THE

VETERINARY RECORD

AND

TRANSACTIONS

OF THE

VETERINARY

MEDICAL ASSOCIATION.

VOL. V.

PRICE 10*s.*

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VETERINARY RECORD,

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VETERINARY MEDICAL ASSOCIATION.

EDITED BY

PROFESSORS SPOONER, SIMONDS, AND MORTON,

ROYAL VETERINARY COLLEGE.

VOLUME V.

ILLUSTRATED BY ENGRAVINGS AND WOODCUTS.

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

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THE

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ROYAL VETERINARY COLLEGE.

THE Lectures commenced at the above Institution on Monday, October 23d, 1848. The opening Address was delivered by Professor Sewell. It was gratifying to see so many of the older members of the profession present, giving support to one who for more than fifty years had been connected with the College, and who had contributed so largely to its establishment in the estimation of the public, and advanced its best interests. The manifestation of this feeling awakened in him emotions of gratitude, and drew forth suitable acknowledgments. He proceeded to state, that it would doubtlessly be expected by his auditors that he should give some account of the origin and progress of veterinary science in this country, since it might be said he helped to cradle it in its infancy, and had watched its growth up to manhood; and it was now for those who had embraced and followed this profession to maintain it in its integrity, and hand it down both unsullied and improved to those who may succeed them.

It is true that but few authentic records, if any, furnish us with the commencement of the veterinary art, for an art doubtless it was in the earlier ages; yet it is fair to infer, that, as flocks and herds constituted the wealth of individuals in the earlier and patriarchal times, they were the subjects of disease then as now, and man would naturally resort to remedial measures for their eradication. We find, even at this day, in Australia, that flocks form the greater part of the possessions of rich individuals. The use of the horse, it is well known, was interdicted by the laws of some nations, and by others this animal was employed only in

war, pageantry, and for pleasure; and then, perhaps, he was less obnoxious to disease than at present; but as his utility became manifest, his worth was appreciated, and, becoming more domesticated, disorders of various kinds soon pervaded his frame. Asses, mules, and bullocks, were then the animals of labour.

To Hippocrates, a Greek physician, has been long assigned the honour of being the founder of the art of medicine; yet the Chinese, we are told, practised it before his time. They also possess a work of very early date on veterinary medicine, illustrated with plates, of course of an inferior character, and not unlike the representations depicted on oriental china. In the history of ancient Babylon, we read that the sick were exposed in public places, so that they might receive the opinion and advice of casual observers. Captain Ross, during one of his intrepid voyages, discovered a race of Esquimaux with whom amputation of the limbs was common. Their course of procedure has been already recorded, and there is but little doubt that somewhat similar rude expedients were adopted by our progenitors in veterinary science. It need hardly be stated, that as civilization progressed, and the arts and sciences were more cultivated, so the science of medicine advanced.

The principal therapeutic agents that the veterinary surgeon even now makes use of, as aloes, myrrh, various resins, &c. are derived from the eastern parts of the world, where physic may be said to have had its origin. The same substances the priests employed for fumigations, in sacrifices, as disinfectants, and as means for destroying vermin. Such agents are still employed in Nubia, and other adjacent countries, by the inhabitants, who besmear their bodies with these compounds to avert the attacks of insects.

It is not too much to suppose, from the skill displayed by the ancients in sculpture and other branches of the fine arts, that the surgical instruments employed by them were of perfect make and construction: still history does not record the state of anatomical science before the time of Hippocrates, who, we are informed, dissected apes in order to acquire a knowledge of the animal organism, there being a superstitious prejudice against the cadaveric section of human bodies. It is well known that Galen advocated the use of vegetable remedies. These, however, are subject to much variation in action from difference in cultivation,

climate, &c. Probably the earlier practice of physic was founded on observing the habits of animals; thus the dog eats grass, preferring the *cynosurus echinatus*, to remove that which is offensive to his stomach, and the same animal favours the healing of his wounds by frequently licking them, which acts as an excellent fomentation. And we are told that in the deserts of Africa horses in a state of plethora relieve themselves of the superfluous blood by biting the superficial veins of the shoulders, so as to allow of its escape.

Reference was then made by the Professor to older works of Columella, Vegetius, and Xenophon.

Virgil, he said, practised as an amateur in the stables of Cæsar Augustus; and in the third book of his Georgics, he describes as catarrhal influenza a disease bearing a great similitude to glanders in its symptoms and fatality. The learned poet, in the following words, informs us that it defied the treatment of cowleeches of those days:—

> "The learned leeches, failing in their art,
> Hang down their head, and silently depart."

Virgil's choice of horses and cattle testifies to his knowledge of the external conformation of animals; and as a meteorologist, he is, perhaps, not surpassed even in our day. Nor can the advantages resulting from perfect ventilation and the proper temperature of the places in which animals are kept be over-rated, since a neglect of this often becomes a fertile source of disease. After the epoch of which Virgil formed so great an ornament, the Roman power declined under the oppressing yoke of the barbarian invaders, and the sciences fell into almost total oblivion. It was not until a thousand dark years had rolled away, that with the resuscitation of science the veterinary profession was cultivated by men of any talent, among whom rank pre-eminent Ruelli in Italy, Solleysel and Lafosse the elder, in France. Contemporaneously with these able inquirers, a celebrated Spanish author wrote on Glanders; which disease, he said, was brought to Europe by Columbus in his voyage from America. There is reason to doubt the correctness of this statement, notwithstanding it is supported by the powerful argument, that Columbus's horses being crowded in ships of imperfect construction, were in a situation well adapted to engender that virulent disease: he is said to be the first person who landed horses in that country. In England, the rising period of veterinary

science is signalized by Snape, in the time of Charles II, and by the works of Gibson and Bartlett. About the same period Osmer, Bridges, and Clarke of Edinburgh, were known as eminent practical farriers and authors. Other gentlemen soon after devoted their talents to the improvement of the veterinary art, and from among the more celebrated of them may be selected the Earl of Pembroke, the Duke of Newcastle, and Mr. Strickland Freeman, who wrote a work on the foot of the horse, illustrated with very excellent plates.

In the year 1761 France took the lead of all other nations, by establishing, in the environs of Lyons, a veterinary school, to which M. Bourgelat was appointed Professor. In 1764 this gentleman was appointed principal teacher at the newly established school at Alfort.

At a more recent date, a school for cattle practice was founded at Toulouse; and veterinary colleges have since been established in Berlin, Vienna, and Hanover. Bavaria and Egypt have also given birth to institutions of the same kind; and of late years a school has been formed in Moravia, for the instruction of shepherds.

It was in the reign of George III that an establishment for the study of veterinary science was founded in the Electorate of Hanover, although the extensive empire of Great Britain was not then provided with one. This deficiency attracted the attention of many gentlemen, among whom rank foremost Grenville Penn, the Earls of Grosvenor, Morton, and others: the first-named, and who has only of late paid the debt of Nature, was the originator of this College. His attention was first drawn to the veterinary profession by an accidental circumstance in a tour through France. When waiting for post-horses in that country, he visited a veterinary school, and was at once struck with the necessity of a similar establishment in England. By the mutual co-operation of several distinguished gentlemen this College was founded, and to it St. Bel was appointed the first professor. He soon after died, and was succeeded by Messrs. Coleman and Moorcroft: the latter retired, not long after the appointment, to his private practice in Oxford-street; and he subsequently went to India, where he rendered most valuable service to the East India Company. He died of fever brought on by over-exertion in the pursuit of his professional avocation. In later years, other veterinary schools

were established in Dublin and Edinburgh, and Professors appointed to them who had been educated at this Institution.

Veterinary practitioners of eminence are now located in the provinces, and many of our colonies are likewise supplied with them. In the army they rank as commissioned officers; and the Hon. East India Company have also availed themselves of their services. Many other members of the profession render great benefit to society, in the various companies and firms by which they are employed. All these are highly honourable testimonials to the founders of this Institution, and also to those who have filled the important office of instructors.

In an early appeal to the public, were stated the principal objects this Institution had in view. One was that of superseding the almost invariable use of the actual cautery and other severe remedies, such as boiling oil and lead, which were occasionally poured into sinuous wounds. How far we have been enabled to improve upon this state of things all those whom I have the pleasure to address are competent to judge.

Other operations of equal cruelty have been also discarded by the educated veterinary surgeon, and who has, in great part, discontinued the barbarous customs of cutting off tails and nicking, cropping the ears, excising the membrana nictitans, and burning the palate in colts, in whom the redundance of blood in that part, as the concomitant of teething, was considered a disease.

The public have received additional benefits from those veterinary surgeons who have published works on different divisions of this science. The various authors were then enumerated by the Lecturer, who proceeded next to speak of the different modes of shoeing the horse.

Mr. Jas. Clarke introduced a seated shoe, which is to this day called the Edinburgh or Scotch shoe. The jointed shoe of Mr. Bracy Clark was expected to prevent all the diseases of the foot of the horse; but it has not been found available for daily use, although a very useful adjuvant in the treatment of many diseases to which the foot is liable. Lately many other novelties have been instituted in the practice of shoeing; but they are not so eagerly sought after as they once were, since the number of lame horses is greatly diminished. Mr. J. Turner's unilateral shoe has gained considerable and well-merited credit; but it requires to be very carefully nailed on, or it is liable to be thrown off.

Different plans of shoeing are pursued under various circumstances and in different countries. In Arabia, Turkey, and Persia, the widely covered shoe is the best adapted for the protection of the horse's foot, and it is a truly sensible plan.

In Algeria and Morocco, portions of fresh bullocks' hide are interposed between the shoe and the foot, so as to act as an excellent preservative against the heat of the climate.

In Siberia the horse's shoes are adapted to their working on the ice, by being furrowed, as is occasionally done here to prevent slipping on the wood pavement.

In Iceland, at the present day, I am informed that horses are shod by the priests. Among the Cossacks horses are not shod at all; and in Saxony they go without shoes from the month of April until October, when the wet season commences, so as to render shoeing indispensable. In Australia, and many parts of Africa and India, no shoes are employed.

In England the public have derived no little advantage from the improvements wrought in the art of shoeing carried on under the management of skilful veterinary surgeons, by whom not only are many diseases, such as canker and others, cured—these being formerly deemed irremediable—but both those and other maladies, as thrush, corns, &c. have become far less frequent, owing to the superior treatment the foot of the horse receives, by which it is rendered less liable to disease.

That our regiments of cavalry have been considerably benefitted from the scientific plans adopted by their respective veterinary surgeons is proved by a statement once made to me by the late Mr. Bloxam, of the First Life Guards, that he lost only one horse in eleven months; and Mr. Wilkinson, V.S. to the Second Life Guards, assures me he has not lost a horse in his regiment for a longer period than this. Mr. Battersby, V.S. 3d Light Cavalry, Hon. East India Company, a short time since also informed me that, in his regiment of 800 horses, he has not lost a horse, except from the casualties of war, during the like period; and Mr. Burt, of the Artillery, states, that for years he has not known an instance of glanders occur.

Among other benefits that have followed the cultivation of veterinary science may be quoted the treatment of glanders, the "opprobrium veterinarii."

Glandered horses were formerly indiscriminately destroyed; but

we are now enabled to restore a considerable number of those cases by administering the sulphate of copper in large doses in a state of solution. By this means, I hesitate not to say, several cures have been effected; and I have now in work three horses which have been rescued from destruction by this treatment being adopted in conjunction with trephining the frontal sinuses and passing setons through the openings made. Two of these were cases of that kind usually denominated chronic glanders. True or acute glanders, so called, originates in the lungs, and is followed by ulceration of the air-passages; and should the disease be of long standing, so that the lungs are much involved, it is then of no use to attempt the eradication of the disease.

The several duties of the different teachers appointed in the school were then adverted to by the Professor, and each division received elucidation from him. Under the head Pathology, and from among the diseases accidental to the foot of the horse, he selected the foot-joint capsule disease, for which "Neurotomy" has been so often successfully resorted to by him, and he recommended the operation to be performed below the fetlock. For splints and exostoses of various kinds "subcutaneous periosteotomy" would be found to effect more good than any other remedy. In the employment of the knife by the surgeon would be evidenced the man of scientific and anatomical knowledge, and hence the necessity of anatomy being made the foundation stone of his studies. Lithotomy is another affection that calls forth both the judgment and the science of the educated practitioner.

That the blood itself is often the subject of disease, he stated has been proved by experiment. This fluid had been withdrawn from a horse labouring under glanders, and transfused into a healthy animal, which soon after became affected with the same malady, and died. In the circulation of this fluid, impelled through its conduits by the contractions of the heart, giving rise to the pulse, some errors as to numbers have crept in. It was customary to say the pulse of the horse was forty. He had found the average to be but thirty-two in the minute. It ranged between twenty-eight and thirty-six in the healthy animal. The number of respirations within the same period was also placed too high, it being only six. In other animals, as the bullock and the sheep, both the pulsations and the respirations were likewise made too frequent. The pulse of the bullock is between fifty and sixty, the

respirations about eight. The pulse of the sheep between sixty and seventy, and the respirations twelve.

"Roaring" is a disease of the air-passages. At one time it was stated to depend upon a band of lymph being thrown across the trachea. But it is well known to result from several causes, and among them distortion of the windpipe is a common one, this being induced by tightly reining-in the animal; also from a loss of power in the muscles lining the trachea and the bronchi. Other affections were cursorily reviewed by the Lecturer, who, in closing his address, adverted to emigration, now so actively going on among all classes of the community; and stated that he had known the sons of those following the learned and liberal professions go out as cultivators of land or breeders of sheep. Some of these having previously attended a course of lectures at this Institution, had informed him that they received considerable advantage from so doing, by being able to treat their flocks and herds when diseased, as no practitioner of veterinary medicine lived near them: he therefore thought it extremely desirable that all those who intended sojourning in those parts, and becoming breeders, should avail themselves of this opportunity of acquiring knowledge. He spoke from personal experience, having had repeated applications made to him from Australia, and New Holland in particular, respecting the sending out of veterinary surgeons. In South America a similar want is experienced, and also in some of the West India Islands. The large and populous cities of India also open a fair field for enterprise.

The Professor, in conclusion, offered suitable admonitions to the Students as to their conduct while pursuing their studies, which he believed would much influence both their future prosperity and happiness; and he added, "It is possible that, at my time of life, I may not again have an opportunity of addressing you within the walls of this theatre; nevertheless, I am convinced—and I rejoice in the knowledge of it—that the duty of instructing you has fallen into the hands of those who will exert themselves to the utmost for the advancement of your interests and that of the profession; and my sincere hope is, that by steadiness of conduct, by perseverance and attention, and gentlemanly demeanour, when you go forth to the world you will be esteemed by the well-thinking and the wise, and reap your just reward."

COMMUNICATIONS AND EXTRACTS.

On Intussusception in the Horse.

Clapham Common, Nov. 8, 1848.

Dear Sir,

The accompanying case is from an American paper, and has been sent to me.

The popular notion, of not allowing a horse suffering from gripes or colic to lie down and roll, I believe to be well founded; though the consequences resulting from a horse doing so are not generally understood. The unnatural positions then assumed, combined with the struggles, I believe to be the most common cause of introsusception; the spasmodic action favouring the occurrence of the malady.

I am, dear Sir, your's truly,

F. C. Cherry,

Principal Army Veterinary Surgeon.

W. J. T. Morton, Esq.

Case of Intussusception in a Horse.

