid breathing of great exertion the inspired air acts as a local irritant, inducing a local manifestation of a general blood disease, tending to fibrinous exudation and structural organization of the exuded fibrine. The local irritant acting within the substance of the lower jaw is the rapidly growing teeth; at least this seems to be a reasonable explanation, if not the true one.

As for the cause of the disease, it has been ascribed in England and here to errors of diet chiefly. In England it was at first thought peculiar to the female, all the animals examined at the College being mares; but here both sexes have suffered equally. Food over-rich in phosphates was supposed to have occasioned it. Too much bran, for example. The excess of phosphates was supposed to have generated excess of phosphoric acid, which dissolved the bony matter, and as it were washed it away in the secretions. A deficiency of lime in the food or in the water, it was also said, had something to do with it, just as a deficiency of lime is said to explain the early decay of teeth, with the rachitic tendency of much of the constitutional ailments of children in this country; or to the presence of alum. However eventually explained, here for the present is an interesting point of contact between the human and comparative pathology; without full knowledge of both neither will be understood.

That the nasal disease is somehow associated with diet and conditions of life appears most probable. One point in the history of all the animals hitherto affected is the highly artificial method of dieting to the exclusion of adequate quantity of fresh natural grasses. This consideration leads at once to a review of the uses of salts in the blood. Without these, as Liebig in his 'Letters on Chemistry' long ago clearly explained, nutrition cannot proceed, in man or beast. These salts may not be decomposed within the body, but still their presence in the blood and tissues are all essential. Without alkaline phosphates in the blood, it is said the albuminous matters are not changed from the colloidal to the crystalloidal states, in which alone they can dialyse, that is, transude through the membranous walls of the capillary blood-vessels, to form bodily substance, so that in the absence of that saline matter there might be abundance of rich nutriment in the blood, and yet be no means of transferring it to the solid structures. There would thus arise a surplus of albuminous matter in the blood, constantly tending to the change into fibrine, which is a diseased blood condition allied by its earliest symptoms to a form of rheumatism. It is doubtful if any fibrine circulates in normal blood. A writer in last *Edinburgh Review* says, there are about three ounces of fibrine at a time, any excess over that quantity being abnormal. But there is no physiological proof that even this quantity exists, or any; and the reviewer asserts dogmatically, and is popularly believed by his host of readers, that which is unproved and unprovable. It is more probable that the instant a particle of fibrine forms within the blood current, that instant shows disease. Hence the fibrinous clots found in the heart-strings and vessels in Knavesmire, which were by some said to be purely *post mortem*.

Simultaneously with these, occurs a lactic-acid fermentation, and this free acid excites inflammatory action on the fibrous structures, on which it acts as a morbid irritant, as in rheumatic and gouty constitutions; while in the young, where there is still the separations between the long bones and their loose cartilaginous extremities, the lactic and phosphoric acids dissolve away the bony matter, secreting it by the kidneys. This also explains the thin dark slate-coloured cartilage of the joints; the dark colour not arising from any change in the colour of the cartilage, but from the dark congested bone shining through.

Then, again, it is well known that salts of potash are quite necessary for the healthy structure and function of muscles; and any animal deprived of a due supply of that salt must

degenerate into ill health, probably of a scorbutic kind. These young horses, being so curtailed of that allowance of potash provided naturally for them in the green food or fresh field grass, are literally starved while being over-fed, but still not nourished, by the rich dry saltless grain given by the trainer. Again, it is said the carbonic acid of waste products is removed out of the body by phosphate of soda as a vehicle; but if there be no phosphate of soda the carbonic acid is retained, to produce the dark tarry-looking fluid in lieu of bright blood seen in Knavesmire.

These points are all put suggestively, or, as Mr. Varnell says, "interrogatively rather than assertively;" still, they seem to indicate the correct line of research in this investigation. They best tally with physical appearances, but such appearances alone can never explain the mode of production. They further suggest the rational line of treatment, which is obedience to the laws of nature. Whenever a colt or filly shows symptoms of nasal affection, the fresh grass of the open fields, where potash, soda, and lime, as saline matters, abound, affords the best remedial aid; while all forms of stable treatment are only inflicting more suffering upon the brute, and fresh sorrow on the master.—*The Australian Farmer.*

HORSES.

To the Editor of the 'Sheffield Independent.'

Sir,—A correspondent a short time ago suggested in the columns of the *Independent* the formation of an establishment for the breeding of horses, and he thought, considering the present scarcity of them, such a scheme would succeed.

I doubt the writer being a practical authority on the subject. I would not invest money in such a scheme. At the present price of horses even, the breeder of them is not remunerated, and I do not think any are induced to produce more on account of the increased demand. What do you think a four-year-old colt of the hack or harness breed will have cost the breeder of him up to that age, when for the good both of the animal and the buyer he is prematurely offered for sale? And what is the average marketable value of the animal at that time? Do not let it be forgotten that the four-year-old must be brought to market "sound," to say nothing of appearance, style, action, colour, bloom, condition —if he is to command a fair price, and what proportion can claim the first-named recommendation at that age? Briefly,

the four-year-old will have cost the breeder £55 to £65. The dealer buys the animal at about that sum, unless he has size, character, breed, or hunting-like qualities, or has fashion, and can be matched to make a pair.

Hunters are often sold at large prices, but these are seldom obtained by the breeder, as it takes two, if not three, seasons to make a hunter with "good manners," and his breeder will have sold him before his education was so far complete as to command a big figure.

The producer does not produce 75 per cent. of "sound" horses at four years old, and of these that are so a "blemish" (which does not constitute unsoundness) often sadly mars his sale. Then comes the profit of the dealer, which is not often excessive.

The user cannot obtain superior horses first hand, and very properly so, as the dealer is an everyday customer of the breeder, and it would be unfair if the latter allowed the user to pick the cream of his stud and so leave "skimmed milk" only for the dealer. On the whole, the heavy breeds of horses are the most profitable to the breeder, although few realise great sums. But a carting colt at two years "off" begins to earn his keep, and so continues until sold; whereas an animal of the hunter, hack, or harness class is a dead weight until he has reached the age of four. It is not so much that the best class of horses have gone up in price as the cab, 'bus, dray, and tradesman's horse, all of which within the last two or three years have advanced to an extraordinary amount.

The fact of a large proportion of the horses now employed by the London General Omnibus Company and others being imported from France shows the great scarcity of English horses; and it is a fact that at the present time there are Yorkshire dealers in Russia in search of the better kind of harness horses. I see no probability of English horses becoming more plentiful or cheaper, and the present advanced price will not be found sufficient inducement to increase the supply.—Yours, &c.,

B. Cartledge, M.R.C.V.S.

Norfolk street, 14th March, 1873.

Analysis of Continental Journals.

By George Fleming, M.R.C.V.S., Royal Engineers.

VIRUS AND VIRULENT MALADIES.

During the invasion of epidemic cholera in 1849, we learn from a report presented to the Paris Academy of Sciences in the name of the commission appointed to award the prizes in medicine and surgery, that M. Breant instituted a prize of 100,000 francs for "whoever should discover the means by which Asiatic cholera could be cured, or ascertained the causes of this terrible scourge." Since 1854, when the Academy received the legacy, the prize has not been won, and it is probable that a long time will elapse before it is carried off. Nevertheless, in accordance with the intentions of the testator, the Academy has every year awarded the interest of the sum named, as a recompense for researches which have tended to the advancement of science with regard to the cholera or to any other epidemic or contagious malady. This year the commission has fixed its attention on the experiments of M. Chauveau in reference to virulent maladies and their virus.