By G. Turner, *V.S., Montreal.*

If you do not think it derogatory to your valuable *Medical Journal* to notice communications of cases affecting that noble animal the Horse, I shall be pleased by your inserting the following:—

In the early part of May last, I was called on to attend a chestnut horse, five years old, of ordinary stature, then labouring under an inflammation of the parotid and submaxillary glands. This affection is vulgarly termed by the French "La Gourme," and is identical with mumps in the human species. In this case the inflammation ran on rapidly to healthy suppuration, and every thing bid fair for a speedy recovery; when about the tenth day this animal assumed a very strange appearance, and the movement of his limbs became very uneasy, or, as we term it, he was suddenly

affected with great stiffness in his legs. This could not easily be accounted for, inasmuch as he had a first-rate new stable, well ventilated, and the weather during his whole illness had been very temperate, and even warm. To be sure, he had not left his stall since the first day of his being taken ill; but that could not account for this new feature in the case. However, he was ordered a little walking exercise, after which he seemed to improve and to feed as usual. In the evening of the same day, he again became very stiff, and on applying my hand to the inside of his thighs, I found his flexor muscles hard and cramped: the circulation did not appear in the least affected, therefore, I simply ordered hard rubbing and a warm antispasmodic draught. Instead of finding him better the next morning, he was much worse, and had been kicking and rolling during the greater part of the night. The spasms now seemed to have extended to the bowels, whereupon I had him removed to my own premises, and placed in a large well-ventilated box, where he was copiously bled, clystered, treated with powerful antispasmodics internally, and epispastics externally. Prostration now set in rapidly, and he ultimately died in a strong convulsive struggle thirty hours after the first appearance of the spasmodic symptoms. A post-mortem examination was made at the Montreal dog-kennel, on the same day, in presence of the owner, my neighbour, Mr. Mason, and two medical gentlemen of the first standing in their profession.

On opening the abdomen, the intestines, generally, were congested, and here and there exhibited very dark patches. Fluid to the amount of a gallon or two, of a clear serous character, was effused into the peritoneal cavity; all the glandular organs were in a perfect state, and free from congestion. One portion of the ileum appearing more extensively congested and distended than the rest, was cut open, when a considerable quantity of serum escaped, and an intussusception was discovered. This fully accounted for the unyielding character of the symptoms; but what was our astonishment when, on examining the intussuscepted portion, we measured not less than sixteen feet four inches of the intestine composing it.

The above case is of valuable practical importance, shewing the suddenness with which spasms of the extremities may be transferred, or extend, to the bowels; also, that in the horse, as in the

human subject, such an affection runs its course to a fatal termination in the same period of time, and before the setting in of inflammation. Such a state of the intestine would, in the human subject, cause, and incessantly keep up, vomiting; but in the horse, it is known that the peculiar conformation of his stomach forbids this ever occurring; wherefore, the deceptive character of this disease in the horse is very great, and the more so when we further take into account the usually large contents of the colon, which unloads itself spontaneously, or it is effected by back-raking. In short, we have in the horse no other symptom indicative of intussusception but such as may accompany ordinary colic, and as this latter disease is very common in this animal, the veterinary surgeon has to be very much on his guard in not mistaking the one for the other; for although it be admitted that the treatment for colic is also applicable to intussusception, he must not consequently infer that the necessary treatment of the latter is always applicable to the former.

On South American Horses.

September 29, 1848.

My dear Sir,

Having been interested about different breeds of horses for the Honourable East India Company, either for remount or for breeding, or for both, I some time ago wrote to a friend who had lived in South America some years, for information about the horses of *that* country: the enclosed is his answer, which you may give a place in your Journal, should you think it worthy the room.

My friend, you will perceive, makes the candid (and *unusual*) acknowledgment that, though he has had much *traffic* in "horse flesh," his knowledge of the animal is very limited; any imperfections, therefore, on his part are excusable. Nevertheless his remarks must be looked upon as constituting a very good general account of the horses of South America.

The horses in that country being possessed of very "tender

mouths," is similar to what is the case in all semicivilized countries. It would appear to be an anomaly to some travellers; but no wonder at all to those who examine the *serrated* bits.

I remain, your's very truly,

T. Aston, V. S.

To W. J. T. Morton, Esq. Madras Cavalry.

"With reference to the subject therein referred to, I fear I cannot give you that satisfactory information you require. I have during my sojourn in South America had a great deal of traffic in 'horse flesh,' but my practical knowledge of the animal is very limited. I found the horses of Chili to be superior to those of Peru, both in appearance, strength, and action. They (the Chilian) are generally smaller than the English horse, and have a very beautiful appearance, approaching to something like the dray horses used with us; they are bony, and universally possess a property (highly esteemed by the Chilians), a broad chest. I considered them somewhat vicious, though the 'Guasas' pride themselves on being good trainers. They have a custom of training all first-rate horses to jump off at the time of mounting, and with persons unaccustomed to this, accidents often occur, and to which I have, on many occasions, been an eye witness. I cannot give any reason for this custom. They are very 'tender mouthed,' from the severe bit used in this country, and which you may probably have seen or heard speak of; so much so, that a horse at the height of his speed can be checked with the little finger. It is a most beautiful sight to see with what quickness they obey the rein, the slightest check of which brings them completely on their haunches.

"They never commence to train them till they are four years of age and upwards, and to this circumstance I attribute their lasting qualities. The journey between Santiago and the port of Valparaiso, a distance of thirty-three leagues, over an indifferent road, with two very high mountains to pass, is daily performed, *on one horse*, in ten to twelve hours.

"During my stay in Chili, the 'Mary Ann,' a large East India ship, sailed from Talcalmano (a port in Chili, to the southward of Valparaiso) for New South Wales, with a cargo of horses and mules, but owing to the very tempestuous weather she encountered, she threw the whole overboard, and, I believe, arrived at

her destination without a single animal on board. This is the only shipment from this country I ever heard of. If you should entertain any serious intention of possessing yourself of the Chilian breed, I would recommend the southern parts of the country, from whence the best horses are always procured, say Concepcion ; and a most celebrated place for first-rate nags is Raneague, about twenty-five leagues to the southward of Santiago. The price of a good horse is from four to six doubloons* ; but much higher prices are paid, and I have known as much as thirty doubloons paid for an entire horse : the generality are, however, ' cut,' and mares are never used for the saddle, the natives having a prejudice against them. Their daily food consists of clover, with a couple of feeds of chopped straw, and oats or Indian corn, and on which they can stand any work. Owing to a peculiarity they have of raising and throwing out their fore feet, swellings of the fetlocks are very common ; but I never found this circumstance interfere materially with them until very aged.

" The most general colour throughout Chili is dark bay and brown ; there are also a great many greys and duns, but few blacks.

" In Peru I have had and seen some excellent horses, and capable of very heavy work ; but I do not like them nearly so well as those of Chili, nor do I think the breed of the former to be compared with that of the latter country : they are quite different, and generally have but one pace (ambling, I think it is called), and are only fit for ladies and long journeys.

" Salta, a city under the government of Buenos Ayres, is a celebrated place for horses, of which I have seen some very first-rate ones, and, being a nearer port (say Buenos Ayres), could be procured at less expense."

On Shoulder Lameness.

By Mr. J. Barlow, *M.R.C.V.S.*

To the Editors of " The Veterinary Record."

Gentlemen,

In the " Veterinarian " for July last, there is a paper on Shoulder Lameness, by Mr. William Percivall, Editor of that Journal, on which I made some remarks in the September

* A doubloon = 2 pistoles ; a pistole = 17 shillings.

number of the same periodical, in the hope that Mr. Percivall might be induced again to notice a subject to which I conceived he had not done justice. Instead, however, of offering any further remarks on the nature and symptoms of some shoulder lamenesses which I mentioned as unnoticed by him, he—taking advantage of an ambiguous sentence in his former paper—endeavours to shew that I have misinterpreted his meaning to suit my own purpose,—that of finding fault. Not wishing to be so misunderstood, I wrote a short explanatory note for insertion in the October "Veterinarian," and in it again explicitly called Mr. Percivall's attention to the varieties of shoulder lamenesses. Instead, however of appearing in print, as I expected, the paper was returned to me with the intimation that "The Editor of the 'Veterinarian' enters into no controversies." I immediately informed Mr. Percivall of my intention again to notice the subject in another periodical; and now trust that the more liberal Editors of THE VETERINARY RECORD, will afford space for the insertion of the following short article, as I have the happiness of feeling assured it will meet with more kindly reception and more extended notice in their pages than in those of a contemporary. Permit me, however, to remark in passing, that I cannot see how "The Editor of the Veterinarian," can afford to forego discussions interesting to the veterinary public, or why, in the august office of "Editor," there is any exemption from being drawn into controversy to which his own writings may fairly expose him. When a person, confessedly useful so long as he industriously confines himself to the compilation and expression of the opinion of others, should so far venture beyond his appropriate province as to aim at *originality*, he cannot blame the public for questioning his authority on subjects with which his own statements shew he is not practically familiar.

It is not my intention to write any thing like a systematic article on shoulder lamenesses; but I intend to confine my remarks mainly to those portions of the subject to which I originally endeavoured to recall Mr. Percivall's attention, all further satisfactory notice of which he somewhat ungraciously evades in his foot note appended to my paper.—(See *Veterinarian*, September last).

Throughout the whole of Mr. Percivall's article there is very little distinction drawn between *lamenesses* as such, and the various

morbid conditions of the shoulder of which it is but a *symptom*. It is said that Solleysell's description of the movement of the leg, " includes pretty well all observation since his time has taught us concerning it." The peculiarities of this movement are stated to consist in the horse casting his leg outwards—in making a circle with it " instead of advancing straight forward," or, in the words of the Editor, and *horse folks*, he " cannot get it forward," or " brings it forward with a sort of sweep, and perhaps some trail of the toe along the ground as well." It is insisted on, that " action is our great guide in directing our attention to the shoulder as the seat of lameness." In short, there is lameness, which, from some peculiarities, and as a symptom, leads us to infer that there is some disease in the shoulder. But, is this lameness always of the same kind? or, does it not vary, and by its changes of character afford us some indication as to what part of the shoulder is the seat of injury? And again, are there no other *great guides* to assist us in forming a just conclusion?

For any thing which Mr. Percivall states to the contrary, one might suppose that in articular disease of the joint—in sprain of the flexor brachii, or sprain of the antea and postea spinati—the movements of the limb to be not only identical, but that they are almost, if not the only, distinguishing indication of the seat of disease. The symptoms of " shoulder lameness" to which Mr. Percivall mainly confines himself more especially denote sprain of the flexor brachii. This muscle being concerned in raising and flexing the limb below the shoulder, on being sprained, as it not unfrequently is, at the point where it passes at an angle by means of a synovial bursa over the anterior articular processes of the head of the humerus, will be kept as much in repose as possible during progression, and instead of the usual flexion, we have outward dragging of the leg, frequently with the toe along the ground. Yet are there no additional symptoms of sprain or injuring of this muscle, and of its fibro-cartilaginous pad? or, what is there in the symptoms alluded to, to distinguish this affection from articular disease of the joint?

Mr. Percivall seems to put little faith in tests such as flexing the limb backward and forward; and, if we may judge from his silence on the subject, seems to attach even less importance to the external swellings, or heat and pain detected by pressure, as in-

dications of the locality of the mischief. It is true, that the flexor brachii in the position where it is mostly strained, is covered by the levator humeri and skin; yet the latter muscle is not so thick as completely to obscure the outline of the flexor, or to prevent pressure being made in the direction of the articular groove over which it passes, so as to elicit pain, which is a most distinctive evidence of its being injured or diseased. Increased heat is sometimes felt at the point of the shoulder, but is not so uniformly present as the indications of pain during action, or on pressure being applied first to one shoulder and then to the other. In severe cases of sprain there is perceptible swelling, which in great measure depends upon the accumulation of synovia in the bursa before mentioned.

Mr. Percivall states that he has described disease of the shoulder-joint through a quotation which he introduces from Leblanc. On referring to it (*Veterinarian*, September, p. 359) I find it merely embraces an account of the *post-mortem* appearances, and is introduced as such. In writing a professedly systematic article on any given disease, it is usual, however, with most authors to say something regarding its symptoms and nature. Perhaps, however, our author, judging from the proximity of the shoulder-joint to the synovial bursa of the flexor brachii, may think it immaterial which of the two is the situation of the ailment, as treatment applied to the one may, in all probability, have some influence on the other. In fact, he may have reason to be satisfied in coming even *so near* the seat of mischief, as I find in a case of elbow lameness he applies remedies to every joint in the limb except to that really requiring them. A knowledge, however, of symptoms indicating articular disease of the shoulder-joint will be found of much importance, inasmuch as when such a condition exists the case is generally far more serious than one of sprain of the flexor brachii. Again, in this instance our "*great guide*," the movement of the limb, will not serve us in fixing with certainty on the precise seat of the disease, for there is the same disinclination to move and bend the joint as in the former instance, with the occasional casting of the limb outwards and dragging of the toe. But in articular disease with abrasion of the cartilages, there is an accumulation of vitiated synovia within the capsular ligament, and from the continuance of the inflammatory action, resulting partly

from the rough articular surfaces rubbing on each other, the various changes take place on them, and involving the capsular ligament, to which the notice of Leblanc applies, and with tolerable correctness.

But to render the diagnosis of the disease more certain, it would have been well had Mr. Percivall informed his readers, that above the large external tuberosity of the head of the humerus, with the antea-spinatus before and the postea-spinatus behind, both muscles meeting at the termination of the spine of the scapula above, there is inclosed a somewhat triangular-shaped pit or depression, at the bottom of which lies the outer part of the capsular ligament of the shoulder-joint. The ligament is naturally so loose and capacious as to admit of great distention from the accumulation of synovia and effusion, a condition certain to occur under the existence of articular disease; and as it is externally covered by little else than fibro-cellular tissue and skin, it can, under such circumstances, be readily felt from without. Pressure applied in the direction of this ligament will also cause pain so different in situation from that existing in injury of the flexor brachii, as materially to assist us in forming a correct opinion with reference to the existing disease.

Mr. Percivall states that, with regard to "shoulder slip," the phrase is too little known in the south to require any mention. It is true enough that the same diseases are known by different names in various parts of the country; and such may be the case with shoulder slip, but this does not alter the fact, that injuries, with subsequent atrophy of the antea and postea spinati and teres externus muscles, which the phrase is intended to denote, may occur in the "south" as well as elsewhere. From inquiries on the subject, I can venture to say that there are few veterinary surgeons but have seen cases of this description; and may add, that I have myself, when in the "south," seen various instances of the kind.

It most frequently occurs in young horses, especially when first put to the plough, and where it is the practice to work them abreast. As the off-side or furrow horse is most commonly affected, the disease seems to be in great measure induced by a writhing gait in and out of the furrow, before the animal becomes accustomed to the step best adapted for the draught of the plough. It does, however, occur in carriage and other horses; and all kinds of

work causing an irregular distribution of weight between the fore extremities will tend to produce the affection in that shoulder which has the greatest stress to sustain. This condition is, in the first instance, often accompanied by visible external swelling attended by pain, immediately outside and extending above and below the shoulder joint. The "movement of the limb" differs altogether from that characterising disease of the joint, or flexor brachii. Flexion and extension are, in many cases, tolerably equally performed; but when weight comes upon the shoulder, the head of the humerus rolls considerably outwards. In some cases the swelling and pain occurring in the first instance are so slight as almost to elude notice, and it is only by subsequent lameness resulting from atrophy of the muscles that they attract attention. The spinati muscles, with their tendons, constitute lateral supports to the shoulder joint during its flexion or extension, and whilst passively supporting the weight of the trunk. But when, in consequence of rupture, the fleshy fibres lose their tendinous connexions, and afterwards undergo more or less absorption, the muscles cannot retain the head of the humerus in its natural position, and the characteristic rolling motion occurs which has been described.

Mr. Percivall seems to place little reliance on the "wasting of the shoulder" as a symptom of disease, and asserts that "it is but a *remote consequence of lameness*, which may be in the foot or leg, and not necessarily in the shoulder." It is true that in lamenesses occurring in some parts of the limb for a considerable time there is apparent shrinking of the muscles of the shoulder, in consequence of their action being changed and constrained; yet in such cases the wasting so called is not confined to two muscles, or at most to three, as in shoulder slip, but extends to the general fleshy substance of the shoulder and limb. I could scarcely think it possible for a veterinary surgeon to mistake such a wasting attendant, for instance, on chronic lameness in the foot, for that evident local wasting of the muscles covering the dorsum scapulæ, and connected with the intrinsic nature of shoulder slip so far as to constitute the essential condition on which the peculiar lameness depends, and not its "remote consequence." Yet it seems these distinctions may be overlooked, not only by grooms and farriers, but by such of our professional brethren as seton the frog,

blister the knee and shoulder to cure elbow lameness, and then destroy the animal to find out the seat of disease.