Since the commencement of medicine, virulent and contagious diseases have been the object of numberless opinions and hypotheses; but problems of this kind—so complex in their nature—cannot be elucidated by discussions and arguments, and it is now understood that they are only to be solved by attentive observation and most carefully conducted experiments. For a number of years M. Chauveau (of the Lyons Veterinary School) has undertaken experimental researches on viruses, and with so much perseverance and success that already his efforts have yielded highly important results. M. Chauveau's early investigations were directed to the composition of vaccine virus. By ingenious and delicate experiments, he has been successful in dividing the contents of a vaccine pustule into two portions—a vaccinal serosity and molecular granules—so as to be able to inoculate them separately and comparatively, either on one or on several different subjects (child, horse, or cow).

The result of these primary comparative experiments have brought him to the conclusion that the vaccinal serosity is not virulent, and that the activity of the virus resides in the solid granules. Afterwards, on examining the effects of dilution on the vaccine virus, M. Chauveau has observed

that, by the addition of water, the virulent granulations become separated and deposited, leaving above them a stratum which is inactive during the repose of the mixture; if, however, it is agitated, these granules are stirred up and communicate the virulent property to all its parts. M. Chauveau has also noted, with regard to this subject, a fact the importance of which few can overlook: he has ascertained that the vaccine diluted with five times its weight of water is as certain in its action as concentrated virus; he has even been successful in obtaining inoculations with vaccine matter mixed with a hundred and fifty times its weight of water, though less constantly. What is still more worthy of remark is that, in these cases, the vaccinal eruption comports itself in the same manner; the pustulation pursues an absolutely normal course, and presents characters identical with those of the pustulation produced by inoculation with pure vaccine matter.

Giving a wider extension to his researches, M. Chauveau has applied the same method to determine the virulent principle in variolous pus and that of glanders. Without entering into the detail of these facts in this place, it may be sufficient to state that these experiments have led M. Chauveau to the same conclusions; in the pus of variola and glanders, as in the vaccinal liquid, the specific activity which constitutes its virulence resides exclusively in the elementary corpuscles suspended in these humours. Therefore studying the virulent corpuscles in the closest manner, he has remarked that they may be washed without losing their specific properties, and that their prolonged sojourn in water does not confer their virulence on that fluid.

It is in starting from these experimental results, and having recourse to other observations made in cases of variola ovina, and the cattle plague, that M. Chauveau has proposed a theory of mediate contagion in these diverse infectious maladies. He has also broached in these experiments a question of the highest interest in pathology and hygiene. In medicine there prevails an erroneous opinion with regard to the innocuousness of virulent substances when introduced into the stomach; it being supposed that they are digested and become inactive when they reach the intestinal canal. M. Chauveau has demonstrated that it is not so, and his experiments in this direction have been more particularly carried on with tuberculous matter. He is still engaged in a series of experimental and comparative researches on simple inflammatory humours, virulent humours, and other analogous morbid productions.

To sum up, M. Chauveau has arrived at results, relative to the study of the viruses, which are great acquisitions to science. These matters cease to be inappreciable mysterious agents; he has fixed a certain number, and distinguished them in the solid corpuscles. Is it necessary to say that now these results may be generalised and applied to all the infectious or contagious maladies? The Commission does not find itself in a position to emit such an opinion; even M. Chauveau himself, after all his labours, does not arrive at such a conclusion. In the experimental method one must never go beyond facts, and general conclusions can only be arrived at after a rigorous study of each particular case. As there are ferments of various kinds, some soluble, others insoluble, so there may exist different sorts of virus. However this may be, the Commission has recognised that M. Chauveau, in submitting the study of viruses to the experimental method, is engaged in a useful and fruitful pursuit. He has already received rewards and encouragement from the Academy, and the Commission has been desirous of giving him another testimony of their appreciation of his efforts by recommending that the interest of the Breant prize for 1870 be awarded to him.

The hearty felicitations of the members of the veterinary profession will, we feel sure, be accorded to their distinguished colleague of the Lyons Veterinary School, on receiving this flattering and substantial mark of recognition from the Academy of Sciences for his ingenious and remarkably valuable and interesting researches, which cannot fail to produce excellent results in human and veterinary medicine. We purpose, at an early opportunity, to resume our translation of his report, which was commenced a few months ago in the *Veterinarian*.

THE ORGANISMS OF VACCINAL LYMPH.

In connection with the subject just alluded to, we find that Cohn has also been devoting some attention to the composition of vaccine matter. He remarks that several observers, and especially Keber, Hallier, and Chauveau, have noticed the presence in vaccinal and variolic lymph of minute granules which, according to their opinion, are the vehicles of the contagium. Nevertheless, the researches in this particular have not as yet led to a definite result, so far as the origin and signification of these elements are concerned. Cohn has, in the first place, confirmed the presence of the organisms in

question in perfectly fresh variolic or vaccinal lymph, collected and preserved with all the necessary precautions, in order to keep away every extraneous impurity. In carrying out this operation, the pustules were opened by means of a new lancet, the liquid was received in capillary tubes which had been heated to a moderate red tint, and from which the matter was transferred to the object-glass by blowing. This being accomplished, no time was lost in hermetically enclosing the preparation by fixing down the covering-glass with good pitch cement. Neither mould nor bacteria were developed in lymph thus preserved. Pasteur's fluid, to which was added a capillary tube containing the matter collected as above, also remained perfectly clear—proofs that this procedure protects the lymph from any alteration by foreign substances. In fresh preparations, Cohn found that they contained, among other morphotic constituent parts, minute granules or globules of a diameter less than 0·001m., the largest attaining at most three fourths of this size; and their degree of refraction being nearly that of serum, at first there was much difficulty in distinguishing them. Cohn believes them to be cells composed of a membrane and contents. At first these elements are generally isolated, though rarely they are joined in twos to form a figure 8; but if the preparation is maintained at a constant temperature of 35° Centigrade, there is observed in a few hours not only a considerable augmentation of the conjoined elements, but, in addition, the appearance of more elongated groups formed of six, eight, or a larger number of cells. These cells are very mobile in their relations towards each other; so that, after a certain period, and in consequence of the multiplication of the elements, there are seen filaments in the form of chaplets giving rise to groups of cells of variable sizes. The latter are evidently multiplied in a very rapid manner by division or gemmation; but their extreme minuteness is opposed to any direct observation of these phenomena. The proliferation continues for several days. In old lymph the corpuscles have increased in volume, their contents are more refrangent, and they adhere more closely to each other, owing to the appearance of an intermediate mucous substance (a mass of zoogloca). These elements are not endowed with any proper movement, save that of a molecular kind. Cohn characterises them as follows:

"MICROSPHŒRA (globular bacteria).

"*Family* of Schizomycetæ, *Group* of the Bacteriacæ.

"Colourless cells, very minute, globular or spherical, generally motionless, multiplying by division or gemmation

as moniliform chains of two, four, eight, or a greater number of articles, forming by their displacement irregular groups, and developing, during the process of multiplication, in the form of colonies or cellular masses; or, lastly, becoming agglutinated together through the medium of an intercellular mucous substance in the shape of masses of zoogloca, composed probably of stable cells."

With respect to the signification of these corpuscles, Cohn, following the example of Keber and Chauveau, considers them as being essentially the contagious element, and bases his opinion on the following facts: these corpuscles are identical, as the author has been able to assure himself, with those found by Weigert in the skin of several persons who had died from smallpox. According to him, the globular bacteria always act as ferments, and develop in urine, albumen, the spleen, &c., products of decomposition. He admits, by analogy, that the microspheres of variolic lymph also play the part of a ferment, and give rise in this lymph to a product of decomposition capable of setting up a morbid specific process. According to this hypothesis, the microspheres are rather the generators than the vehicles of the contagium.—*Virchow's Archives, Annales Vet. de Bruxelles.*

IMPORTANCE OF THERMOMETRY IN CLINICAL INVESTIGATIONS.

According to M. Dèle, this subject has been commented upon by Signor Lorenzo Brusasco, professor of pathology and clinic, in his inaugural discourse at the Veterinary School of Turin in 1872-73.