In support of the statements I have made regarding the different localities of disease in the shoulder, of which lameness is but a symptom, I shall at any time feel most happy to shew Mr. Percivall, or any of our professional friends who may favour us with a call, numerous morbid specimens and their history, many of which have been years in the museum here, and are none of them of *foreign growth.* In some there is disease of the flexor brachii, such as simple sprain with abrasion of its cartilaginous pad; in others, its tendinous fibres are raised into shreds from friction against the abraded surface of the articular processes of the humerus, and especially, in one instance, there is bony matter deposited in the cartilaginous pad itself, *without, except in the latter case, any disease in the shoulder joint.* Again, on the other hand, there are numerous specimens shewing every stage of articular disease *in the joint,* from simple abrasion of the cartilages, to caries and abrasion of the bones, and even anchylosis between the scapula and humerus. Although, in some aggravated morbid affections occurring in the shoulder joint, the flexor brachii and its bursa may be involved, and *vice versâ,* yet the two synovial cavities being distinct and separated, very extensive disease may occur, and be confined to one without affecting the other. As shewing again that shoulder slip (so called) consists in rupture and subsequent wasting of the spinati and teres externus muscles, and that the peculiar lameness depends on such condition, I shall also have great pleasure in supplying Mr. Percivall with the *proof,* in living animals, at any time he may feel disposed to enrich his writings with the results of practical investigations in place of quotations from Solleysel.

In the June "Veterinarian" there is a case of *elbow lameness,* in which the prominent symptoms of that affection appear to have been well developed; yet some of the most decisive tests for fixing with certainty upon its real situation never seem to have been put in requisition. The poor patient was a martyr to various surgical enterprises for something like six months;—to learn with what result, read the following pathetic detail:—"Reduced as he was to a state of crippleness, to disable him even from walking about to get his own living at pasture, and evidently in exquisite pain

every time he put forwards his fore limbs in action, still it was not without reluctance and regret that, in the month of March 1845, I came to the resolution to have an end put to his sufferings, which every means we had made trial of had signally failed to arrest or relieve." On the foregoing case, Messrs. Editors, I may be disposed to offer some remarks at a future time; but for the present will only express my regret, that the measures taken, it is said, to "arrest or relieve" the disease, consisted so much of what is confessed to have been "hit or miss treatment," were even that discreditable phrase correctly applied to the case in question, which I submit it is not. The only part which required treatment, yet withal *was missed in all treatment*, was the elbow joint, while every other sound joint in the limb was subjected to ill-directed and unjustifiable torture.

I remain, Gentlemen, your's obediently.

Edinburgh Veterinary College, Dec. 2, 1848.

Effects of Alsike Clover on Horses.

By Mr. Edwin Taylor, *M.R.C.V.S.*

Dear Sirs, *Bury St. Edmunds, Oct.* 23, 1848.

Perceiving in the last number of your Journal, p. 345, an account of the effects produced by alsike clover on horses, recorded by Mr. J. Carter, I have thought the following would be acceptable to your readers, as corroborative of the statements made by him.

I am,

Your's respectfully.

On the morning of the 15th July a horse was sent to our infirmary from a farmer, reported to be ill. The symptoms were dulness of the head and eyes; all the visible mucous membranes extremely yellow, as if the animal was affected with an acute attack of jaundice; the lips swollen, the cuticle peeling off from the tongue, the buccal membrane covered with blisters, and a large quantity of saliva flowing from the mouth; the pulse was accelerated, and the bowels slightly constipated. I at once made inquiries of the man respecting the nature of the food the horse

had been partaking of, when he informed me that it had been eating a new sort of clover, and added, that they had three or four more horses at home that were not quite well; but he had no instructions to request me to look at them. It immediately occurred to me that the new clover was the cause of this disease; my endeavours, therefore, were to rid the system of this agent as soon as possible. I bled the horse to the amount of three quarts, and administered a bold dose of calomel and aloes. Before the close of the same day, a messenger came, desiring me to attend directly, to see the other horses that were ill at home. When I arrived, I found eight others all affected with precisely the same symptoms as those recorded; my treatment consequently was the same with those as it had been with the first one. The bowels of each of them responded freely to the medicine, and the next day the pulse was diminished in frequency, and the general symptoms were much relieved. The cuticle, however, peeled off the tongue so much, as to leave the appearance of an extensive slough having taken place. This, with the blisters inside the mouth, was dressed with a solution of alum, and in a short time got well. By careful nursing, and the administration of mild diuretics occasionally with alteratives, they appeared to be gradually recovering, and some quickly did well; whilst others, instead of progressing favourably as was anticipated, underwent an unexpected change: their legs became considerably swollen, and then broke out with the most confirmed grease, the hair peeling off all the way down the leg from the knee and hock, and also on the forehead and nose. Some of the horses were ill about a week, others ten days, and a few a fortnight. Ultimately all recovered.

The symptoms that presented themselves in these cases were similar to Mr. Carter's, with the exception of the abdominal pain and the swelling of the legs. Mr. Carter also states, that some sheep were turned into the layer, but they would not eat any of the clover. On this farm the sheep had it mown for them, and they fed from it for some time without the least evil resulting from it.

The clover that the horses partook of was in a very forward state of growth—in fact, going to seed; and soon afterwards it was hurdled off and kept for that purpose. The sheep partook of that which was less forward.

A large farmer in this neighbourhood last year grew some of this alsike clover; but he had such a bad crop, that he determined not to feed his cattle with it, but to save it for seed, which perhaps it was lucky for him he did. I am decidedly of opinion that the disease under which these horses laboured was produced by this new clover; and therefore the sooner these cases are made known to the public the better, as they may be the means of preventing others from growing so dangerous a variety of clover, by which their horses may be affected in the same way.

Case of Endocarditis in a Bullock.

By the same.

Dear Sir, *Bury St. Edmunds, Nov.* 24, 1848.

Having accidentally met with a specimen of a fibrinous tumour of the heart, I have sent it to you, thinking it might prove somewhat interesting, it being the first of the kind I have seen. Its history, I am sorry to say, is brief. A bullock, belonging to an employer of our's, was found dead the other day, its horn being wedged under a piece of wood in the farmyard, and it was from this conjectured that he had broken his neck. On examination, however, the heart was found to be highly diseased. Within it, I believe, is a fibrinous tumour, partly attached to both the auricles, and which, when put in its proper place, fills up the entire space of the left ventricle.

I should also tell you that the lungs and the liver of the bullock were both stated to be diseased, but, as I did not see them, I am not able to say in what peculiar state they were.

The proprietor informs me that he had never noticed any thing particular in the breathing of the animal during life, or any indication of ill health; but all the other bullocks had taken a dislike to it, and always drove it away from the manger until they were satisfied; therefore it used to look rather thin. I saw the place to-day where the animal was found dead, and my opinion is that it must have suddenly dropped down dead, and, in falling, thrust the horn under the piece of wood as it was found; it being

merely a piece laid down at the entrance of a shed, to keep the straw in. Moreover, when it is taken into consideration the effect which a tumour of that description must have had on the circulation, it being so completely embedded in the ventricle of the heart, I think it is but fair to infer, from all I can learn, that the tumour was the alone and immediate cause of death. The man had fed the bullocks only a quarter of an hour before, and they all appeared well.

Believe me, your's truly,
EDWIN TAYLOR.

To J. B. Simonds, Esq.

[A case very analogous to this will be found in the last volume of the RECORD, page 34, communicated by Mr. T. W. Gowing.]

CASE OF ASCITES AND HYDROPS PERICARDII IN A DOG.

By the same.

Dear Sir, *Saturday evening, Dec.* 9, 1848.

I HAVE sent you by train another morbid specimen, which you will perceive upon inspection is one of hydrops pericardii, and which I took from a dog this morning. I have allowed it to remain in as perfect a state as possible, to give you a better opportunity of inspecting it. The history of the case is as follows:—

About ten days since I was requested to attend a favourite Newfoundland dog that was reported to be dull and off his appetite; he had also been very costive for some days. When I saw him he looked very dull, had a staggering gait, and was unable to void any fæces, from their being in such a hardened state; the body appeared full and tympanitic, but I felt no fluctuation, and I thought the fulness was caused by the animal's not having dunged for so long a time: I therefore gave him some castor oil, with syrup of buckthorn, threw up enemata of warm water, and afterwards removed some hardened portions of dung. The next day the animal appeared a little better, looked more lively, and partook of food; but as the bowels had not responded freely, I repeated the purgative, and continued the use of the clysters.

The next day he dunged freely, and I thought he would now do very well, the appetite having returned. I made no further examination of his body, as I thought all the symptoms arose from the costiveness which had existed so long. However, yesterday I was summoned again in great haste to see him, as he was considered to be much worse. The symptoms were again nearly the same as those reported—extreme costiveness, with almost an entire loss of action in the hind legs. But still I confess it never struck me that dropsy of the abdomen existed. I gave him some more castor oil, and threw up more clysters, and afterwards took a large quantity of very hardened fæces from the rectum. My prognosis was unfavourable, as I did not expect to see the animal alive in the morning. Nor was I mistaken: he was left much worse about nine o'clock last night, and found dead this morning.

Post-mortem appearances.—Upon laying open the cavity of the abdomen, a large quantity of serum escaped—almost half a pailful. The mucous lining of the intestines was much inflamed, and there was no food in the stomach or fæces in the intestines, except that in the rectum were found a few very hard masses. The liver was much enlarged and inflamed, its structure being easily broken down with the finger.

Upon opening the cavity of the chest, I was surprised at seeing what at first sight appeared to be a large tumour pressing against the diaphragm, but, upon examination, I found it to be the pericardium enormously distended with fluid, as you will see it. I have not weighed it, but it appears to me of great weight. The dog was about twelve years old, and I should think the disease must have been coming on for some long time.

I am your's truly, and obliged,

To J. B. Simonds, Esq. EDWIN TAYLOR.

[The weight of the heart, with its pericardial sac and contents, was six pounds avoirdupois. On laying open the pericardium, two quarts of a coffee-coloured fluid escaped, having an acid reaction. The superior part of the pericardium, covering the base of the heart, was granulated from the deposition of small quantities of fibrine on it, and the reflection of the same membrane constituting the pericardium reflexa was studded with the like granules.

The heart was atrophied, its walls flabby and soft. The right auricle and ventricle presented no abnormal appearance; nor did the left side of the heart, but it contained a small quantity of dark-coloured blood. The lining membrane and the valves at the auricular ventricular openings, and also the semilunar valves, were free from disease.

The above lesions clearly indicate that the disease had been of long standing, and the effusion into the cavity of the abdomen consequently depended on impaired action of the circulatory system, and not inflammation of the serous tissues.]

Case of Hæmatocele in a Horse.

By Mr. H. King, *M.R.C.V.S.*

Dear Sir, *Morpeth, Nov. 29th,* 1848.

The following case being an uncommon one in my practice, induces me to give you the particulars of it. About ten weeks ago I was requested to examine a three-year-old colt having an enlargement in the off side of the scrotum, just where the testicle would have been had it not been removed. It was about the size of a goose-egg, hard to the feel, and appeared as if attached to the end of the spermatic cord. The owner had not noticed it until about three weeks previous to my seeing him. The animal seemed in a good deal of pain when pressure was applied to the tumour, and, suspecting from this that matter was forming, I advised waiting for a time, to see whether such was the case or not. However, about sixteen days ago, the tumour had increased so much in size and hardness as to occupy the whole of the scrotum, besides which a considerable cellular effusion had taken place into the fore part of the sheath; I therefore recommended it to be removed by an operation. After reducing the acute inflammation by repeated bleedings and physic, on the 16th November I cast the animal, and secured him upon his back; then made an incision, about fourteen inches in length, in a line with the penis. On dissecting round the tumour, every thing seemed favourable to the completion of the operation, and that with very little bleeding; but, upon getting

near its root, I found its adhesion with the adjacent structures to occupy a considerable surface; consequently, before attempting to extirpate it, I again made a minute examination of the parts, and found the tumour quite free from any attachment connected with the penis, and I thought also with the cord. Without any hesitation I therefore made a bold cut, with the intention of removing the tumour at once; when an immense quantity of dark coffee-coloured fluid followed the knife, which I thought would prove to be, and indeed was, the contents of the tumour. I fully expected the discharge would stop after its evacuation; but in this I was disappointed, as the fluid continued to flow in greater volume, and the longer it flowed the more it assumed the colour and character of venous blood; in fact, at this stage of the operation it had the appearance of the vena cava being divided, the quantity of blood escaping being so great. I now hastened as quickly as possible to conclude the operation, as, from appearances, the patient would soon bleed to death. After removing the tumour I filled the space with dry tow, and applied sixteen sutures; then turned the animal on his side, when the blood burst out between the stitches with great force. I again placed him on his back and applied more sutures, kept my hand tight upon the part and allowed the animal to get up, which he did with a little assistance, and walked into the stable. I then applied a compress by means of a sack tied over his loins and quarters, and kept a man to bear up against the part with his hands for two or three hours. After that time I left him very weak from the loss of blood. The tumour, when removed, was nearly the shape of the heart, its base being its internal attachment. After cutting about two inches into its substance, a large cavity was exposed, the lining of which was the exact colour of the fluid that flowed when I first attempted to remove the mass, which appeared to me to be nothing but congested or coagulated venous blood. The weight of the tumour, when removed, was upwards of two and a-half pounds. The owner tells me there was nothing about the parts either at the time of castration, nor up to the period spoken of, but what was natural.

On the 24th of November, the smell from the wound becoming offensive, I removed the compress, and applied a fresh one; and on the 25th the sutures all gave way, and were followed with the throwing out of a large quantity of healthy pus. I now took away the

sack, and dressed the edges of the wound with digestives daily, and also allowed the horse to lie down, which he did on the following day. On the 27th I again saw him, and he appeared to be doing well; the wound was looking healthy, with a free discharge of laudable matter from it. I have seen the owner to-day, and he tells me that the animal is still going on favourably.

Your's respectfully.

To Professor Morton.

[This is by no means a common case, and is one of considerable interest. We also believe it to be rightly designated; hæmatocele being defined "a swelling of the scrotum or spermatic cord caused by blood." Pott states there are four kinds of hæmatocele. Two of these have their seat within the tunica vaginalis testis, one within the albuginea, and the fourth in the tunica communis, or common cellular membrane investing the spermatic vessels. This, therefore, would come under the fourth division.

"The whole vascular compages of the testicle is sometimes very much enlarged, and at the same time rendered so lax and loose, that the tumour produced thereby has, to the fingers of an examiner, very much the appearance of a swelling composed of a mere fluid, supposed to be somewhat thick or viscid. This is in some measure a deception; but not totally so: the greater part of the tumefaction is caused by the loosened textures of the testes; but there is very frequently a quantity of extravasated blood also. If this be supposed to be an hydrocele, and pierced, the discharge will be mere blood. This is a third kind of hæmatocele, and very different, in all its circumstances, from the two preceding: the fluid is shed from the vessels of the glandular part of the testicle, and contained within the tunica albuginea. The fourth consists in an effusion of blood from a branch of the spermatic vein, in its passage from the groin to the testicles: in which case, the extravasation is made into the tunica communis, or cellular membrane, investing the spermatic vessels.

"Each of these species, Pott says, he has seen so distinctly and perfectly, that he has not the smallest doubt concerning their existence, and of their difference from each other."]

Case of Aneurism in the posterior Aorta of a Horse.

By Mr. T. S. Parker, *M.R.C.V.S.*

Dear Sir, *Montgomery, Nov.* 17, 1848.

I forward to you a specimen of aneurism of the thoracic portion of the posterior aorta. You will also find another part of the vessel which communicated posteriorly with it, in which you will observe the altered state of the vessels emerging from it, as well as the tendency of the aorta itself in both portions to ossific deposit. I intended to have sent the heart, but, from neglect of the party in not forwarding it to me, it has been almost destroyed; but I will copy my notes of the morbid appearances it presented, and which were made at the time of the post-mortem examination.

The patient from which the morbid specimen was taken was a well-bred bay mare, twelve years old, the property of a Mr. Evans, farmer, near this place.

I first saw her on the 26th of last August, the owner informing me at the time that she had aborted in March 1847, and had never appeared well since; but in July of the same year he thought her better, and rode her to Ruabon and back the same day, distance 72 miles. Since then she has been gradually losing flesh.