The extent of the discourse precludes a complete translation, but certain important sections are offered for consideration. The value of this means of research is alluded to as follows :

"Methodical and exact thermometrical exploration by the ascending and descending parabola of the temperature, furnishes most precious and important elements in the diagnosis, prognosis, and therapeutics of disease; it makes known the intensity and the gravity, the periods and stages of an inflammatory malady by indicating the different points of transition, and the remissions and exacerbations;—in a word, all the forms, the irregularity of its course, depending upon accidental circumstances, the action of therapeutic agents or unforeseen complications, allows us to make known the duration and to predict a fatal or favorable termination, to know when and for how long a period it is necessary to have recourse to antiphlogistic measures, to control their effects,

and to recognise and watch convalescence, &c." The author, however, does not reject the other means of investigation, such as the stethoscope, pleximeter, microscope, &c., each of which has its diagnostic value.

In *fever* the temperature of the body is raised above the physiological maximum; indeed fever might be defined as an abnormal and durable elevation of the temperature. This symptom deserves to be placed, by reason of its constancy, before the frequency of the pulse.

Hippocrates had already remarked the increased heat of the body in fever. Towards 1600, Sanctorius resorted to the thermometer to measure this elevation, as the hand gave a very inexact appreciation of this condition. At a later period, De Haen, a disciple of Boerhaave, confirmed the defective relation between the acceleration of the pulse and the augmentation of temperature, and he was the first to believe that in the cold stage of fever the internal temperature had already increased. Senac had noted that, in the cold period, the thermometer introduced into the mouth did not show a diminution of heat. James Currie in 1797, and Brodie in 1811, again called attention to clinical thermometry; but it was not until 1850 that this, thanks to Wunderlich, Bärensprung, and Traube, had made great progress. Zimmerman, in 1846, had studied the relations between the febrile temperature and the secretions, and more especially its relation with the composition of the urine. In veterinary medicine, thermometry has only been applied since the labours of Wunderlich were published, by Zangger, Schmidt, Schmelz, Adam, Gerlach, Gamgee, Sanderson, Pflug, Zundel, Brusasco, &c.

The *physiological* temperature, with very slight variations, is always about the same; the *pathological* state, on the contrary, is marked by an increase or diminution, or an unequal distribution, of heat. In febrile affections, it oscillates between limits which it cannot exceed without death taking place.

In health the variations depend upon the age, state of gestation, alimentation, and the surrounding temperature. The temperature of the body also submits to daily fluctuations, and is influenced by rest, exercise, &c.

Signor Brusasco examines each of these points, makes known what different writers have stated on the subject, and gives the results of his investigations on animals.

With regard to the *quotidian fluctuations*, he has observed that they are greater and more varied with animals than mankind. In solipeds and the ox, the physiological tempe-

rature is at its maximum from 5 to 7 and from 9 to 10 p.m.; and at its minimum at from 3 to 5 and 8 to 10 a.m. With the dog, the maximum is from 1 to 2 and 5 to 8 p.m.; the minimum from 3 to 5 and 7 to 8 a.m.

Muscular exertion causes an increase which may amount to 1·5° above the temperature of rest; though it is maintained only for a short time, repose bringing it down to its normal standard in one hour, or at the latest three hours after the exercise.

After dilating on the best instrument to employ, the hours at which the temperature should be taken, and the regions of the body most suitable for the application of the themometer, Signor Brusasco passes to the thermometric study of different diseases.

Cattle plague.—The researches of Gerlach, Gamgee, Sanderson, Ruef, Zangger, and others, on the thermic elevation in this disease, are already known. According to Gerlach, in young healthy cattle the temperature oscillates between 38·5° and 39·5° (Centigrade). Under the influence of the disease it ascends to 41°, and even to 42° and a fraction, but does not exceed 42·2°. In inoculated animals, Sanderson observed the temperature to rise for two days before any other symptoms appeared.

Epizoötic aphthous fever.—Before the manifestation of any external symptom the temperature rises, attaining 42° in from one to two days, and does not diminish until the termination of the eruptive period.

Variola ovina.—According to the observations of Brusasco, the temperature is increased before shivering is exhibited; in from thirty-six to forty-eight hours it rises 1° to 1·5°, and on the second day is 41° to 42° and a fraction. When the disease is regular, the fever lessens from the commencement of the eruption by a complete defervescence, usually in twenty-four hours. In confluent variola the temperature falls more slowly and irregularly, only to ascend again at the beginning of the period of suppuration, becoming normal at the end of this period and the commencement of the stage of dessication.

Anthrax.—The author saw the temperature mount to 42·6° in a cow twenty-four hours preceding death, but immediately before that event it fell to 38°.

Acute glanders.—He also observed the temperature ascend in a continuous manner to 41·5° and 41·7°, and remain at this point for two to three days. In a less acute case, the oscillations, trifling in the preceding instance, were very marked.

In *typhus and typhoæmia* the increase is slow and rapid. He saw a horse in which the temperature rose in a few days to 39°, 40°, and 40½° shortly before death, in others in fifteen hours from 39° to 42½°; in cattle, in twenty-four hours to 41¾°.

In cerebral typhus of the ataxic form, the thermometer is a most valuable guide, as it shows a marked elevation of temperature when there is scarcely any acceleration of the pulse.

The thermometer enables the practitioner to distinguish abdominal typhus from serious gastro-enteritic catarrh at the very commencement. In the first a series of ascending oscillations generally leads to the maximum. In the second the thermic cycle of elevation is less considerable.

Peters has more particularly studied thermometry in *pneumonia* and *pleurisy*. In the first the temperature often attains at the commencement 41·5°, and is maintained at the elevation with but slight variations morning and evening. Towards the fifth, sixth, or seventh day it decreases, until in twenty-four hours it has reached its normal degree, &c. In this malady there is a relation between the augmentation and diminution of the temperature, and the acceleration and lessening of the pulse.

In pleurisy the modifications of the temperature are not so regular; at the commencement elevation, and often after two or three days diminution, without the other symptoms decreasing in intensity.

In *acute tetanus* the pathological temperature attains its maximum; not only does it increase during life, but it even rises after death. The gravity of the prognosis depends on the degree to which the temperature has attained.

Clinical thermometry has also been studied in external affections, as in traumatism, by Billroth and O. Weber; and Jacmann has applied it in chronic diseases; such as tuberculosis in man.

Brusasco briefly alludes to the importance of thermometry with respect to prognosis and therapeutics. The prognosis of a disease is serious in a direct ratio with organic combustion (febrile consumption), which is related to the thermical degree. A sudden and marked elevation is a bad augury as to the termination of a case. According to the Professor, every fraction of a degree above 41° C. in the horse increases the danger. He does not agree with Schwelz, who says that any diminution of temperature in febrile maladies is *always* a favorable prognostic sign, even when there appears to be no amendment in the other symptoms, &c.

With regard to therapeutics, thermometrical explorations give the most certain indications as the antipyretic agents to be employed. The most frequently utilised are digitalis, veratrine, and the sulphate of quinine. The latter, either by its influence on the moderating organ of temperature, or at the same time by its antifermentative action, has been recognised as useful in febrile conditions, zymotic and septic, acute infectious diseases, &c.

To this discourse is annexed a series of explanatory or complimentary notes, amongst which are found those on the physiological temperature of man and animals according to various authorities, and among them Krabbe.*—*Annalès de Med. Veterinaire*, February, 1873.

CENTRAL VETERINARY MEDICAL SOCIETY.

The usual monthly meeting of the above Society was held at 10, Red Lion Square, W.C., on Thursday morning, March 6th, the President, J. J. Mavor, Esq., in the chair. The President brought forward a portion of the spinal cord from the lumbar region of a horse the subject of sciatica, ending in paralysis; the horse first appeared unwell on the 25th of the last month, and the next day when in harness was suddenly seized with spasms of the lumbar muscles, and became excessively lame. Being brought to his box a sedative was administered, and Belladonna rubbed over the loins; the horse fell down and lay in great pain, eventually he became paralysed, and on the 1st inst. the *post-mortem* appearances were not very satisfactory; there appeared slight laceration of the muscles near the pubes. The spinal cord was firm, the periosteal membrane injected and full of sero-sanguineous fluid.