On examination, she appeared to be in foal, was very poor, coat unhealthy, staring, and hidebound; the visible mucous membranes were pale, except that a few of the largest vessels were injected, and of a bright scarlet hue; extremities cold, appetite good, mouth moist, hair in mane and tail easily withdrawn; no pain evinced, but countenance dull and dejected; respiration rather accelerated, and a slight cough present: the respired air was cold, and on placing my ear to the chest there was an absence of the respiratory murmur: the beats of the heart were loud and strong, but intermittent; and there was a peculiar noise following each beat, similar to the sound of the expired air passing off in hurried respiration. The pulse was 70, full and jerking, and the systole so very marked, as seemingly to double the beats of the heart, while the undulations in the jugulars extended nearly to the head: the alvine evacuations and urine were healthy.

My prognosis was unfavourable, as I conceived it to be inflam-

mation of the serous membrane lining the cavities of the heart, with tuberculization of the lungs. I consequently gave the owner no hope whatever of recovery; but, as she was a favourite animal, he did not like to have her destroyed, and wished me to place her under treatment. I administered sedative agents, occasionally interposing an alterative, and saw her about four times afterwards. On September 12th she aborted again.

The only alteration perceived from the first was increased debility, amounting almost to marasmus, the animal being little more than a walking skeleton. Towards the last the urine became discoloured, and she manifested a frequent inclination to lie down, and on rising, which was accomplished with difficulty, she always gave a deep hollow groan.

I requested, when she died, they would send me word, which they did on Tuesday last; and on Wednesday morning I made a post-mortem examination.

Autopsy.—Lungs: left lobe of a light pink colour, studded with tubercles, and towards its anterior lobuli were large vesicles of air; the right lobe contained a few tubercles, and was bordering on congestion; the pericardium was thinner than usual, more capacious, and contained about two pints of serum tinged red; the outer portion of the parietes of the heart was much inflamed, especially towards the superior part of the right ventricle, which in places contained portions of pus; and there was a great quantity of lymph effused into the cellular substance around the base of the heart. On cutting into the left auricle, the cavity was found dilated, and its lining membrane much inflamed; there was hypertrophy of the walls of the left ventricle, with contraction of the cavity, but no traces of inflammation of the lining membrane. The serous membrane lining the right auricle and ventricle was highly inflamed, and the parietes of the right ventricle were unusually thin, as were also its valves: both the kidneys and the uterus were diseased. The intestines, especially the colon, exhibited patches of a similar bright scarlet colour assumed by the visible mucous membranes prior to death. The liver was tuberculous; and, in fact, all the viscera appeared affected.

I have been induced to send you the history of this case, believing that diseases of the heart and its appendages do not receive sufficient attention from the veterinary surgeon. I had a post-

mortem the 6th of this month of a colt, which was a beautiful specimen of air in the heart, accompanied with emphysema of the left lobe of the lungs.

On the 10th of this month I was sent for to a horse attacked with spasm of the bowels, but before my arrival he was dead; and, on making post-mortem examination, I found there was hydrops pericardii, with general hypertrophy of the heart.

I am your's respectfully.

To W. J. T. Morton, Esq.

[The above case is replete with instruction. Several specimens of aneurism of the aorta are in the museum of the College, but the history of the cases in which they occurred we are almost ignorant of.

In the specimen sent to us by Mr. Parker, there is, on its left side, a pouch-like sac capable of containing full half a pint of fluid, —a true aneurism. The coats of the vessel generally are somewhat thickened, and in its abdominal portion another dilatation exists, to the extent of about six inches: from this is given off the cœlia axis, in this case, by one common root, which divides into three arteries, having the phrenic artery a little anterior to it, and posterior to the cœliac is given off the large but short mesenteric artery with its numerous branches. These arteries at their origin are considerably dilated, but their caliber is, nevertheless, very much diminished by layer upon layer of fibrine deposited on the inner surface. The elongated pouch or dilated portion of the aorta is thinner than natural in its coats, and in several places the internal lining membrane is lacerated in a longitudinal direction: there are also numerous thin plates of bone around the wall of this dilated portion, seemingly between the internal and middle coat; but in reality, as the internal coat is composed of two layers, the external one has become altered from its normal structure into that of bone.

The comparative infrequency of aneurismal tumours in the arterial system of the horse is another reason which renders the above case one of considerable interest; but, additionally, its value is increased by a diagnostic symptom detailed by Mr. Parker. He alleges that in auscultating the pulsation of the heart, a kind of respiratory murmur was audible.

We hesitate not to compare that symptom with the sensation conveyed to the ear in "working a pair of bellows," or the "brouit de soufflet;" terms which are employed by Mr. Samuel Cooper and Baron Dupuytren to designate that peculiar sound which is heard by the aid of the stethescope, and sometimes by the naked ear, in the vicinity of an aneurism.

But while we venture thus to identify the diagnostic character related by Mr. Parker with the one established by the late eminent British and French surgeons, the question presents itself, Could the "brouit de soufflet" (which is produced by the sudden rush of blood from the ordinary caliber into the dilated portion of the vessel) be heard at the region of the heart, when the aneurism existed at the posterior aorta at its passage through the diaphragm?

We are at first disposed to doubt the possibility of the sound being appreciable at such distance; but when we take into consideration the degenerated coat of the abdominal aorta, with the atheromatous deposit in the anterior mesenteric artery, we may safely infer that the valves at the origin of the aorta from the left ventricle were abnormally dilated, owing to the difficulty opposed to the propulsion of blood.

Such derangement of the valvular apparatus is known to give rise to the "brouit de soufflet;" consequently, whether that symptom in Mr. Parker's case was the direct result of the aneurism, or of the valvular disease of the heart (which we had not an opportunity of examining), its pathological interest remains unaltered; and as it hitherto has escaped the notice of veterinary surgeons, it may now be considered a valuable aid in the diagnosis of cardiac affections, or aneurisms on the great arteries near the centre of circulation.]

On Collodion.

By W. J. T. Morton.

The new adhesive and protective agent for wounds, Collodion, has been tried at the College with such results as to warrant our recommending it to the notice of the veterinary profession.

Collodion is a solution of gun-cotton in ether; and its employ-

ment as a dressing for wounds was suggested either by Mr. Maynard, a medical student of Boston, U.S., or by Dr. Bigelow, of the same city.

If lignin, or any of the allied organic substances, as the varieties of starch, or linen, paper, sawdust, &c. be treated with cold nitric acid, on the addition of water to the mixture, a peculiar precipitate is thrown down, termed xyloidine or nitra-midine, the composition of which, according to Pelouze, is—

$$C_6,\ H_4,\ O_4,\ NO_5$$

Cotton wool being steeped in concentrated nitric acid, then washed and dried, forms a similar compound; but if equal parts of this acid and sulphuric acid be employed, and the cotton be subsequently very carefully washed and dried, it becomes highly inflammable and explosive, and when kindled undergoes combustion with no smoke, and scarcely any residue. This is called Schönbein's gun-cotton, which is probably either a peroxide, or a nitrate of lignin, but its true composition appears not to have been accurately determined.

Soon after its discovery it was ascertained that its best solvent was acetic ether, with which it formed a gelatinous mass, and, this being spread on a smooth surface, left a membrane impervious to water. Sulphuric ether appears to reduce this substance to a like consistence, and to this compound the name of Collodion has been given. Professor Simpson, in an article inserted in the *Edinburgh Monthly Journal*, says—

"When gun-cotton is fully dissolved in strong sulphuric ether, it forms a semi-transparent gelatinous pulp. When a layer of this is laid on any surface, the ether speedily evaporates, and leaves an adherent whitish, cotton-like web, which contracts strongly as it dries, and possesses still all the usual inflammable and explosive properties of gun-cotton. In a great variety of trials which I have had made as to the best mode of forming the solution, I have met with very various results. Many of these variations were probably owing to imperfections and differences, either in the quality of the gun-cotton or of the ether. But occasionally, with the same ingredients, the quality of the solution seemed liable to differ. Sometimes, after the gun-cotton had been immersed in the ether for ten or twelve hours without much effect, the addition of a little strong spirit immediately effected a perfect solution. The gun-

cotton often possesses strong adhesive properties when used before it is all completely dissolved. In using as a solvent aldehyde which had been kept for a considerable time, I found a perfect pulpy solution formed in a few minutes. If it could be used as a menstruum, it would possess the advantage of being even more vaporizable than ether. But in trying to repeat the experiment with some aldehyde newly formed for the purpose, the same results were not obtained.

Usually an ounce of strong sulphuric ether will dissolve thirty grains or more of gun-cotton in the course of a few hours. But to form a complete pulp it will, in general, require to stand for a day."

For the preparation of this compound preference now appears to be given to the process introduced by M. Mialhe, according to whom gun-cotton in its most explosive form is not the best for making the etherial solution, or collodion.

" Finely powered nitrate of potash . . .	40 parts by weight
Concentrated sulphuric acid*	60 "
Carded Cotton	2 "

Mix the nitre with the sulphuric acid in a porcelain vessel, then add the cotton, and agitate the mass for *three minutes* by the aid of two glass rods. Wash the cotton, without first pressing it, in a large quantity of water, and, when all acidity is removed (indicated by litmus paper), press it firmly in a cloth. Pull it out into a loose mass, and dry it in a stove at a moderate heat.

The compound thus obtained is not pure fulminating cotton: it always retains a small quantity of sulphuric acid, is less inflammable than gun-cotton, and it leaves a carbonaceous residue after explosion. It has, however, in a remarkable degree, the property of solubility in ether, especially when mixed with a little alcohol, and it forms therewith a very adhesive solution, to which the name of *Collodion* has been applied.

Preparation of Collodion.

Prepared Cotton	8 parts by weight.
Rectified sulphuric ether	125 "
Rectified alcohol	8 "

Put the cotton with the ether into a well-stopped bottle, and

* The common commercial acid will answer. When very weak a longer immersion of the cotton is required.

shake the mixture for some minutes. Then add the alcohol by degrees, and continue to shake until the whole of the liquid acquires a syrupy consistency. It may be then passed through a cloth, the residue strongly pressed, and the liquid kept in a well-secured bottle.

Collodion thus prepared possesses remarkably adhesive properties. A piece of linen or cotton cloth covered with it, and made to adhere by evaporation to the palm of the hand, will support, after a few minutes, without giving way, a weight of from twenty to thirty pounds. Its adhesive power is so great, that the cloth will commonly be torn before it gives way. The collodion cannot be regarded as a perfect solution of the cotton. It contains, suspended and floating in it, a quantity of the vegetable fibre which has escaped the solvent action of the ether. The liquid portion may be separated from these fibres by a filter, but it is doubtful whether this is an advantage. In the evaporation of the liquid, these undissolved fibres, by felting with each other, appear to give a greater degree of tenacity and resistence to the dried mass.

In the preparation of collodion it is indispensable to avoid the presence of *water*, as this renders it less adhesive: hence the ether, as well as the alcohol, should be pure and rectified. The parts to which the collodion is applied should be first thoroughly *dried*, and no water allowed to come in contact with them until all the ether is evaporated."

As to the way in which it should be further applied, Mr. Maynard advises that "In slight cuts a moderately thick coating of the solution, laid over the incised parts, was, on becoming dry, sufficient to keep the lips of the wound in position till union took place; but in most instances it was employed in conjunction with straps of cotton and sheepskin, and with raw cotton, forming with them strong, unyielding, adhesive straps, bandages, and encasements: and, after many experiments, I am convinced that this is the best and most effectual way in which it can be employed as an adhesive agent in surgery. The solution dries rapidly, and in a few seconds; by the evaporation of the ether it contains, it becomes solid and impermeable to water; and a strap moistened with it, and glued to any part of the cutaneous surface, adheres to it with a tenacity that is truly surprising."

Dr. Bigelow's directions for the appliance of this agent are as follow :—"For straight incisions, of *whatever length*, provided the edges can be brought together without great difficulty, it is better to apply the solution in immediate contact with the skin, as follows :—The bleeding should be arrested, and the skin thoroughly dried. If the lips of the wound are themselves in contact, the surgeon has only to apply a coating of the solution lengthwise over the approximated edges by means of a camel's hair pencil, leaving it untouched after the brush has once passed over it till it is dry, during, perhaps, ten or twenty seconds. This first film will of itself have confined the edges together; but, in order to increase the firmness of the support, more must then be applied in the same manner, allowing it to extend on either side of the incision half an inch or more. If, however, the wound gapes, an assistant is required to bring the edges in contact, and retain them so whilst the application is made. If the incision is so long that the assistant cannot place the edges in apposition throughout the whole extent, begin by covering a small portion at the upper end, and apply the solution to the lower parts as fast as it becomes dry above. In this case something more than the film which is left adherent to the skin will be necessary for a safe and proper support to the wound, which may have a tendency to separate. The transparency of the dressing may be still maintained by adapting a piece of goldbeater's skin or oiled silk to the wound. This should be covered with the solution, and the membrane applied after the coating is on and already contracted. A dossil of lint, or a strip of cloth, or even a piece of tissue paper, which is thus rendered tough and waterproof, will answer the same purpose, though not transparent. Where there is much separation, it is better to fortify the wound in this way at once, and as fast as the first coating is applied and dry. 'If, however, adhesion by first intention be not desired, the gum may be painted on in traverse strips, like adhesive cloth, letting the first strip dry, and giving it the goldbeater's skin support before the second is applied. Thus room is left for the escape of pus, and the exposed portion may be watched without removing the strips.'"

Mr. Erasmus Wilson, reporting on the effects of collodion, in the Lancet of November last, found it to possess four important properties, namely

"First. That of a mild stimulant.

Second. That of an efficient substitute for the natural scarfskin.

Third. That of a mechanical compress.

Fourth. That of an adhesive glue, from which quality it derives its name.

First. As a stimulant, it is fitted to exert a local alterative action on the congested capillaries of a chronic ulceration, and give activity to the healing process.

Second. In its character of a substitute for the absent scarfskin, it is transparent, pliant, and more or less impermeable, according to the thickness of the layer that may seem to be required.

Third. Its most remarkable property, as it seems to me, is the contraction which occurs during the dessication of the collodion, and which produces a local pressure of considerable power on the surface to which it is applied. Thus, in the case above related, the congestion of the thickened skin was relieved by the varnish-like film of collodion spread upon its surface, by means of a camel-hair brush, as completely as if a nicely-adjusted bandage had been placed over it. In another instance, I found a film of collodion entirely remove a purple congestion (resulting from imperfect circulation) from the tip of the nose, in a lady who had long suffered from the annoyance. In the third case, in which the fingers of an elderly lady were congested and blue, and the congestion was attended with pain and throbbing, like that which accompanies chilblains, the collodion produced so much contraction as to render their tips white and bloodless, and I was obliged to discontinue the application in consequence.

Fourthly. The glue-like property of the collodion is evinced in its adhesion of cut surfaces, a property which is much increased by the contraction above mentioned. When employed with the purpose of keeping together the edges of an incision, a piece of cambric or thin linen rag should be dipped in the solution, and placed along the line of incision, after the cut edges have been adjusted and carefully dried, perfect dryness of the skin being a necessary condition to the adhesion of the solution. From the rapidity with which the solution dries, and its perfect adhesive powers, collodion is likely to occupy an important place among the 'adjuvantia' of surgical practice."

Since the introduction of this agent, other well-known adhesive

compounds, dissolved in different menstrua, have been tried; for instance, gutta percha in sulphuret of carbon, and chloroform; and caoutchouc in the same fluids and ether, respecting which Dr. Simpson says:—

"Gutta percha readily, I find, dissolves in chloroform. When a thin layer of this solution is spread upon the skin or any other surface, the chloroform rapidly evaporates, and leaves a film or web of gutta-percha, possessing all the tenacity and other properties of that substance. A layer of it, of the thickness of good writing-paper, has perhaps as much strength and tenacity as to hold the edges of a wound together, with all the required firmness and strength of sutures. When a film of it is placed upon the skin, and is allowed to dry thoroughly for a few minutes, the subsequent attempt to separate it is like peeling and tearing off the epidermis after erysipelas, &c. It then forms, as it were, at once a kind of artificial tissue, epidermis, or skin, which adheres strongly for a time. There is one disadvantage pertaining to it. In the course of a day or two it generally dries and crisps up, like court plaster, at its edges. If we could either increase its adhesiveness, or destroy its tendency to dry and crisp, we should render it more useful. I have seen the addition of a little caoutchouc apparently correct it in these respects.