Mr. J. Roalfe Cox then related a case of phrensy; the subject was a well-bred horse which was turned out at his farm, and on being gently exercised in a field commenced cringing in a remarkable manner, then plunging he furiously bolted (the rider having dismounted); being eventually got into an adjoining box he was shut up and left alone. A few days later Mr. Cox was sent for, and finding him the subject of spasm of the gastrocnemii muscles treated him accordingly; two days later a telegram was received to say the animal was mad, the symptoms consisting in quick deer-like running round the box, the hind legs being drawn up under him. The horse was destroyed. On *post-mortem*

* See the *Veterinarian* for January, 1873.

examination the intestines appeared healthy, but on removing the head a large quantity of serous fluid poured out from the brain cavity, the brain was unusually firm, and the blood-vessels at the base thoroughly arborescent; in the lumbar vertebræ there was also found a quantity of serous fluid. Mr. Roalfe Cox had previously attended the same horse from injury between the hair and hoof, and an escape of synovia therefrom; at this time the animal was addicted to snapping and quietly walking round his box, which ceased when oil and turpentine were administered. The present case, one of cerebro-spinal disturbance, occurred in a thirteen-years old drayhorse first noticed to be standing calm and motionless in his box, breathing slowly, and the pulse normal; he then walked quietly to the stable door, where he stood as though fixed, blows having no effect upon him; eventually was led to his box, when he commenced walking round to the left in a methodical manner. In the morning he was roaring loudly, when the poll was rubbed with turpentine and a tracheotomy tube inserted, after which he gradually recovered and worked for four years longer and was then destroyed on account of his old age. This case of catalepsy (so designated) is the more remarkable owing to recovery on the treatment of one of the symptoms and that secondarily.

Another case instanced occurred in a dray horse the subject of hemiplegia of the right limbs. The horse was slung, but treatment proved ineffectual. In the *post-mortem* examination a large clot of blood was observed in the base of the brain.

Another case was related of a horse reported as stiffnecked, which was treated as a rheumatic affection, recovered; some time afterwards, when in harness, commenced reeling about, was obliged to be led home, when he recovered; the symptoms recurred again and again, but subsided when the horse was taken out of harness. The horse died from an attack of paralysis, and an examination was instituted, when the upper part of the atlas was found to be drilled through by absorption, and an abscess had burst through the theca vertebralis on the spinal cord; this explains the quick recoveries after removal of the harness.

Another case.—A horse suffering from a cough and making a roaring noise, which was aggravated by water being offered; the operation of tracheotomy was commenced, when the horse fell forwards, and before assistance could be rendered died from asphyxia. It was found that the posterior half of the whole length of the trachea was separated, and narrowed by about one third, and the separated part between the membrane and cartilage filled with soft pasty effusion; there was no congestion noticed.

Mr. Burrell related a case where a horse became violently ex-

cited when interrupted by candle light or at the sight of shadows. He afterwards took to leaping, as it were, round the box, seizing and breaking the rails, &c., shaking his hay and making personal attendance dangerous. These symptoms gradually subsided, but the light of a candle always caused their recurrence. When in action he had a peculiar gait similar to stringhalt.

In the discussion that ensued the analogy existing between some of the above and rabies was considered, and a case of the latter disease was related by Mr. Clark, the President asserting that a constant feature in rabies of the horse was a peculiar dropping of the spine and cringing action when made to move, as though dreading a pursuer, and that violence was not a sure indication of madness; Mr. Rowe reverting to the complication of liver affections with nervous disorders, and the presence of cholesterine in the brain; and Mr. Hunting to the similarity of the second case of Mr. Cox's with "immobilité." Mr. Cox in reply stated there were no hydrophobic symptoms in the case of phrensy, but rather extreme fearfulness. He believed that Mr. Burrell's case was a cerebro-spinal affection, and the annoyance of light due to amaurosis. In the cases where the trachea was affected it was ecchymosis rather than œdema glottidis. The meeting then adjourned. Present twelve fellows.

JAMES ROWE, Junr.,
Hon. Secretary.

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE thirty-fourth quarterly meeting of this Association was held at the Medical Institution, Hope Street, Liverpool, on Friday evening, February 14th, 1873. After tea the chair was taken by the President.

The following gentlemen were present:—Messrs. R. S. Reynolds, President, Morgan, Heyes, Proctor, Jos. Leather, Elam, Ackroyd, and the Secretary, Liverpool; Welsby, West Derby; Lawson, Woolton; Barnes, Malpas; Thos. Greaves, P. Taylor, W. A. Taylor, Locke, and T. Hopkin, Manchester; R. Reynolds, Mansfield; Woods, Wigan; Peter Ellis, Leeds; Storrar, Chester; Whittle, Worsley; and Dobie, Birkenhead.

The minutes of the last meeting were read, and, with a slight alteration suggested by *Mr. Storrar*, confirmed. Letters of apology were read from gentlemen who were unable to attend.

Letters were also received from Messrs. G. Fleming, Royal Engineers, and T. D. Broad, of Bath, conveying to the Association their thanks on election as Honorary Associates.

The *President* then read his Inaugural Address. *Mr. Greaves* moved and *Mr. W. A. Taylor* seconded a vote of thanks to the President for his excellent address, which was carried by acclamation.

The *Secretary* read the report of the Committee, Messrs. Reynolds, Welsley, and Kenny, who were appointed at the last meeting to inquire and report why the meetings of the Association for the past year had not been attended by the usual number of members and visitors.

The report, which referred to complaints of unprofessional conduct, among other things, as having had an injurious effect, was, after an animated discussion, adopted. JOHN KENNY,
Hon. Sec.

THE PRESIDENT'S ADDRESS.

GENTLEMEN,—Let the first words I utter from this chair be expressions of thanks to the members of this Association for placing me in so distinguished a position, and the coupling with those thanks assurances that my best endeavours shall be exerted to maintain the cardinal objects for which this and kindred associations throughout the United Kingdom have been established.

It is somewhat a difficult matter to get out of the beaten track so often previously traversed by former presidents in their inaugural addresses; still I do not know but that a short retrospective glance at recent topics of general and local interest, and a consideration of the future of the profession, may not be taken with greater pleasure and profit than "showing a line" over a new country, one perhaps more difficult, and probably less interesting to cross.

The year 1872 has been notable for important additions to the literature of our art, and the thanks of every veterinary surgeon are due to those gentlemen who have striven with hand and brain to remove the stigma which has laid so long upon our profession for its paucity in works of standard authority.

The literature of a science is the meter of its status, and our recent additions of high class works is a subject for sincere congratulation. Especially would I mention Professor Williams's 'Principles and Practice of Veterinary Surgery,' which is not only a valuable text-book, but an agreeable and profitable one for general reading.

Mr. Fleming's prolific pen has given to us, perhaps, the most complete work on rabies that has appeared in any language, while his translation of M. Chauveau's 'Comparative Anatomy of Domesticated Animals' will supply a requirement of long exist-

ence, and will doubtless assist us in attaining an equality with our Continental brethren, upon that particular branch of our science. The same gentleman, as co-editor of the *Veterinarian*, has periodically furnished us with original and valuable information, as well as translations from foreign journals. Indeed, were it not for Mr. Fleming's writings, and the reports of essays and discussions at the various Veterinary Medical Associations, our monthly journal would fall exceedingly short of its mission in supplying the profession with valuable and practical information. It may be that I shall be considered impertinent, and display questionable taste in criticising the "conduct" of the *Veterinarian;* but I am convinced that I only express the opinions of many practitioners who, like myself, are unscientific enough to prefer (if both cannot be given) receiving information on improved modes of treating cases, which I am daily called upon to attend, than to be made acquainted with the development of Bilharzia Hematobia, or read up some thirteen pages on the spontaneous movement in plants.

During the past year death has been busy amongst our ranks, laying low alike young men full of worthy aspirations for future distinction in their profession as well as time-honoured veterans, who have witnessed the emergence of our science from infancy to adolescence. I deem it a privilege to have this opportunity of paying a tribute to the memory of one who has passed away from us. Professor Spooner, for eighteen years, was the official head of our profession, and rigorously did he uphold every tittle of its dignity. The fault of obstructing the progress of the profession has been laid to his charge; but, as I think, without just cause. By nature positive, and possessing no vestige of servility in his composition, he could not quetly submit to the dogmatical opinions of men whose motives he did not appreciate. Thus he failed to see that change was synonymous with progress, and hence arose the accusation of obstructiveness. Those, however, who had the opportunity of pursuing their studies under his guidance, know full well that Charles Spooner stood second to none as an advocate for the advancement of the veterinary student in mind-culture and gentlemanly bearing. Let those to whom Charles Spooner's faults were apparent forget them in the grave, and unite with us in regret that a light has gone out in our lamp, and an ornament struck down from the edifice of our profession.

To fill the vacancy occasioned by the death of Mr. Spooner, the Governors of the College have elected Professor Simonds as Principal. It would be unseemly for me to remark on that gentleman's capabilities for the high function he has been called upon to fulfil; but I may be permitted to say that the belief which I, in common with many others, hopefully entertain for

the future of the profession is strengthened by the appointment of one who so well and deservedly stands high in the opinion, not only of veterinary surgeons, but of the agriculturists of this country.

Whilst on the subject of appointments, I cannot resist expressing the satisfaction I feel at the election of Professor Flower, Curator of the Museum at the Royal College of Surgeons, as an examiner in anatomy, in place of Professor Ellis, whose resignation had been accepted by the Council. I was not present when the question "whether the examiners ought to be elected from members of our own profession" was discussed at the August meeting of this Association, or my voice would have been raised in its support, even had it been unsupported. Since then I have read in the *Veterinarian* the arguments *pro* and *con*, and allowing, as every one must, the ability and force adduced in support of the proposition, the conviction remaining on my mind that the veterinary profession receives honour and status from its allegiance with medical examiners. I feel that an apology is due to those members who, at the discussion of the question in this Hall, advocated opposite views; and I trust they will pardon the liberty I have taken in reintroducing the subject.

Before another session at the Colleges is inaugurated, it is to be desired that the recently proposed alteration of the byelaws relating to the examinations will have been confirmed, and that the authorities of the various schools will have introduced such changes in their curricula of instruction as may be required for the students to reap the full benefits conferred by the proposed amendments. The alterations are indicative of advancement, and their principles accord with the desires of the best wishers of the profession, as being potent means for making veterinary surgeons of higher class; a better way, in my opinion, of decreasing the rule of charlatanism than a dozen prohibitory Acts of Parliament. The charges, too, will tend to lighten the labours of the student. In this age of telegraphic existence there is of necessity an amount of crowding which the requirements of bygone times did not demand; but it must be remembered that there is a limit to mental endurance, and consequently every legitimate means should be adopted to abridge the necessity for over-exertion, by a systematic division of study.

It is a fact the reverse of flattering to us that at a recent Veterinary Congress at Vienna the only English representative was a member of the medical profession. Dr. Alexander Williams, experienced and able as he undoubtedly is in manipulating the machinery of the "Contagious Diseases (Animals) Act," and its Supplementary Orders in Council, would have benefited by the co-operation of the present head of our profession—Professor

Simonds, who is so practically acquainted with contagious diseases, including cattle plagues, and so conversant with all known sanitary precautions which should be taken against their extension.

Attempts have been made to disguise the slight cast upon us, on the assumption that the conference was rather a legal than scientific gathering, and by other equally weak arguments, coined apparently to soothe our feelings. It is nevertheless an unwelcome certainty that Englishmen were the only people unrepresented by a veterinary surgeon—our profession being disregarded and its services apparently undervalued by her Majesty's Government.

The State had, I think, little cause for the perpetration of this slight to us. Hitherto not only have we existed, but even rapidly advanced without its aid.

Has the Government forgotten that when, early in the year 1866, it condescended to adopt the stamping-out process, for the suppression of cattle plague, advocated by competent veterinary advisers, from the commencement of the outbreak? Unfortunately, perhaps, for us, this advice was not acted upon, until the herds of the country had been decimated by the disease, and the centres of infection almost indefinitely multiplied. The general public, as a rule, look to results, and not closely into the details for their accomplishment; it may not be generally known, but the State can scarcely plead ignorance, that hecatombs were sacrificed to the opinions of men unskilled in the pathology of contagious typhus, before the sound advice of veterinary authorities was taken. The exertions of veterinary surgeons, in those trying times, if not forgotten, have been rewarded by slights, not the least of which is the appointment of police inspectors for the detection of epizootic and contagious diseases. Government, as the natural protector of the public weal, is right in adopting efficient measures to ascertain the existence of dangerous contagious diseases, but surely it is questionable economy, as may some day be proved, to entrust the reports of disastrous outbreaks of epizootic disease to the skill of a police-officer.

Contrast this state of things with the manner in which Continental veterinary surgeons are treated by their respective governments, and we suffer almost inexpressibly by the comparison. Yet I would not imply that State support conduces much to the advancement of our profession abroad in public estimation; such patronage rarely exercises salutary influences on the spirit of independence and self-reliance; for the life-blood of knowledge is freedom,—take it from her and she perishes. Rather would I attribute the comparatively exalted position of our continental *confrères* to their more complete system of instruction, and higher

standard of excellence required from the student. But, Gentlemen, whilst one cannot help drawing unwelcome comparisons, feeling indignant at the treatment we have been called upon to submit to, we must not remain inattentive to the lesson it inculcates, but strive the more earnestly to discover the true cause for the non-recognition of our services, and yet more strenuously endeavour to remove every obstruction to the obtainment of that social and political status to which we are justly entitled to aspire.

In our everyday individual existence the difficulties we have to encounter insensibly become helpers by strengthening our nerves and sharpening our skill, so let it be with us as a united body, and when called upon to overcome obstructions against our advancement, may we ever remember that real ability is not to be estimated by what it attempts, but by what it finishes.

An important question has lately arisen, to which I trust this meeting will give due consideration, and exert its influence to revive the apparently fleeting interests to veterinary progress. Many have been the conjectures formed upon the causes for the decreasing vitality of this and other associations.

There are, no doubt, several causes conducing to so unsatisfactory a state of things, and although I may not anticipate the report of the committee appointed to inquire into the causes for the falling off in attendance at the quarterly gatherings of this Association, I may be allowed to name one or two possible reasons, a definite solution to which the Committee have not been enabled to determine, as results to their inquiries.

Want of interest in the proceedings of our meetings is unquestionably a cause of absence with many, who, although having at heart the advancement of the science, and desirous of increasing their individual knowledge on practical subjects, absent themselves because the essays and discussions do not afford them a fair equivalent of information for the inconvenience of attending. Let me, however, ask, have these gentlemen nothing to impart for the benefit of others? Have they tried, by experiment, the correctness of the Divine truism, that "to give is more blessed than to receive"? If not, let them lose no time in testing it, and I am sanguine that they will be as anxious to repeat the experiment as we can possibly desire that they should give it a trial.

Others there are also, I fear—may the number decrease—so imbued with a sense of their own superior attainments that they are afraid of imparting knowledge to men less liberally endowed. These we cannot hope to attract by any effort, nor is it to be desired that any should join us under the suspicion that they have all to lose and nothing to gain. Should the above observation perchance meet the eye of such an egotist, let him think on the words of one who had seen something of the world; he says,

"The good of human life *cannot* be in the possession of things which for one man to possess is for the rest of mankind to lose, but rather in things which all can possess alike, and where each man's wealth promotes his neighbour's."