"The deposit or 'plaster' left by the solution of gutta-percha is far more equable, smooth, and skin-like, than that left by the solution of gun-cotton.

"A solution of caoutchouc in bisulphuret of carbon, ether, or chloroform, leaves a very thin, but perhaps less regular web, and one which stretches too readily for most practical purposes.

"One great deficit in this class of dressings is the want of a menstruum sufficiently powerful, and, at the same time, not stimulating like ether or chloroform. This objection may, perhaps, in practice be got over, by applying an unstimulating solution of isinglass or the like to the raw surface, before applying the stimulating solution of the gun-cotton or gutta-percha. Or the first layer of gun-cotton or gutta-percha may be made very thin, so as to evaporate almost instantaneously, and then afterwards a series of superincumbent layers may be added till the web is of the required strength. Other better substances for solution may, perhaps, be found. But no material has a chance of succeeding unless it be

insoluble in water after it is consolidated, and unless it be sufficiently strong in its texture, and possesses powerfully adhesive properties."

Mr. W. Acton, in a paper on the advantages of solutions of caoutchouc and gutta-percha in protecting the skin against the contagion of animal poisons, published in the *Medical Gazette*, states, that the conclusions he has arrived at are—1. That a solution of gun-cotton, when dry, corrugates the skin too much to be available for the purposes required. 2. That gutta-percha alone is devoid of elasticity and sufficient adhesive quality, whilst the solution of caoutchouc wants body, and is too sticky; but that—3. The compound solution of caoutchouc and gutta-percha possesses the requisite qualities to fulfil the purpose required. It is prepared by adding a drachm of gutta-percha to an ounce of benzole (the volatile principle of coal naphtha), and ten grains of India-rubber to the same quantity of benzole, each being dissolved at a gentle heat, and then mixed in equal proportions. A letter from Mr. Quekett to the author states the results of that gentleman's examination of these several solutions under the microscope. A dried film of the compound is described by him to be perfectly elastic and free from perforations, though in many parts less than the $\frac{1}{500}$th of an inch in thickness.

Some practitioners may be induced to try one or other of these solutions, and they well merit a trial. The following cases, illustrative of the effects of collodion, have been communicated to me. Mr. Varnell applied it to an incised wound of some extent, which divided the fibres of the obliquus capitis inferior in a line with their course. The blood being allowed to flow as long as it would, the wound was cleansed, and its edges brought in apposition by means of the thumb and finger; the collodion was then freely laid over it by means of a camel's-hair brush; and while this material was yet moist, strips of calico were placed on it, and these again were covered with the adhesive solution. An inspection of the wound was frequently made, and no swelling, nor any increased heat, could be detected as being present during the healing process.

On the sixth day the calico was removed, when the lips of the wound were found to be firmly adherent throughout their whole extent. The animal being required for dissection, the wounded

parts were carefully examined after death, when the divided muscle was seen perfectly united, the incision in it being barely perceptible. The upper surface of the skin, it has been already stated, had completely healed by the first intention; and its under surface beautifully shewed the progress of the reparative process, plastic lymph having been effused, filling up the separated edges, but as yet it had not become perfectly organized.

The second case, as follows, is from Mr. G. T. Brown.

On Saturday, December 3d, 1848, a brown mare was brought to our infirmary with the following injuries, produced by her coming in contact with a cart:—

First, a rent in the integument, commencing from the neck of the scapula on the off side, and extending half way down the humerus, dividing a portion of the panniculus and the lower attachment of the levator humeri. The second wound took the line of the sternum, commencing from the cariniform cartilage, extending downwards about eight or ten inches, and removing the integument from the subjacent tissues for the distance of nearly ten square inches over the left shoulder. After bringing the edges of the divided portions in apposition by means of silken sutures, I applied collodion over the skin and sutures, and the result was highly satisfactory; for, whereas in cases where sutures alone are used they commonly slough out in four or five days, in this case they continued firm for a week, fomentations in the mean time being frequently used; and when the sloughing process did take place, reparation had gone on to such an extent in the wound as to leave but a very insignificant blemish, compared with what probably would have been the case had not the adhesive material been employed.

It will be observed, that I made only one application of the agent in this case; and I have no doubt if it had been repeated every alternate day, or as found necessary, the result would have been even still more favourable.

From what has been collated and advanced it is not too much to anticipate that for wounds generally, and especially for incised and punctured wounds, collodion, or some of the solutions alluded to in this article, will prove most efficacious as remedies in the hands of the careful and observant practitioner.

Disease among Sheep.

Copies *or* Extracts *of any* Correspondence *which has recently taken place between the Board of Trade and any Public Offices, and between the Board of Trade and the Market Committee of the Corporation of London and other Parties, relative to the* Disease *among the* Sheep.

(presented to parliament by command of her majesty.)

Correspondence.

Office of Committee of Privy Council for Trade,
Whitehall, 12 July, 1848.

Sir,

I am directed by the Lords of the Committee of Privy Council for Trade to request that you will acquaint the Commissioners of Customs, that information has recently been received by this department, that the disease called "Variola Ovis" is now greatly extending in some parts of the country, especially in the counties of Norfolk and Suffolk, and that apprehensions exist that it may be caused by the importation of infected sheep. I am, therefore, to request that you will move the Commissioners, with the least possible delay, to make particular inquiries upon the subject, especially at the Ports of Hull, Great Yarmouth, Southampton, London, and other places having direct communication with the east of Europe, and to inform my Lords whether it appears that sheep are now being imported in an infected state.

This subject was fully discussed between the Commissioners of Customs and this Board in October last. But my Lords are desirous of being apprised whether any recent information has been received with respect to the importation of infected sheep, and whether the Commissioners are of opinion that it would now be expedient that an Order in Council should be issued, authorizing the destruction of diseased animals.

My Lords would also suggest to the Commissioners the propriety of instructing their officers at the different ports of entry to exercise the greatest vigilance in enforcing the precautions which they were previously authorized to adopt in this matter.

I am, &c.

Charles Scovell, Esq. (Signed) Denis Le Marchant.
&c. &c. &c.

Office of Committee of Privy Council for Trade,
Whitehall, 22 July, 1848.

Sir,

I AM directed by the Lords of the Committee of Privy Council for Trade to transmit to you the accompanying copy of a letter from Mr. J. B. Simonds, relative to the small-pox in sheep, and I am to request that the Commissioners of Customs will inform my Lords whether the flocks of sheep imported into the other ports of the kingdom, besides London, are examined by veterinary surgeons: I am also to request that the Lords of this Committee may be informed from time to time of any cases that may arise calling for notice; and I am to add, that their Lordships will be glad of any suggestions which the Commissioners may think fit to make upon this important subject.

I am, &c.

Charles Scovell, Esq. (Signed) D. LE MARCHANT.
&c. &c. &c.

Royal Veterinary College, 17 July, 1848.

Sir,

I HAVE the honour to acknowledge the receipt of your communication on the subject of small-pox in sheep, and to acquaint you, for the information of the Lords of the Committee of Privy Council for Trade, that unless the most active and stringent measures are at once adopted to prevent the extension of the disease, fearful ravages will be committed by it, not only now, but from time to time, by fresh outbreaks taking place; for, from circumstances which have come to my knowledge, I fear that already it may be said to be naturalized in this kingdom. I would respectfully recommend that means are taken to obtain correct information, through the magistracy, of the present extent of the malady, as I have reason to believe that great mischief has resulted from the commingling of flocks, the farmer suppressing the true cause of death among his sheep, and not hesitating to send animals for sale which had been exposed to the contagion. The infected sheep should be confined to the separate farms, and none should be allowed to enter a market or fair, if coming from places where the disease prevails; for the malady may have been received and be incubated in the system without any evidence of this being shewn by the animals.

I would also suggest the trial of inoculation on an extended scale as a preventive: this might be undertaken by the Government, or by large proprietors of sheep at the recommendation of Government. The plan has perfectly succeeded on the continent, and is annually adopted in many parts of both Germany and France. I need scarcely say, that isolation of the inoculated animals must be strictly enforced. That the Honourable the Board of Trade may be put in full possession of my views of the nature and treatment of the disease, and the means to mitigate its destructive effects, and to limit its spread, I beg to present you with a copy of my work upon the subject, and would respectfully direct attention to a plan to regulate the importation of sheep, contained in the third chapter, which likewise treats of other prophylactic measures.

Apologising for the lateness of this reply, which has been caused by my attendance at the York meeting of the Royal Agricultural Society,

I have, &c.

Sir Denis Le Marchant,
&c. &c. &c.

(Signed) Jas. B. Simonds.

(No. 301.)

To the Lords of the Committee of Privy Council for Trade.

Your Lordships having been pleased, by Sir Denis Le Marchant's letter of the 12th instant, to acquaint us, that information had recently been received by your Lordships that the disease called "Variola Ovis" is now greatly extending in some parts of the country, especially in the counties of Norfolk and Suffolk, and that apprehensions exist that it may be caused by the importation of infected sheep, and to request that we would, with the least practicable delay, make particular inquiries upon the subject, especially at the ports of Hull, Great Yarmouth, Southampton, London, and other places having direct communication with the east of Europe, and inform your Lordships whether it appears that sheep are now being imported in an infected state; suggesting at the same time the propriety of instructing our officers at the different ports of entry to exercise the greatest vigilance

in enforcing the precautions which they were previously authorized to adopt in the matter.

Your Lordships were further pleased to signify that you are desirous of being apprised whether any recent information has been received with regard to the importation of infected sheep, and whether we are of opinion that it would now be expedient that an Order in Council should be issued authorizing the destruction of diseased animals.

In obedience to your Lordships' commands, we report, that the Lords of the Treasury having been pleased, by their orders of the 17th and 21st February, 1845, to signify that information had been received from various quarters of the prevalence of an infectious disease among cattle in several parts of the Continent, and to desire we would give directions to our officers carefully to examine any cattle imported into this country, and, in the event of their appearing to be infected with any disorder, not to permit them to be landed without inspection, and report as to their soundness, by some competent person reporting the circumstances to us forthwith; we issued the necessary orders accordingly, on the 19th and 22d February, 1845, to the officers of this port, and at all the ports of the United Kingdom, copies of which we annex for your Lordships' information, and employed two experienced veterinary surgeons for the due examination of all cattle imported into this port from the Continent.

That intelligence having been received in autumn last of the prevalence of an infectious disorder among sheep in several parts of the Continent, we, on the 2d October following, issued the like directions for the examination, &c. of sheep upon their importation, copy of which order is also annexed; and we beg to state, that, on a recent importation of 290 sheep at this port, by the vessel "Caledonia," from Hamburgh, one of the animals was found diseased, and, on the fact being represented to us, we issued directions for its being immediately destroyed, and the whole number to be detained for three or four days; we also directed that, on any future similar case occurring, the whole of the animals should be detained for a like period, and the case reported for our further directions.

On the receipt of Sir Denis Le Marchant's letter of 12th instant, we directed our officers at the several ports, by an order, of which

we annex a copy, to exercise the greatest vigilance in enforcing the precautions previously authorized to be adopted on the importation of cattle and sheep, and to report to us whether it appears that sheep are being imported in an infected state.

It appears, from the returns which we have received to the above order, that no infected sheep have been imported at any of the out-ports.

As, however, there does not appear to be any legal authority for the destruction of sheep or cattle imported under such circumstances, we are of opinion that an Order in Council should be issued, authorizing the officers of Customs to destroy all animals found to be infected with any contagious or infectious disease on their importation, and to detain for a reasonable time such as arrive under circumstances warranting a suspicion that they may be so infected, though the disease may not appear to have broken out.

We beg to add, that it appears, from the report of our officers at Falmouth, dated the 22d ultimo, that certain cattle imported from France, and landed in a sound state on the 20th May and 2d ultimo, had become affected with disease of the feet and mouths some days afterwards, and that, although no case had proved fatal, the cattle had become much reduced, and unfit for immediate sale.

(Signed) Thos. F. Fremantle.
Edw. Saurin.
Custom House, 24 *July*, 1848. S. G. Lushington.
Culling Chs. Smith.

(No. 17, 1845.)

Treasury Chambers, 17 February, 1845.

Gentlemen,

I am commanded, by the Lords Commisioners of Her Majesty's Treasury, to state to you, that information has been received from various quarters of the prevalence of an infectious disorder among cattle in several parts of the Continent; and to desire you will give directions to your officers carefully to examine any cattle imported into this country, and, in the event of their appearing to be af-

fected with any disorder, not to permit them to be landed without inspection, and report as to their soundness, by some competent person, and report forthwith the circumstances to your Board.

I am, &c.

(Signed) EDWARD CARDWELL.

The Commissioners of Customs.

Custom House, London, 19 February, 1848.

THE aforegoing copy of a letter from Mr. Cardwell, one of the Secretaries to the Lords of the Treasury, is transmitted to the Collector and Comptroller at

who are to take care that the same be duly obeyed.

By order of the Commissioners.

(G. O.—22d February, No. 18, 1845.)

Gentlemen,

THE Lords Commissioners of Her Majesty's Treasury having, by Mr. Trevelyan's letter of the 21st instant, with reference to the instructions already conveyed to this Board on the subject of a certain disease now raging among cattle on the Continent, desired that this Board would enjoin upon all their officers the greatest attention to the state of the cattle imported, I have it in command to apprise you of this communication, and to enjoin you, and the several officers under your survey, to a strict attention to this matter, with reference to the General Order of the 19th instant (17, 1845), on the subject, taking care not to fail to represent to the Board any matter that may arise fit for their cognizance.

I am, &c.

Custom House, London,
22 *February,* 1845.

(G. O.—2d October, No. 132, 1847.)

Gentlemen,

WITH reference to the General Orders of the 19th and 22d February 1845, Nos. 17 and 18, directing your attention to the state of the cattle imported, in consequence of a certain disease

then raging among cattle on the Continent; I have it in command to acquaint you, that information has been received of the prevalence of an infectious disorder among sheep in several parts of the Continent; and to direct that you will give instructions to the officers under your survey carefully to examine all sheep and cattle which may be imported into your port, and, in the event of their appearing to be infected with any disorder, not to permit them to be landed without inspection as to their soundness by some competent person, and you are to report forthwith the circumstances to this Board.

I am, &c.

Collector and Comptroller at

(No. 55, 1848.)

Custom House, London, 14 July, 1848.

Gentlemen,

With reference to the General Orders of the 19th and 22d February 1845, and 2d October, 1847, directing your attention to the state of the cattle and sheep imported, in consequence of a certain disease then prevalent among them on the Continent; I have it in command to acquaint you, that information has recently been received, that the disease called "Variola Ovis" is now greatly extending in some parts of the country, especially in the counties of Norfolk and Suffolk, and that apprehensions exist that it may be caused by the importation of infected sheep; and I am therefore to direct you to exercise the greatest vigilance in enforcing the precautions previously authorized to be adopted in this matter, forthwith reporting to the Board whether it appears that sheep are now being imported at your port in an infected state.

I am, &c.

Collector and Comptroller at

Office of Committee of Privy Council for Trade,
Whitehall, 24 July, 1848.

Sir,

I am directed by the Lords of the Committee of Privy Council for Trade to acquaint you, for the information of the Lords Commissioners of her Majesty's Treasury, that my Lords have been

in communication with the Commissioners of the Customs with regard to the measures to be taken for preventing the importation of diseased sheep, a subject to which the attention of this department was drawn last autumn, and which has been lately revived in Parliament, in consequence of the great extent to which the "Varicla Ovis" is now spreading in this country.

The Commissioners of Customs are alive to the importance of preventing the admission of diseased animals; but, in order effectually to ensure their exclusion, they consider it necessary that veterinary surgeons should be employed to inspect all flocks imported into those ports where the infection is most to be apprehended; and I am to request that you will move the Lords of the Treasury to communicate with the Commissioners, and to sanction their incurring the necessary expenditure for insuring inspection, by persons duly qualified as veterinary surgeons, in the ports of London, Hull, and Great Yarmouth.

My Lords conceive that temporary provisions for such inspection would be highly desirable.

I am, &c.

(Signed) DENIS LE MARCHANT.

Sir C. E. Trevelyan, K.C.B.
&c. &c. &c.

Treasury Chambers, 28 July, 1848.