I take it one of the chief benefits to be derived from associations of this kind is the opportunity afforded of comparing our personal observations with those of our brother practitioners, thereby extending the scope and testing the security of our knowledge; by exclusiveness we remain insensible to our own defects, and our standard of individual capacity is unreliable because it is not gauged by the experience of others.

It is possible, also, that some do not attend from a jealous dislike to meet a competitive practitioner apart altogether from suspicion of unprofessional conduct. This morbid indisposition should be overcome. There is, it is said, more good than evil in the composition of every man, and it is undeniable that the best traits in a man's character are most clearly perceptible to his closest acquaintances. Benevolence and kindly feeling are the best interests of all, and are the only royal road to happiness, whether individual or social.

I apprehend that by earnest co-operation the present members can render our usual meetings more attractive to general practitioners than they have hitherto been; but to do so every individual will be required to exert himself for the benefit of his fellow-associates, by drawing on his daily experience for cases of interest, and to introduce them in a concise descriptive manner, and, when possible, to exhibit morbid specimens relating to the subject. Such an arrangement would tend to assimilate our programme nearer to that of the Central Veterinary Society of London, and I think great benefit in several ways would accrue therefrom. The adoption of such proceeding would in no wise detract from the study of our profession in its scientific aspect, but the subjects would afford ample scope for theoretical speculation, and matter for the thoughtful, long after the meetings were ended.

THE SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

The Annual General Meeting was held in Cumming's Hotel, Lothian Road, Edinburgh, on Wednesday, 12th February, at 1 p.m.

Professor Williams, President, in the Chair.

Present:—Messrs. Balfour, Kirkcaldy; Robertson, Kelso; Borthwick, Kirkliston; Aitken, Dalkeith; Baird and Cumming,

Edinburgh; Comachie, Selkirk; Finlay, Royal Artillery, Leith Fort; Black, Howgate; Young, East Calder; and the Secretary.

Mr. Dan. Maclean, President of the West of Scotland Veterinary Medical Association, was also present.

Mr. Robertson, Kelso, reopened the question of "Fees for Examinations as to Soundness" discussed at last meeting, stating that had he been present he would have assuredly advocated increased remuneration for this duty; that it was at times one of the most unpleasant the veterinary surgeon had to perform; that at least a guinea should be charged for examining a horse worth £50; and that in these days of high prices and agitations for higher pay, the veterinary surgeon's fees, not only for examining as to soundness, but also for general professional attendance, should be raised to meet at least the increased expenditure.

Professor Williams said that the result of the discussion at the last meeting was simply that, although it would be almost impossible to fix any definite scale of charges, it was very desirable to have increased remuneration whenever it could be obtained. That the subject was an important one, and would be all the better of being ventilated; that it would be a great boon to students and young practitioners to have some definite idea as to the charges they should make on entering practice, and suggested that Mr. Robertson favour members with a paper on the subject at next meeting.

Mr. Robertson kindly consented to do so, and it was arranged that the meeting be held in April during the week of the examinations at the Veterinary College, so that gentlemen from a distance attending these examinations might be invited, and have the opportunity of being present.

As interesting cases *Mr. Robertson* described the removal of a melanotic tumour sixteen pounds in weight from the neck of an ox. It was situated midway between the angle of the lower jaw and the sternum, and seemed to cause no inconvenience save from its great weight. Mr. Robertson did not anticipate any great difficulty in removing it, but found that its attachments, though mainly to the muscles, were deep and firm. Its pedicle was very large, extending to within a quarter of an inch of the carotid artery; while a large and a smaller artery and corresponding venous branches entered into its substance. The hæmorrhage would have been considerable, but pressure on the carotid itself enabled the principal artery to be secured. The animal did well, the wound healed rapidly, leaving only a large cicatrix. The animal was bright red in colour, and the tumour was found to consist of pure black melanotic matter.

Professor Williams stated that he had several smaller melanotic tumours in the College Museum which had been removed from

cattle. They were occasionally met with, and were not confined, as in the horse, to animals of a white colour.

Mr. Baird detailed a case of disease of the ovaries and uterus. Professor Williams had received the organs from Mr. Baird, and though he had not yet submitted them to microscopical examination, was of opinion, from the bluish jelly-like matter in the ovaries, that the case was one of colloid cancer.

Professor Williams also said that he had received a diseased spleen from Mr. Dow, of Dunkeld, in which there were deposits of a very peculiar character. Along with Dr. Young, he had examined them microscopically, and was at first inclined to think that they were cancerous, but after a still more careful examination with the highest powers he had come to the conclusion that the peculiar cell-like bodies seen were in reality lymphoid bodies similar to those recently investigated by Virchow, and that the case was one of lymphadenoma. This disease in the human subject is characterised by great anæmia or prostration of strength. Professor Williams was not aware whether such was the case in the present instance, but had written to Mr. Dow for further information as to the animal. The subject was an interesting one, and he might at some future time be able to give the result of his investigations into it.

A slight discussion also took place on amyloid or waxy degeneration in the lower animals. *Professor Williams* had met with it in the liver of a horse and the kidneys of a cow. The organs were firm, almost hard, and glazed over not unlike a wax model; while on treating them with solution of iodine, the peculiar blue or rather purple or violet colour immediately spread over their surface. In a well-marked case in Northumberland, in which he had been consulted, Professor Williams stated, as showing the value of the microscope in everyday practice, that while the horse was alive he had requested that some of the urine be sent to him, and on examining it microscopically he had found blood-globules, and from the appearance they presented he inferred at once that inflammation of the kidneys also existed to a very considerable extent. *Post-mortem* examination confirmed this view, the greater part of the liver having undergone waxy degeneration, while the kidneys were of a very dark red colour.

Mr. Robertson also described a case in which very peculiar deposits had occurred in the spleen; they were imbedded in the substance, were white and pearly, and as hard as fibro-cartilage.

The Dinner.

The members afterwards dined together, the President in the chair, Mr. Balfour, Vice-President, Croupier, and spent a very pleasant afternoon. The principal toasts were the "Queen,"

"Prince and Princess of Wales, and the rest of the Royal Family," "Army, Navy, and the Volunteers." *Mr. Finlay* replied for the army.

The Croupier in appropriate terms proposed the "Highland and Agricultural Society of Scotland."

Mr. Robertson, in responding, said that the Highland Society had always taken the deepest interest in veterinary science, that under the late Professor Dick it had fostered and cared for it when there was no one else to do so, and had lately given fresh proof of its continued regard in the recent change in the examinations soon to come into operation. This he considered a step in the right direction; it necessitated higher acquirements on the part of the students, and would therefore be of great benefit, though he was afraid they could scarcely hope to have veterinary students so highly educated as those of the medical profession, for the simple reason that there was greater pecuniary inducement for young men to enter the latter.

Mr. Maclean in proposing "Our Schools" said that were any one to enter the Colleges and compare the teaching now with what it was formerly, they could not but admit a very great improvement, more especially in the pathological department. In addition to the plain practical teaching of Professor Dick, pathology was now taught as it should be taught—as a science, and the pathological professors did their duty to the satisfaction of every one. He could scarcely agree with Mr. Robertson that medical men as a rule were better paid than veterinary surgeons. Excepting the highest class in the medical profession, a really good veterinary surgeon, as far as he (Mr. Maclean) was able to judge, was, generally speaking, as well paid and in as good circumstances as his fellow medical practitioner, though not called on to keep up such a style and appearance. With the toast Mr. Maclean coupled the name of Professor Williams, referring in highly eulogistic terms to the professors connected with the Veterinary College, and remarking that were other professors to attend the meetings and take the same interest in Veterinary Medical Associations as Professor Williams did, it would be of great mutual benefit.

Professor Williams, in responding, said that he could endorse all that Mr. Robertson had said as to the interest taken by the Highland Society in all veterinary matters. Since his appointment as Principal of the College he had had "his little difficulties and trials," and he trusted he was none the worse, but a very great deal the better for them in every way. Mr. Menzies, the Secretary of the Highland and Agricultural Society, and other members, took the greatest interest in everything connected with the Veterinary College and whenever the examination was pro-

posed they took it up eagerly, and never rested till it was carried through.

Professor Williams, in proposing the "Scottish Metropolitan Veterinary Medical Society," said that its success, like many other similar associations, had been but limited,—many who might attend the meetings did not do so. Still he found that the best and the busiest men came, and could generally find time to come; that those who joined the Society at first remained still. There had been no hitch nor a single disagreeable word among them, and many very pleasant and profitable hours they had had together. He had always taken the deepest interest in veterinary medical associations, and though their success, generally speaking, had not been so great as it might have been, still they had done a great deal of good, and had left their mark and brought their influence to bear on the educational and many other aspects of the profession.

Mr. Maclean proposed the "Royal College of Veterinary Surgeons," referring more especially to the connection of Mr. Wilkinson with that body. As principal veterinary surgeon to the army, Mr. Wilkinson was emphatically "the right man in the right place;" a man who was truly and in every way the veterinary surgeon's friend, and he (Mr. Maclean) had often admired the position Mr. Wilkinson occupied at the meetings of the Royal College of Veterinary Surgeons, and the pertinent common sense tone of his remarks.

Professor Williams replied, remarking that Professor Dick and the Council of the Royal College of Veterinary Surgeons did not always pull together, and there could be no doubt but that at one time Professor Dick had cause, and good cause, to be at variance with them, but he did not think the course taken by Professor Dick was the most advisable one. Had Professor Dick attended the meeting of the Council, stated his case, reasoned with the members, he (Prof. Williams) had no doubt Professor Dick would have carried any motion he chose, provided it was worthy of being carried.

Mr. Comachie proposed the "Court of Examiners," remarking that the duties of these gentlemen were onerous and very responsible, and deserved acknowledgment. With the toast he would couple the name of Mr. Borthwick, of Kirkliston, than whom there was no more able and competent examiner.

Mr. Borthwick replied, stating that the duties of the examiners in his department (horse pathology) were rendered comparatively easy, by the very creditable knowledge of the subject the students of the Edinburgh Veterinary College were found to possess.

Mr. Robertson referred in very feeling terms to the late Professors Dick, Barlow, Strangeways, and Dr. George Wilson, and

proposed that they should drink in solemn silence to the "Memory of those who have gone before."

Mr. Cunningham proposed the "President, Professor Williams," remarking that it was almost needless to give expression to the very high opinion all now present entertained of his professional abilities, to their feelings of warm friendship towards him, and their sincere wishes for his still further success and prosperity.

Mr. Cumming proposed the "West of Scotland Veterinary Medical Association," as one of the oldest and largest in the kingdom, and begged to convey through their President (Mr. Maclean) now present, the kind regards and best wishes of this Society to their "brethren in the west."

Mr. Maclean replied.

Mr. Baird proposed "Our Provincial Friends."

Mr. Aitken, Dalkeith, replied.

Mr. Borthwick proposed the "Croupier, Mr. Balfour, Vice-President," and the other office-bearers."

It was discovered that musical talent of no mean order was present in the persons of Mr. Finlay, Mr. Borthwick, Mr. Maclean, and Mr. Young.

C. CUNNINGHAM,
Secretary.

Veterinary Jurisprudence.

ACTION FOR DAMAGES.

TURNING OUT HORSES AFFECTED WITH GLANDERS.

YESTERDAY, Friday, March 14, at the Bradford County Court, Mr. W. T. S. Daniel, Q. C., the judge, and a jury were occupied several hours in hearing a case in which Mr. Alfred Hartley, cooper, Wakefield Road, was the plaintiff, and Mr. Jonas Dawson, cab proprietor and innkeeper, the defendant. The action was to recover £50 damages which the plaintiff alleged he had suffered in consequence of the defendant negligently and unlawfully turning into a field at Bowling, certain horses which it was alleged were affected with glanders. Mr. Watson appeared for the plaintiff, and Mr. Berry defended the action. It was stated that the plaintiff was occupier of a field at Bowling, and paid rent at the rate of £28 per year. He used it partly for grazing his own horses, and to assist in paying the rent he let off some of the grazing to other parties. In May, 1872, Hartley had some horses in the field, and it was agreed that the defendant should turn one or two of his horses into it at a rental of £7 per head for the season. On the 23rd of May the defendant Dawson took a bay mare to turn into the field, and

on the way he called at the plaintiff's place of business, where he saw plaintiff's man, Denison. Denison observed that Dawson's mare was affected with a slight discharge from the nose and that it did not look well, and remarked upon this to the defendant, who said that the mare had got cold and would be all right in a few days. On the following morning the plaintiff saw the mare, and noticing the discharge at the nostrils he had a suspicion that it was the first symptom of glanders, which was a very infectious disease. He went to see the defendant and expressed a fear that the mare would "smittle" the other horses in the field, but the defendant said he had had a veterinary surgeon to see the mare, and it was only suffering from a cold and would be better in a week or two. Plaintiff said he had refused to take £60 for his own horse which was in the field, and he should not like it to take any disease. After that the defendant turned two other horses into the field, and on the 25th of June the defendant's three horses were found to be suffering so much from the glanders that they had to be buried in the field, and the authorities ordered that the field should be closed to prevent the spread of the disease. Plaintiff's horse, which was a young one, about the same time showed symptoms of the disease, and was now, it was stated, on the point of death. It ought, the plaintiff said, to have been destroyed a month ago, but it still remained in his stable in Wakefield Road. The plaintiff was examined at length in support of the above statement, and he admitted on cross examination that his horse, since the disease had developed, had been at one or two trotting matches. He said he had given the animal away, but would not allow the party to take it away until that action had been tried.—Denison, the plaintiff's man, having been called, *Mr. Carter*, veterinary surgeon, was examined, and stated that in June he was called in by the defendant to examine a grey horse in the stables which he found affected with glanders to such an extent that he recommended that it should be destroyed. He was informed about the other horses in the field and also examined them. He found them also suffering and they were destroyed. He described the symptoms of the disease, one of which he said was a discharge from the nose. In answer to Mr. Berry, he said that the discharge was so similar to the discharge caused by influenza that it required a very experienced man to detect the difference. The discharge would take place when the horse would eat well, look well and work well. The disease was incurable. After the horses in the field had been slaughtered, he made a *post-mortem* examination, and found from the lungs of the bay mare that she had suffered from chronic glanders, as she was much worse than the others. Mr Walker, another veterinary surgeon, was there at the time, besides other persons.—*Inspector Wood* gave similar evidence as to the *post-mortem* examination, and Mr. Collins, veterinary surgeon, deposed to the state of the plaintiff's horse, which suffered from glanders.—*Mr. Lodge* surgeon, was the next witness. He said that the bay mare was bought from him by the defendant in February, and a few weeks afterwards the defendant

came to him and said he feared something was the matter with it. Witness said he did not think there was, but he would send Mr. Walker to examine it. Mr. Walker did so and reported to him that the mare had only got a little cold. While the mare was in witness's possession he had frequently observed a running at the nose and Mr. Walker had treated it for cold. It was a good worker and he believed sound when the defendant bought it. The defendant had threatened him with an action.—*Mr. Berry* remarked that this witness was the real plaintiff in the case, being interested in it on account of the action which was threatened against him by the defendant.