Sir,

WITH reference to your letter of the 24th instant, I am commanded by the Lords Commissioners of Her Majesty's Treasury to acquaint you, for the information of the Lords of the Committee of Privy Council for Trade, that my Lords have given directions to the Commissioners of Customs for the employment of persons duly qualified as veterinary surgeons at the ports of London, Hull, and Great Yarmouth, for the purpose of inspecting animals imported thereinto, with a view to preventing the admission of any that are diseased.

I am, &c.

Sir Denis Le Marchant, Bart. (Signed) J. PARKER.
&c. &c. &c.

Office of Committee of Privy Council for Trade,
Whitehall, 13 July, 1848.

Sir,

I AM directed by the Lords of the Committee of Privy Council for Trade to request that you will inform Viscount Palmerston that reports have recently reached this department, that the disease called "Variola Ovis" is extending among the sheep in this country. Attention was called to this subject by letter from this Board of the 1st October last, and some valuable information was obtained through Her Majesty's Consul-General at Hamburgh.

My Lords would now suggest that a further communication should be made to that gentleman on the subject, and that he should be requested, with all practicable despatch, to collect any additional information as to the present prevalence of the disease on the Continent, and with respect to the steps usually taken either by the public authorities or individuals to check its progress.

The matter being one of importance, I am to request that Lord Palmerston's attention may be directed to it as early as possible, and that Colonel Hodges be desired to use all practicable despatch in collecting and forwarding information.

I am, &c.

(Signed) DENIS LE MARCHANT.

H. U. Addington, Esq.
&c. &c. &c.

Foreign Office, 8 August, 1848.

Sir,

I AM directed by the Secretary of State to transmit to you, to be laid before the Lords of the Committee of Privy Council for Trade, the accompanying copies of two despatches from Her Majesty's Consul-General at Hamburgh, containing information relative to the small-pox amongst sheep.

I am, &c.

(Signed) JOHN BIDWELL.

The Secretary to the Board of Trade.

Hamburgh, 1 August, 1848.

My Lord,

I HAVE the honour to acknowledge the receipt of your Lordship's despatches up to No. 29 of the 24th ultimo; and in reference to the last despatch, No. 29, respecting the prevalent disease of small-pox amongst sheep in this part of Germany, I beg to refer your Lordship to my despatch (Consular, No. 24) of 28th ultimo, and its enclosures, wherein I have furnished all the information which I have been able to obtain upon this subject.

I have, &c.

(Signed) G. LLOYD HODGES.

The Viscount Palmerston,
&c. &c. &c.

(Consular, No. 24.)

Hamburgh, 28 July, 1848.

My Lord,

I HAVE the honour to acknowledge the receipt of your Lordship's despatch (Consular, No. 7) of the 18th instant, and its enclosure, from Sir Denis Le Marchant, of the Board of Trade, desiring further information as to the prevalence of the disease amongst sheep in this part of Germany, called the "Variola Ovis," and as to the steps usually taken, either by the public authorities or individuals, for its prevention or cure.

I find that the only means regarding this disease resorted to by public authorities in this neighbourhood are those taken in Mecklenburgh Schwerin.

A law exists there, which directs all owners of flocks not only to acquaint their neighbours when the disease appears among their sheep, but also obliges them to circulate information of its breaking out in the country newspapers.

I have recently inquired of several large sheep-owners in Mecklenburgh, Holstein, and Lanenburg, respecting this disease; and I enclose a copy of a letter which I have received from Captain Stanley Carr, of Füschenbeck, an English gentleman, who has resided in Lanenburg for many years past, farming there a large estate, and whose extensive experience in all agricultural pursuits

is well known to the farming community in England. This letter speaks for itself.

Baron Biel, of Zieron, in Mecklenburgh, writes to me as follows: "I was sorry to see, by your letter of the 20th instant, that the small-pox had shewn itself in England: it is a very nasty and destructive disease, and the only thing to be done is inoculation as soon as the disease appears in the neighbourhood. It is considered to be an epidemic, which, when once it appears, is contagious in the highest degree. Inoculation, however, prevents the danger almost entirely, and, where properly attended to, reduces loss amongst the flocks to about $2\frac{0}{0}$. It is a law with us, not only to inform our neighbours so soon as the disease breaks out, but we are also obliged to give notice of the same through the country newspapers."

Another acquaintance of mine writes to me thus from a distant part of Mecklenburgh: "In this disease the sheep suffer previously internally, with loss of appetite, heaviness and indisposition to move, difficulty of breathing, swelling of and discharge from the eyes, and of a viscous matter from the nose: in from three to five days spots appear on the bare parts of the legs and body, which become large, and form blisters, in the centre of the red circumference of which yellow spots come, and at last fill with yellow matter. If these spots become blue or blackish, they unite, and a thin stinking matter issues from them, which is the height of the disease; but death ensues if the pustules should not come properly out, or should strike in again. The last stage of the disease, when it terminates favourably, is marked by the drying away of the sore, on which a black scurf forms and falls off. The animal has the disease, as with man, only once: in a flock it is contagious, but not so among cattle. During this disease, good hay, and drinks of a decoction of barley, are good, to which a little common salt may be added. At the commencement of the disease the nose and mouth must be kept clean with vinegar and water; the eyelids are to be often washed with warm milk, and an electuary of three parts flower of brimstone, and one part common salt and honey, is a useful remedy. But I am decidedly of opinion that inoculation of the whole flock the moment the disease shews itself, even in one in the neighbourhood, is the only preservative."

As there is residing in this city a very skilful and experienced veterinary surgeon, who is very often consulted by the farmers and large landed proprietors in these parts, I thought it advisable to request of him a report on this subject, and I have the honour to transmit to your Lordship Mr. Warnecke's observations thereon.

From all the inquiries I have made, I am led to believe that this disease does not prevail in the immediate neighbourhood of this city; and that the parts of Hanover, Holstein, and Schleswig around are comparatively free from it, as will appear by the enclosed copy of a letter which I have received from Mr. Ballheimer, one of the most considerable meat and provision merchants of Hamburgh.

I have, &c.

(Signed) G. Lloyd Hodges.

The Viscount Palmerston, G.C.B.

&c. &c. &c.

(Translation.)

Hamburgh, 26th July, 1848.

The so-called small-pox of sheep (variola ovis) is a disease peculiar to sheep, and is infectious: it shews itself by febrile pustules, very similar to the small-pox in human beings, and from its infectious nature frequently spreads over whole flocks, but only attacks the same animal once.

The course of this disease is exactly like that of the usual small-pox in its various stages.

The first symptoms are, that the animal becomes lame or stiff in the hind legs, is uneasy, will not feed, &c.

After this the fever commences with shivering and trembling, with increased heat of the body, but the ears and tail particularly become very red, the nostrils and gums dry and hot; the animal stands with drooping head, and the feet are close together under the belly; it is lame, or halts, particularly with the hind legs; the ears hang, the eye is bloodshot; the fever increases, as also the difficulty of breathing; the animal feeds and ruminates little or not at all; its dry dung passes in very small hard balls.

Soon after the first attack of fever, there appear on all the bare parts of the body, particularly about the mouth, eyes, and on the inner surface of the leg and belly, and the under part of the tail, numerous small spots like flea-bites, which in eight or nine days come more out in small pimples, and in forms like the heads of small-pox. As the spots become more numerous, the swelling of the head increases, so much so that the animal can but with difficulty open its mouth and eyes; the lumps that have formed fill, in three or four days later, with a pale, clear, white matter. The pustules now formed are of a good sort, and differ in size up to that of a pea. They are found mostly on the parts of the body with no wool on, but they may even be found under the wool. The malignant pustules are found close together, of a red, violet, blue, blackish, or brown red colour, with a blue margin; they are broad, flat, and sunk in, and emit an offensive smell.

The animal stands unsteady, with drooping and swollen head, and closed eye; the nostrils are stopped up with a tough viscous matter, smelling like carrion; it breathes very short, and with difficulty, snorts with open mouth, gnashes its teeth, and its evacuations emit a very offensive odour: in this latter state a cure is not possible.

On the first attack of the common "variola," the animal must be well taken care of, and must not be exposed to cold or wet, and drinks must be administered to it of salts, bitters, and spices.

As a preventive, inoculation with healthy matter, if obtainable, is the best, as thereby the inoculated animal throws out only a few of the pustules, the sickness from which it can easily get over, and is then completely protected from the attacks of the disease.

(Signed) G. Warnecke.

Hamburgh, 25th July, 1848.

Sir,

At your request I have the honour to communicate to you, that after having inquired here, and in the country about, as to the mentioned disease of sheep, I have ascertained that, although the neighbourhood of Hamburgh, and all Holstein, Schleswig, and Hanover, are quit from any illness amongst them, sheep-pox (variola ovis) has shewn itself in some parts of Mecklenburgh, and

it is found that a part of some flocks have died of that disease there within the two last months.

I am, &c.

(Signed) V. H. Ballheimer.

To Colonel Hodges,
&c. &c. &c.

Füschenbeck, 24th July, 1848.

My dear Colonel,

It gives me great pleasure to learn by your's of the 21st instant, that the information respecting the sheep-pox, with which I furnished you in October last, was of some value to the Government at home; and, in reply to their renewed application to you for additional information respecting this dangerous disease, I enclose you two extracts from the "Mark-Lane Express," of October 1847, in proof that whatever knowledge I possess on the subject was promptly and willingly communicated to the British public.

I have now only to repeat my conviction, that inoculation furnishes the only preventive to the spread of a disorder which must inevitably prove still more fatal among English than continental sheep, since high condition invariably aggravates its virulence. On the other hand, I learnt, by conversation with the Duke of Richmond and others at the recent meeting of the Royal Agricultural Society at York, that the English veterinary surgeons generally are at issue with me as to the efficacy of inoculation. I presume, however, to oppose experience to their theory, and to express my full conviction, that, had the proposed remedy been resorted to in England as a preventive, the present afflicting recurrence of the malady would not have taken place. In corroboration of which opinion I may state, that since the period referred to in my pamphlet when inoculation was generally resorted to in this neighbourhood, no instance of sheep-pox has, to my knowledge, occurred, nor have I had, up to this moment, any intimation of such existing elsewhere from the "Animal Sanitary Commission," which, as you are no doubt aware, exists in all these states, for the purpose of watching over and warning against the approach from other countries of any epidemic or infectious disease among farm-stock. The English papers are full of alarm on this subject: the "Observer" of the 17th instant informs us, that "in the Hamburgh market a separate place is assigned for contaminated sheep coming from diseased districts!!"

* * * * To keep out infection from a country to which wool—a fully efficient medium—is brought from all parts of the world, is impossible: to render the animal insusceptible of infection is possible; it is the easy and the only remedy.

I am, &c.

(Signed) F. Stanley Carr.

To Colonel L. Hodges,
&c. &c. &c.

Office of Committee of Privy Council for Trade,
Whitehall, July 1848.

Sir,

I am directed by the Lords of the Committee of Privy Council for Trade to request that you will, at your earliest convenience, inform their Lordships whether any, and what, bye-laws or regulations are in force in market with respect to diseased or infected exposed for sale; whether any power exists of seizing and destroying the same, and by whom and in what manner that power is exercised.

My Lords being about to introduce a Bill for the purpose of preventing the exposure of diseased sheep in the market, are anxious to collect information as to the mode of proceeding in different parts of the country.

I am, &c.

To the Clerk of the Market.

Replies to Circular of July 1848.

A List of those Towns in which no bye-laws or regulations are in force with respect to diseased or infected cattle exposed for sale:—

Abingdon	Durham	Melton Mowbray
Andover	Great Grimsby	Rochdale
Askrigg	Guildford	Rotherham
Atherston	Haverfordwest	Saffron Walden
Barnet	Hereford	Shrewsbury
Boroughbridge	Harleston	Stroud
Bridgwater	Kidderminster	Totness
Bristol	Lewes	Warwick
Devizes	Leominster	Wigan.
Droitwich		

A List of those Towns in which bye-laws exist for the destruction of unsound or putrid meat, fish, or other provisions; but none are mentioned for the destruction of live animals:—

Bewdley	Leicester	Nottingham
Boston	Loughborough	Spalding
Bradford	Leeds	Wokingham.
Cambridge	Northampton	

Office of Committee of Privy Council for Trade,
Whitehall, 2 August, 1848.

Sir,

I AM directed by the Lords of the Committee of Privy Council for Trade to inquire whether, in cases of the new disease of small-pox infecting sheep, it would be desirable as a cure that they should be inoculated in the regular manner, or with vaccine matter, with a view of checking the virulence of the disease.

I am, &c.

(Signed) D. LE MARCHANT.

To the President of the Royal Veterinary College.

Office of Committee of Privy Council for Trade,
Whitehall, 3 August, 1848.

Sir,

I AM directed by the Lords of the Committee of Privy Council for Trade to inquire what measures the College would recommend for purifying the trucks or carriages on which diseased sheep may have been conveyed. My Lords will then be prepared to take steps for inducing the Railway Companies to adopt such measures.

I am, &c.

(Signed) DENIS LE MARCHANT.

To the President of the Veterinary College.

Royal Veterinary College, 4 August, 1848.

Sir,

I BEG respectfully to inform you, that on my return from Norfolk, where I had been to examine some sheep affected with the small-pox, your note of the 2d instant was handed to me by Professor Sewell. I avail myself of the earliest opportunity of replying to it, and also to the communication which was for-

warded here last evening from the Board of Trade. With reference to your inquiries respecting the inoculation and vaccination of sheep, I have the honour to acquaint the Lords of the Committee, &c., that the latter cannot be depended on as a preventive of the small-pox of sheep; but it is a well-established fact, that the former gives security against second attacks, and also diminishes the severity of the disease, and lessens thereby the number of deaths; the mortality being often fifty per cent. from the natural, but rarely more than seven or eight, even in the worst instances, from the inoculated disease. In any measure to be submitted to Parliament, a clause should be inserted, recommending, if not enforcing, the annual inoculation of lambs, as thereby the malady would be kept in check for want of subjects of attack. The lambs should likewise be isolated from other sheep during the progress of the inoculated disease. Inoculation is also of great value if had recourse to even after the small-pox has shewn itself in a flock; and it may be said to be our chief means of controlling the virulence of the affection.

I beg likewise to state, in answer to the inquiry respecting "the purification of the trucks or carriages on which diseased sheep may have been conveyed," that such carriages should first be thoroughly cleansed with soap and water, and then well washed with either Sir William Burnett's disinfectant solution, or a solution of the chloride of lime, as either of these agents will prevent any injurious results following the use of the trucks for other sheep.

I regret to add, that the small-pox is rapidly extending in all directions, and destroying hundreds of sheep; so that, besides the suggestions herein contained, it is of the utmost importance that the most stringent measures should forthwith be adopted to save our native flocks, and to regulate the future importations of foreign sheep. Should the Lords of the Committee, &c. wish me to wait personally on them, or give further information on this subject, I will hold myself in readiness to attend their request at any time, and as often as they may desire.

I am, &c.

(Signed) Jas. B. Simonds.

Sir Denis Le Marchant, Bart., &c. &c. &c.

Further Papers respecting Disease among Sheep.

Foreign Office, 12 August, 1848.

Sir,

I am directed by the Secretary of State to transmit to you, to be laid before the Lords of the Committee of Privy Council for Trade, the accompanying copies of despatches from Her Majesty's Consuls at Calais, Boulogne, Middleburg, Ghent, and Antwerp, containing information relative to the sheep-pox.

I am, &c.

(Signed) John Bidwell.

The Secretary to the Board of Trade.

Calais, 10 August, 1848.

My Lord,

I have the honour to acknowledge receipt of your Lordship's communication, dated the 4th instant, with enclosures, relative to the disease called "variola ovis," now prevalent in England amongst the sheep.

On inquiry, and from the best information, I find that no such disease exists in the district of my consulship, nor in the adjoining parts.

The only disease known at present is the sore foot, which has been very troublesome this season in the northern parts of France; so much so, that out of a flock of 250 sheep, 130 have been laid up at the same time: it comes on very suddenly, and is easily cured by paring the feet, and applying vitriol to the injured part.

Should I obtain any further information, I shall lose no time in communicating the same to your Lordship.

I have, &c.

(Signed) J. Morley, V. Consul.

To the Viscount Palmerston, &c. &c. &c.