Mr. Berry, on behalf of the defendant, did not deny that the defendant's mare was suffering from the glanders, and that the disease had been communicated to the other horses in the way stated; but he submitted to the jury that the defendant did not negligently and wrongfully turn the mare into the field knowing that it was suffering from the disease, and therefore he should contend that the action could not be maintained. The defendant bought the mare from Mr. Lodge in the month of February for £20, and having received a roan mare into his stables from Leeds, he observed in the latter symptoms of a disease called farcy, which was similar to glanders and equally infectious. He suspected that the infection had come from the bay mare, and went to Mr. Lodge, stating that he feared something was amiss. Mr. Lodge said he did not think there was, but would send Mr. Walker to see it. The roan mare had to be destroyed. Mr. Walker came to see the bay mare, prescribed a ball and blister for it, and recommended that it should be turned out. He said it had only got a cold and would recover in a few weeks. Believing this to be the case the defendant turned the mare into the plaintiff's field, and Mr. Walker told him that there would be no harm in putting another horse into its stable. The defendant put a grey horse there which was afterwards found to be affected with the glanders, and then Mr. Carter was called in and the horses were destroyed. He contended that the defendant had acted in ignorance that the bay mare was diseased with glanders, that he had not negligently turned it into the field, and that therefore he was not liable.—The defendant was examined at some length, and bore out by evidence the statement of Mr. Berry. He stated that he had lost six horses through the disease, and his loss in value was about £200.—*Mr. Walker*, veterinary surgeon, was also called by Mr. Berry. He stated that he had treated the bay mare when in the possession of Mr. Lodge for cold and not for glanders. It only had a cold, and it was witness's opinion that when it was in the possession of the defendant it never had the glanders or any disease whatever.

By Mr. Watson.—When he examined the mare at Dawson's he was not told there was any disease in the stable, and he did not recollect saying it would be quite safe to put another horse in the stable. Several other witnesses were examined by Mr. Berry, with a view of showing that Mr. Walker had pronounced the ailment to

be merely cold, and the defendant had sent the horse out on his recommendation.—*His Honour* remarked that it was a very singular case of doctors differing.

After *Mr. Watson* had replied on the case, the *Judge* proceeded to sum up, commenting on the evidence at considerable length. He submitted the following four questions to the jury:—1. Was the mare suffering under this disease, when turned into the plaintiff's field, to the knowledge of the defendant; 2. Did defendant represent to plaintiff's man Denison, before the mare was turned into the field, that she had only a cold; 3. Did he believe such representation to be true, and had he reasonable ground for such belief; 4. Was he guilty of negligence in turning the mare into the field under all the circumstances of the case?—After a consultation of about a quarter of an hour's duration, the Jury returned an answer in the affirmative to all the questions, being, therefore, a verdict for the plaintiff.—In answer to his Honour, the *Foreman* said they had considered the question of damages, and thought that they should be £25.—A verdict for plaintiff, damages £25, was therefore entered.—*Bradford Observer.*

POISONING OF SHEEP BY YEW.

A CURIOUS question in the law of landlord and tenant has arisen in a case in the Rolls Court. The plaintiff, Mr. Thomas Bennett Babraham, Cambridge, a tenant, claimed £580 10s. for a number of sheep and lambs and a steer and three cows, which he alleged to have been poisoned through the default of his landlord Mr. Adeane. The question between the parties then resolved itself into two issues of fact and law respectively—the first being as to whether the death of the animals had been caused in the way alleged by the plaintiff, and the second as to whether, in that case, there was any violation of duty on the part of the defendant. The plaintiff's case was that early in the spring of 1869 he lost thirty-six lambing ewes out of a flock of 250, and about 100 lambs owing to the ewes browsing on the yew trees at the side of one of the plantations on the farm; that in October, 1869, he lost 105 hoggets through their eating the clippings off the yew trees. The steer and the cows had been examined post mortem by a veterinary surgeon, and it was admitted that their deaths were caused by eating yew; but the sheep had not been so examined, though it was proved that some of them were seen to browse off the yew, and their deaths resembled deaths by poisoning. On the other hand, the yew trees had been there for years, and no sheep on the farm had ever died from eating yew before, but then it was not shown that the sheep on the farm had ever eaten yew before the occasion in question. On the point of law it was argued on behalf of the defendant that it was too broad a proposition that knowledge of possible mischief should be imputed under the circumstances, as that would make a man responsible for every mischief he occasioned, however involuntarily or even uncon-

sciously. The Master of the Rolls, however, was of opinion that the ewes and hoggets died of eating the yew, and decided in favour of the plaintiff, on the ground that as between the landlord and tenant there is an implied warranty on the part of the former that the trees and shrubs which he plants or suffers to be on the demised premises shall not be noxious or injurious to the tenant.—*Chamber of Agriculture Journal.*

OVERSTOCKING CATTLE.

Conviction of a Farmer.

At the Swindon Petty Session yesterday (March 20th) Mr. Edward Seager, farmer, of Cotmarsh, near Wootton Bassett, was charged with cruelly ill-treating a cow, by what is known as overstocking, at Swindon, on the 10th of March. The prosecution was undertaken by the Cirencester Society for the Prevention of Cruelty to Animals.

Mr. Peters, the inspector to the Society, said he was on duty in Swindon Cattle Market on the 10th inst., when he saw a cow standing by the side of a cart containing a calf. He noticed that she was very uneasy and kept trampling about, and that milk was running from the udder in a stream. The udder was much distended, the teats were dry, stiff, dirty, being covered with manure. From the appearance of the cow he concluded that she had not been milked for a length of time. The cow looked wild, and was evidently suffering much from an accumulation of milk. He called the defendant's attention to the state of the udder, and asked him to ease the cow, but he refused, saying she would not sell so well if she had not such a large udder. This was at 10.15, and the cow remained in the same state until after she was sold at 12.15. Every time she moved the milk ran away in a stream.—*P.C. Kibblewhite* confirmed the inspector's statement.

John Adam M'Bride, M.R.C.V.S., said he had heard the evidence of the last witnesses, and had no hesitation in saying the case was one of cruelty. Overstocking was one of the common causes of inflammation of the udder. Overstocking was a practice quite unnecessary, but was generally resorted to to make the udder look large, and thus enhance the value of the cow. The udder was so connected to a large number of nerves that the retention of milk in it must be very painful. Mr J. Whapham, M.R.C.V.S., gave similar evidence.

Defendant had nothing to say in his defence. He admitted that the cow had not been milked that morning, but said she had been the night before. After a long consultation the bench convicted defendant, and fined him £1 and £5 11s costs.—*Bristol Press.*

PRESENTATION TO PROFESSOR PRITCHARD.

The members of this gentleman's private class met at the Crowndale Hall, Camden Town, on Monday evening, March the 10th, and presented to him, as a souvenir, an elaborately wrought silver epergne, manufactured by Messrs. Garrard, Haymarket, and also an address, beautifully illuminated, on vellum, in old English style, by Messrs. Marcus Ward, of Chandos Street and Belfast.

The address was couched in the following terms:—

"Dear Sir,—We pray you will accept the accompanying souvenir from the members of your private class, during the sessions 1872 and 1873, as a slight token of respect and esteem, and also a mark of gratitude for the many kindnesses rendered by you to

"Your grateful pupils,

"Hulton J. Harrison, *Chairman.*

"*Committee.*

"Swainston Adamson, jun., G. Burrows,
Thos. B. Goodall, J. V. King,
A. C. Webb, F. Farrance."

ARMY APPOINTMENT.

Veterinary Department, War Office, *March* 14*th.*

Benjamin Augustus Powell, Gent., to be Acting Veterinary Surgeon, *vice* William Alfred Crow, who resigns his appointment.

OBITUARY.

We regret to have to record the death of Dr. George William Davidson, eldest son of the Rev. G. M. Davidson, of Watten, and Professor of Anatomy at the Edinburgh Veterinary College. Mr. Davidson had only very recently been elected. He was a young man of promise, and his sudden removal must be much felt by his colleagues.