Boulogne-sur-Mer, 10 August, 1848.

My Lord,

In compliance with your Lordship's instructions contained in Mr. Bidwell's printed circular, dated the 4th instant, marked "Separate," relative to sheep imported into Great Britain within

the last twelve months having been attacked by a virulent disease similar to small-pox in the human frame, I lost no time in taking immediate steps to ascertain whether any such disease is at present prevalent amongst the sheep within the district of my consulate, and parts adjacent; and I have now the honour to inform your Lordship that the result of the most minute inquiries made by me is that no disease of the sort has as yet made its appearance among the sheep within the district of my consulate, and parts adjacent.

I have, &c.

(Signed) Wm. Hamilton.

The Viscount Palmerston, &c. &c. &c.

(Separate.) Middleburg, 8 August, 1848.

My Lord,

Agreeably to the instructions as per circular printed letter from the Foreign Office, dated 4th of this month, I have most respectfully the honour to give your Lordship the assurance from the best of authority, that there is no small-pox, "variola ovis," amongst the sheep within the whole province of Zealand, and the parts adjacent.

I have, &c.

(Signed) Wm. Ellinckhuysen, Vice-Consul.

The Viscount Palmerston, &c. &c. &c.

Ghent, 10 August, 1848.

Sir,

I have the honour to acknowledge the receipt of your despatch, dated August 4th (marked 3), and its enclosures, for my information, requiring that I should with all practicable despatch communicate to Viscount Palmerston if any disease existed at present amongst the sheep within the district of my vice-consular functions, and, if so, what steps have been taken by individuals or public authorities to check its progress.

In obedience to the above instructions, I have the honour to report, for Viscount Palmerston's information, the result of my inquiries in this matter.

No disease of the nature of small-pox, "variola ovis," exists

in Eastern Flanders, or, as I am informed, in the adjacent parts, amongst the sheep, nor other infectious disease at the present time. The disease most common to the sheep in Eastern Flanders is an attack on the liver, arising, as I am informed by veterinary practitioners, from a small worm (hydatid), which must be in the herbage, and which fastens on the liver; and is found to be more prevalent amongst the sheep in the marshy and heavy grounds, towards the Dutch frontiers (commonly called the Polders), where the atmosphere is humid, and the herbage consequently more or less impregnated in its qualities.

When this disease manifests itself, the sheep are removed into stalls or sheds, and fed exclusively on dry food, mingled with salt, which generally accomplishes a radical cure of the disorder.

I have questioned several of the large cattle proprietors, also the veterinary practitioners, as to the disease mentioned in your despatch, and have been informed that the malady is unknown to them, never having met any case of such a disease amongst the sheep in this part of Flanders; and that at present there exists no epidemic disease amongst the sheep in this part of the country.

I have, &c.

(Signed) Robert Novie, Vice-Consul.

John Bidwell, Esq., &c. &c. &c.

(No. 16.) Antwerp, 10 August, 1848.

My Lord,

I have the honour to acknowledge the despatch of the 4th instant, relative to diseased sheep; and I have to acquaint your Lordship, as the result of the inquiries I have made among persons likely to be conversant with the subject, that there is no unusual disorder prevalent amongst the sheep in this country.

These inquiries have been made of the mutton butchers (which is a separate trade here), the salesmen supplying them with sheep, and veterinary surgeons; and they all agree that they know of no illness at all.

I have, &c.

(Signed) Godschell Johnson.

The Viscount Palmerston, G.C.B., &c. &c. &c.

Foreign Office, 16 August, 1848.

Sir,

I AM directed by the Secretary of State to transmit to you, to be laid before the Lords of the Committee of Privy Council for Trade, the accompanying copies of despatches from Her Majesty's Consuls at Marseilles, Charente, and Brest, containing information relative to the sheep-pox.

I am, &c.

(Signed) JOHN BIDWELL.

The Secretary to the Board of Trade.

(No. 19)

Marseilles, 12 August, 1848.

My Lord,

I HAVE had the honour of receiving the despatch, marked "Separate," from the superintendent of the consular service, dated the 4th inst., instructing the Consul to ascertain whether a disease similar to the small-pox in the human frame is at present prevalent among the sheep within the district of this consulate, and the parts adjacent.

Having made the necessary inquiry on that subject with all the promptitude in my power, by applying to the mayor of this city for information on that point, I was informed that no contagious disease existed among the sheep in this department, nor in the parts adjacent; but the mayor being unable to acquaint me with the steps usually taken by the public authorities to check its progress when such an event takes place, he referred me to the veterinary surgeon of this district, who stated that, when the disease among those animals is pronounced to be of the same nature as the small-pox, the treatment is the same that is adopted when the disease manifests itself in the human frame; viz. by inoculating those that are not infected, and separating them from those that have the disease upon them. The process of inoculation is performed in the interior part of the thigh.

I must now observe, that, although there does not exist any contagious disease among sheep, an epidemic malady is prevalent in the country around Marseilles among pigs and goats, which has obliged the mayor to prohibit, in very express terms, the

introduction into the city, and the delivery for consumption in the precincts, of the flesh of those animals, whether cut up in pieces, or recently salted in the form of hogs' puddings, sausages, or tongues: this prohibition is to be vigorously maintained until further orders.

The owners of pigs and goats are bound to kill such of those animals that are known to be attacked with the disease, and to bury them without delay: the persons who infringe these orders will be prosecuted before the competent tribunals.

I have, &c.

(Signed) W. H. Richardson,
Pro-Consul.

The Viscount Palmerston,
&c. &c. &c.

(Separate.)

Charente, 12 August 1848.

My Lord,

I have the honour to acknowledge the receipt of your Lordship's despatch of the 4th instant, enclosing copies of three letters from the Board of Trade on the subject of "Variola Ovis" in sheep.

This disorder, which is well known to the farmers here, where it is called "Claveau," or "La Picotte des Moutons," frequently makes its appearance, but is not prevalent at the present time.

It is highly contagious and infectious, so much so, that a healthy flock will contract it by passing over a field or road in which a sick one may have grazed, lain or passed three or four days before, if in the meantime no rain has fallen to purify the ground. Dogs will convey the distemper from one flock to another; and a healthy flock has been infected without contact, when placed under the wind of a sick one, at a distance of six hundred yards.

In consequence, the Articles to the Rural Police Regulations, of which I herewith forward an extract, are strictly observed each time the disorder makes its appearance.

As soon as the disease is observed, the sick sheep are separated from the healthy ones, and kept as warm and dry as possible; and

the greatest expedition is used in inoculating all the healthy ones from them, taking care to keep them warm also.

By inoculation, the mortality, which may be estimated at from thirty to fifty per cent., and often more on sheep naturally affected, is reduced to three or four per cent., and the duration of the malady of a large flock is shortened from ninety to fifteen or twenty days; all the sheep being ill at once, instead of one after the other.

They fatten well as soon as the disease leaves them, and the meat is considered good and wholesome a month afterwards; nor are they liable to contract the illness a second time, though put in contact with infected animals.

The disorder makes its appearance from the second to the eighth day after the infection has been received; so that on buying or importing sheep, ten days' observation or quarantine will always shew whether or not they are healthy, and may be safely mixed with others.

I have, &c.

(Signed) J. Close.

The Viscount Palmerston,
&c. &c. &c.

Extract from the "Code Rural," compiled by *M. de Verneil* in 1810.

Art. 227. Lorsque le claveau sera reconnu exister dans un troupeau, le propriétaire sera tenu d'en faire sur-le-champ la déclaration au maire de sa commune, qui assemblera les autres propriétaires de troupeaux de la même commune.

228. Ces propriétaires fixeront le cantonnement qui doit occuper le troupeau malade, et ceux qui doivent occuper les troupeaux sains, de manière et dans aucun cas, et pendant toute la durée de la maladie, les uns et les autres ne puissent passe sur les mêmes routes.

229. Lorsqu'un propriétaire aura un enclos assez étendu pour y mettre son troupeau, il sera obligé d'y retenir pendant toute la durée de la maladie.

230. Le parc de son troupeau malade ne pourra être placé à moins de 100 mètres des grandes routes, et de 50 mètres des chemins vicinaux.

231. Le maire de la commune sera tenu de faire connaître sur-le-champ aux maires des communes limitrophes l'existence de la maladie et des cantonnements prescrits.

232. Dans le cas où les troupeaux d'une ou de plusieurs communes seraient forcés d'aller au même abreuvoir, ceux attaqués de la maladie ne pourront y aller qu'après les autres, et seulement aux heures et par les chemins qui seront indiqués.

233. Les animaux morts du claveau seront enterrés avec leur peaux et toisons.

234. Les mesures prescrites par les Articles ci-dessus auront leur exécution pendant trois mois, temps ordinaire de la durée du claveau.

(No. 14.)

Brest, 12 August 1848.

My Lord,

Mr. Bidwell's circular despatch of the 4th inst. directed me to take immediate steps to ascertain whether the "Variola Ovis" is now prevalent amongst the sheep within the district of this consulate, and to communicate to your Lordship, with all practicable despatch, any information I may be able to obtain on the prevalence of this disease, and the steps usually taken by public authorities or by individuals to check its progress.

In compliance with these instructions, I applied immediately to the President of the Agricultural Society of this department, and to the veterinary surgeon appointed by Government; and I now have the honour to report to your Lordship that this disease, although well known under another name (La Clavelée), and provided against, does not, however, prevail in this part of France.

The enclosed copy of the reply of the veterinary surgeon contains valuable information on this subject, both with respect to prevention by inoculation and the steps ordered by Government to be taken to check the progress of this disease.

The President of the Agricultural Society called upon me to-day: his information, given verbally, coincides with that of the veterinary surgeon.

I have, &c.

(Signed) Anthony Perrier.

The Viscount Palmerston,
&c. &c. &c.

Landerneau, le 11 Août 1848.

Monsieur le Consul,

Par votre lettre du 8 courant, à laquelle je m'empresse de répondre, vous me faite part d'une maladie contagieuse qui exerce ses ravages sur les moutons en Angleterre, et que cette affection parait avoir de l'analogie avec la variole de l'espèce humaine.

Nul doute pour moi, M. le Consul, que la maladie dont vous m'entretenez ne soit celle designée aussi sous le nom de "Variola Ovis" par les anciens naturalistes, et qui est connue en France sous le nom de "Clavelée des Moutons." Les causes ne sont pas encore bien connues; elle ne se montre guère que dans la zone du Nord et au Nord-est de Paris. Le Brétagne jusqu'à ce moment ne l'a pas nu paraître sur sa race ovine; pour ma part, je ne l'ai pas observée dans le Finisterre depuis 30 ans de pratique.

Dans le cas où elle viendrait se manifester sur quelques moutons, le seul moyen efficace mis en usage est l'inoculation.

L'expérience a prouvé que, lorsque la clavelée était abandonnée à elle-même, la mortalité des sujets atteint le chiffre de 40 à 60 sur 100; pendant qu'en mettant en usage l'inoculation, la perte se reduisait de 5 à 10 pour 100 au plus.

Cette différence de mortalité vous fera apprécier, M. le Consul, l'empressement que l'on doit mettre dans une pareille circonstance à avoir recours à l'inoculation.

Quant aux mésures que nous recommandons en France pour empêcher la contagion, elles sont les suivantes:—

1°. Le propriétaire d'un troupeau sur lequel s'est developpée la clavelée, est tenu d'en prévenir de suite le maire de sa commune; ce magistrat en donne avis aussitôt à tous les autres propriétaires riveraines.

2°. Le maire d'accord avec les propriétaires intéressés fixent l'endroit où le troupeau doit être sequestré, afin d'éviter toutes communications des animaux malades avec les sains.

3°. Si le propriétaire du troupeau malade a un enclos assez étendu pour y mettre ses animaux, il est obliger de les y retenir pendant tout la durée de la maladie.

4°. Il faut que le parc soit au moins à 100 mètres des chemins par où peuvent passer d'autres troupeaux.

5°. Le maire de la commune doit aussi prévenir immédiatement

les maires des communes limitrophes de l'existence de la maladie, afin d'éviter toute communication avec les malades.

6°. Enfin, les animaux morts de la maladie sont enterrés avec leur peaux et toisons.

Si vous aviez besoin de nouveaux renseignemens veuillez disposer de celui qui vous prie d'agréer, M. le Consul, &c.

(Signé) KERZEAU.

M. A. Perrier,
&c. &c. &c.

Foreign Office, 17 August 1848.

Sir,

I AM directed by the Secretary of State to transmit to you, to be laid before the Lords of the Committee of Privy Council for Trade, the accompanying copy of a despatch from Her Majesty's Consul at Granville, containing information relative to sheep-pox.

I am, &c.

(Signed) JOHN BIDWELL.

The Secretary to the Board of Trade,
&c. &c. &c.

(No. 32.)

Granville, 14 August, 1848.

My Lord,

I HAVE the honour to acknowledge despatch "Separate" of 4th instant, with three printed enclosures, relative to the disease called the "Variola" in cattle, similar to small-pox in man; desiring me to ascertain whether it be prevalent in this consulate, and to communicate any information on the subject.

I have the honour to state, that, after inquiry throughout this consulate, I find that this disease has not appeared; however, it is well known in various departments in France; and from inquiries I have made on the subject from an intelligent veterinary surgeon, who has not long since treated the disease near Paris, I enclose to your Lordship a report, being the results of his experience, which are approved by the practitioners at Paris: it

comprehends the symptoms and treatment of the disease. I have confined myself to the "Variola Ovis" or small-pox in sheep, as that is the animal mainly in question. Should your Lordship require details upon the same disease and treatment in other animals, I can obtain them also.

There was last year a disease in this department which attacked the feet of cattle and sheep, spreading to the mouth, usually called "Epidemic," and here, vulgarly, "Cocotte." I have not alluded to it in this report, but, should it be required, I can furnish details on the subject.

I have, &c.

(Signed) JOHN TURNBULL.

The Viscount Palmerston, G.C.B.
&c. &c. &c.

VARIOLA OVIS.

THIS disease has all the characteristics of the small-pox in man, and appears a variation of the disease which attacks the cow, very seldom the horse, sometimes the pig, and has been known among other animals; it is found in animals with pustules of the same nature as in man. From the report of the experiments in France, those who have eaten mutton in this state of disease have not been attacked with any immediate illness. It is remarked that, when this disease attacks a flock of sheep, it has sometimes three distinct attacks: the first usually benign, lasting twenty to thirty days; the second shortly follows the first, is malignant, lasting about a month. When two-thirds of the flock will have been attacked, the third attack follows when the other third of the flock are subjected to the disease, but of the benignant kind: these successive attacks last about three months. The symptoms of the disease are thus developed in the sheep: heat about the ears, loss of appetite, distate for food, diminution of milk in the female, acceleration of the pulse and breathing, constipation at the end of three or four days, a pustulent eruption, sometimes around the nostrils and lips, the pustules which appear are flat,

circular, and surrounded by a red ring or kind of inflamed circle, causing suffering, being about the size of a sixpence, or even larger: during the formation of the pustule its size increases, depressed in the middle, and umbilical. These signs are very characteristic: soon the pimples take a reddish, leaden, or silvery tint, the reddish ring already mentioned assuming a livid hue; a kind of depression in the centre of the pustule takes place, from the interior skin resisting longer than its surrounding part. A clear limpid secretion succeeds, during which the animal is much depressed. At the end of ten or twelve days this liquid becomes somewhat coloured and thicker, the pustules of a silver grey in the upper part, and brown at the sides, drying from the centre, forming crusts or scabs, which fall off; then the vesicles become a dirty grey; later the spot becomes cicatrized, with more or less loss of substance. These are the usual symptoms in the sheep, and in most animals. This disease is called by cattle-dealers in France by different unscientific names, such as Close-claveau, Clouseau-picotte, Petite-vérole, Clavelée.

Usually the disease follows a regular and benign course; sometimes it is malignant and dangerous: it has been known very long, but attention was particularly called to it in 1747, by a French doctor, Joubert. It does not appear always in the same places, and sometimes returns to certain districts within an interval of ten or twelve years. It is divided into two kinds, the Benignant, and the Malignant or Confluent: the first not dangerous; the second makes great havock, the pustules being nearer together, or almost joined. It is also subdivided into four periods; viz., incubation, eruption, suppuration, desiccation. It has been very usual of late years, particularly in the neighbourhood of Paris, to inoculate animals for this disease; the animal which has it in the most favourable manner being chosen at a particular period of the disease, and the others are inoculated from that virus. The calculation is, that from four hundred inoculated, only four die.

During the first period of the disease (incubation) there is nothing perceptible, and that period lasts according to the intensity of the disease and the constitutional state of the animal; but when the eruption approaches, the animal is sad and cast down, walks slow, eats little, if at all; the milky secretions diminish or

stop, feverish symptoms commence, shivering, pulse small and quick, the membrane of the eye reddish, skin hot: if the fever be intense, great thirst accompanies; like in all serious diseases, the pulse is concentrated. The above symptoms are less strong in lambs, and are shewn rather by great drowsiness, lasting four or five days in summer, six or seven in the winter, being retarded by the cold, for the heat of the skin facilitates the eruption. After a time signs of eruption appear, which are reddish spots where the skin is most delicate, also about the lips, eyes, thighs, inner part of the genitals, and upon the belly. In the centre of these red spots, which become somewhat violet or greyish, elevations are seen, or small risings, shewing themselves in the interior of the skin, inflamed, rising gradually, with a base beginning about the size of a lentil, and increasing to the size of a shilling; they become more or less prominent, and more or less frequent, but all conical, and some sunken in the centre, with an umbilical form, like the *nux vomica*. Before arriving at that state, the skin was red, becomes less so, and flatter; at this period fever ceases completely. The feverish period being accomplished, the pustules now change in appearance, which should be remarked, to know the course of disease, this being the period for inoculation from the virus, choosing the mildest (which is called in France Claveau). If one of these pustules is opened, which ought to be at its height, first follows blood, next tinged serous matter, and, lastly, serum; these liquids raise the epidermis, rendering the eruptive surface round: this period of secretion lasts commonly four or five days in summer, six or seven in winter. After this succeeds another appearance, important to note, for it has for effect a secondary affection, sometimes more dangerous than that we have alluded to—that is, another purulent inflammation in the centre of the pustule. The swelling is less; from silvery grey, which it was, it becomes more leaden and sunken: if an incision is made, it is said that at times with the discharge animalculæ are found. During this stage another period of fever takes place, with sadness, lassitude, heat of skin, disinclination to ruminate; the skin appears painfully sensible; and this second fever, although sometimes more violent than that preceding the eruption, is not so dangerous when the disease is of the benignant kind. The

duration of this part of the malady is from ten to fifteen days; the swellings sink, become covered with thick crusts, which end in drying up: if one of these crusts is taken off, the skin underneath has a raw pimple; at a later period the crusts fall, and under is a hollow scar, still raw, like a recent sore.

To sum up what we have said upon the benign Variola Ovis :— it is characterised first by a fever, after by a pustular elevation, then by a development of the secretion or suppuration; lastly, by the desiccation, which is the longest, but during which period the disease is not dangerous. The total duration is from twenty to twenty-five days, sometimes a month, according as the desiccation proceeds in different animals.

THE LAW OF THE NUTRITION OF ANIMALS,

Pointed out by Dr. R. D. Thomson, *illustrated by* F. Knapp, *Ph. D., Professor of Technology and Chemistry in the University af Giessen.*

[From the " London, Edinburgh, and Dublin Philosophical Magazine."]

On the farm of Boussingault at Bechelbronn, in order to ascertain the quantity of milk produced, seven cows were subjected to an accurate series of experiments extending over a whole year. They received daily 30 pounds of hay, or of those roots similar in composition, and yielded together 8788 maass (3837 quarts). The time during which they supplied milk was 302½ days. This gives as a mean 4·1 maass (1·8 qt.) daily for each cow. But the quantity of milk varies very much; for in the months of July and August they yielded above 6 maass (2·64 qts.), while in February and March they gave only about 2½ maass (1·1 qt.). From observations of a similar nature, made however upon only one cow, the average daily quantity of milk yielded was 3·7 maass (1·63 qt.). If we take 2½ maas (1·097 qt.) as the lowest quantity, and 7 maass

(3·073 qts.) as the highest, we get daily, for one cow, from 10·3 lbs. to 29 lbs. of milk, which contain—

4·69 oz. troy	to	13·04 oz. butter.
7·08		20·02 oz. sugar of milk and sol. salts.
7·88		22·18 oz. caseine and insol. salts.
Total 19·65		52·24 oz. solid matter.

In reference to the influence which the food has upon the quantity of milk, all farmers know that cows give most milk with green food, and less with hay, &c. In other respects the influence of the food is not so great as might be expected.

Boussingault and Le Bel agree upon this point, at least so far as concerns the quantity of milk*. Dr. R. D. Thomson, on the contrary, draws from similar and equally extensive experiments the conclusion, that the quantity of milk and butter increases in proportion to the quantity of nitrogen (contained in the plastic matter) of the food. He has drawn this conclusion from experiments upon two cows during periods of five days. His results are shewn in the following table, in which grass is the only exception†.

Kind of Food.	Pounds of milk.	Pounds of butter.	Nitrogen in the food in 5 days, in lbs.
Grass	114	3·50	3·32
Barley and hay	107	3·43	3·89
Malt and hay	102	3·20	3·34
Barley, molasses and hay	107‡	3·44	3·82
Barley, linseed and hay	108	3·48	4·14
Beans and hay	108	3·72	5·27

* Boussingault has recently found that hay is equally efficacious with grass in producing milk and muscle; a result which is certainly not applicable to hay made in usual seasons in this country.—Tr.

† Dr. Thomson attributes the superiority of grass to the proper balance of the proximate principles, which in hay and grain is much altered by the drying process.—Tr.

‡ In Dr. Knapp's work the number taken from the original is 106. The present number has been recalculated from the original data.—Tr.

Another table gives the average quantity of solid constituents of the milk for periods of five days.

Kind of food.	Grass.	Barley entire.	Malt entire.	Barley crushed.	Malt crushed.	Barley and Molasses.	Barley and Linseed.	Beans.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Milk.....	29·64	25·57	24·82	28·12	26·61	26·96*	27·48	27·0
Butter	5·96	5·56	6·56	6·87	6·43	7·00	7·00	7·5

The milk consists of—water, 87·19; butter, 3·70; sugar, 4·35; caseine, 4·16; sol. salts, 0·15; insol. salts, 0·44. The constituents of the butter are—oil, 86·3; caseine, 0·9; water, 12·8.

The fact that not merely the quantity of milk but also that of the butter increases with the amount of nitrogenous matter in the food (that is, with the proportion of plastic nourishment), is worthy of notice; for from the absence of nitrogen in the butter, we should be apt to expect the contrary. Playfair, in his experiments, has certainly inferred this; for, according to him, those substances which do not contain nitrogen (potatoes, &c.), yield milk rich in butter, and rest (stall-feeding) acts in the same way; while if the animal be allowed to feed on poor pasture, where it must move about a good deal, it yields milk rich in caseine. But his experiments are continued for such short periods, that important conclusions cannot be deduced from them. From Dr. Thomson's observations, we find that if a cow always receives the same kind of food, the quantity of milk gradually decreases; but if its diet be changed, it rapidly increases. A frequent change of diet is therefore advantageous. He has also established the rule, that the quantity of milk obtained from a cow is greater in the morning than in the evening.

When fed on barley and hay, they yielded—

	Aug. 1.	Aug. 2.	Aug. 3.	Aug. 4.
Morning .	$11\frac{1}{2}$ lbs.	$11\frac{1}{2}$ lbs.	$10\frac{10}{16}$ lbs.	$10\frac{14}{16}$ lbs.
Evening .	$10\frac{1}{5}$	$9\frac{11}{16}$	$9\frac{11}{16}$	$9\frac{11}{16}$

* This number is 25·69 in the original German, but has been recalculated from the English data.—Tr.

[The following observations of Dr. Knapp are founded on a table given by Dr. Thomson, deduced from his own experiments, in which the relation between the nutritive and calorifiant matter is stated for different kinds of food.

	Relation of nutritive to calorifiant matter.
Cow's milk—food for a growing animal	1 to 2
Human milk	1 .. 6
Beans	1 .. 2½
Oatmeal	1 .. 5
Semolina, Barley	1 .. 7
English wheat flour—food for an animal at rest	1 .. 8
Potatoes	1 .. 9
Rice	1 .. 10
Turnips	1 .. 11
Arrow-root, Tapioca, Sago	1 .. 26
Starch	1 .. 40

(*Thomson on the Food of Animals*, p. 167.)

From this table it appears, that an animal taking exercise should be supplied with food formed upon the same principles as the first-mentioned six; and that in proportion to the exertion, the closer should be the relation between the ingredients.—Tr.]

In order to judge of the values of different kinds of food for practical purposes, it must first be ascertained in what relation the blood-forming or nutritive constituents stand to the calorifiant. The kind of food must also vary with age, kind of employment, way of living, climate, &c. With the highest probability we may predicate, that a man in an employment demanding great mental activity will require, in addition to a greater proportional amount of bodily rest, that the calorifiant and blood-forming constituents should be in a different proportion in the food to that of the man whose employment requires great bodily activity.

Thomson has traced out a very simple and ingenious method of

supplying this defect in our knowledge. He ascertains the weight and composition of the food given in a certain time, as also that of the excrement thrown out. From both factors he is enabled to calculate the quantity of food assimilated, as also the relation of the calorifiant to the blood-forming constituents. He found that a cow, stall-fed, assimilated daily 15·28 lbs. of rye-grass, which contained 1·56 lb. of blood-forming and 13·00 lbs. of calorifiant matter. They thus stand in the relation of 1 to $8\frac{1}{3}$, a proportion which, it is highly probable, is much more nearly related in man, as the relation in the various kinds of farinaceous food is about 1 to 5 or 1 to 6. We know with certainty that in the infant the relation, as in milk, must be 1 to $2\frac{1}{2}$.

A company of soldiers were fed on flesh, bread, vegetables, legumes, beer, brandy, fat, &c.; and from the experiments made on these by Liebig, the relation of the blood-forming to the calorifiant matter in the food may be accurately determined. By ascertaining the amount of food taken and the excrement thrown out, the quantity of food assimilated may be determined, as also the abovementioned relation. In this manner the following results were obtained:—

		Water.	Solid matter.	Relation of the blood-forming to the calorifiant matter with solids.
Pounds of food consumed	4001	1655	2346	298 : 1357
Pounds of excrement . .	294	$220\frac{1}{2}$	$73\frac{1}{2}$	13 : 51
Relation of the blood-forming to the calorifiant matter in the food assimilated				285 : 1306 = 1 : 4·7.

As this number 4·7 is calculated from experiments made on persons who undergo considerable bodily exercise, it will increase* in those whose employment is sedentary. Although these numbers are not absolutely correct, some important conclusions may be drawn from them.

It is evident that the relation 1 to 4·7 is almost exactly that which exists naturally in the various kinds of grain. Those barbarous nations which live entirely on flesh receive a large excess of blood-forming matter, which may be counterbalanced either by

* The word in the original is "vermindern;" but in the present case it is obvious that the author means the reverse of diminution.

the addition of calorifiant matter, or by increased bodily exercise. On the contrary, the poorer classes amongst us are obliged to live on the cheapest food they can obtain, such as potatoes, &c.*, which are one half poorer in blood-forming or nutritive matter than the different kinds of grain. In the first case Nature has only to get rid of an excess; but in the latter she has to supply a deficiency, which must be done by bread, milk, &c. It must be evident to every one that this way of living is unnatural in the extreme. A person living entirely on potatoes may be said to be on the brink of a precipice without a single inch of ground before him, where the only safety lies in retreat. Its disadvantages may be shewn in three different ways :—1st. It leads to imperfect bodily strength and unsoundness of health. 2d. To increased mortality and shortness of life. 3d. To loss of energy and to a kind of stupidity, and want of interest in every thing but what concerns the merest animal interests. A country in this state is always ripe for rebellion, and ready to join in every insurrection.

From the above remarks, it would appear that the manufacture of brandy from potatoes is a separation of the excess of calorifiant matter, whilst the residue contains all the blood-forming constituents. It is mixed with the gluten of the malt, and thus forms a half-soluble food. In order, however, that it may suit the nature of ruminating animals, straw or some such food should be added to it. As potatoes contain about one part of albumen for ten of starch, the half of the starch may be converted into spirit, while the remainder will consist of a mixture having the nutritive and calorifiant constituents in the same proportion as in grain (1 : 5).

* "The previous views," says Dr. Thomson (on Food, p. 173), sufficiently explain the experiments which have been made upon cows, in which the result was unfavourable when they were fed on potatoes and beet-root in considerable quantities, as both of these substances contain an excess of calorifiant matter. It is well known to feeders of cattle, that an animal fed on large quantities of potatoes is liable to such complaints as affections of the skin, and also to loss of weight. These consequently, it may be readily inferred, arise from the want of the proper balance between the elements of the food."—Tr.

TRANSACTIONS OF THE VETERINARY MEDICAL ASSOCIATION.

October 31, 1848.

The first Meeting for the Session was held in the Theatre of the College this evening.

The Treasurer in the Chair.

The Secretary read his Annual Report, after which the Chairman presented the Silver Medal and Certificates of Merit to the successful competitors.

Secretary's Report for the Twelfth Session, 1847-8.

" Ignorance is the curse of God,
Knowledge the wing wherewith we ascend to heaven."

Shakspeare.

Another eventful year has rolled away into the vast ocean of Eternity, numbering itself with " those beyond the flood," and the revolving wheel of Time has again brought round the Anniversary of the Veterinary Medical Association.

The Council greet you with the same pleasure they have been wont to do, having no grounds for despondency; for although all has not been as they could have wished, nevertheless, there has been much onward progress made, and the prospects of the future are still bright and cheering, Thus it is that " on the vantage ground of the past we look through the vista of the future, and hope lends her aid to our anticipations."

It has been said that the present is essentially the age of useful applications. It may not be so much the age of the discovery of new truths, or of principles developed by the investigators of science, as of their usefulness, and the application of them to our comforts, conveniences, and even the necessities of life. It may be that for ages, *that* has been allowed to lie dormant and unnoticed, which if applied would have proved ameliorative of the condition of man, and conducive to his well-being; but being now resuscitated, the wonderment is, that it should have been so long neglected, or how it was we did so long without it.

If we glance at the progress that is taking place in the arts and sciences in this our day, we shall be forcibly struck with the

truthfulness of this remark, and particularly in those divisions which, while they minister to the wants, at the same time enhance the comforts and the temporal happiness of the human race. Among them that of medicine may lay a fair claim to its share of advancement; and those who have contributed towards this end well deserve a meed of praise from their fellow-men.

To chronicle the passing transactions of a Society, ostensibly formed for the promulgation of scientific truths, is but to mark the steps of its progress, be it onward or retrograde; and it is well when the review furnishes unmistakeable proof that the former has obtained rather than the latter. The Veterinary Medical Association having now existed for twelve years, it may fairly be expected that from it some good has been derived, some addition by it made to the means resorted to for promoting the advancement of our common art; and with a degree, it is hoped, of justifiable pride, may we refer for a proof to its "Transactions," published in connexion with the VETERINARY RECORD, indices to which are these periodical reports.

To facilitate the acquirement of a knowledge of what has been effected during the past Session, the same divisions will be adopted as heretofore.

PATHOLOGICAL CONTRIBUTIONS.

The opening of the session again afforded abundant proof of the kind interest our friends continue to take in our well doing. Many were the morbid specimens, with the illustrative cases, we had the gratification of placing on the table at the earlier meetings of the Association: some of these, from their possessing more than ordinary interest, had been before recorded in the JOURNAL OF THE ASSOCIATION. Among which are the "Abscess in the testicle of a bull," by Mr. H. Lepper; and of "Sabulous matter in the colon of a horse," by Mr. H. Stevens. Among the others, a specimen of renal calculus, received from Mr. White, introductory to the very interesting case of renal and cystic calculi, by Mr. Dunsford. A ruptured stomach of a horse, with diseased larynx of a bull, from Mr. T. M. Leech. A malformed heart taken from a calf, by Mr. J. S. Carter. A case of Eustachian abscess, by Mr. R. Hunt; and of tuberculous deposits on the heart and lungs of a cow, by Mr. G. Lewis.

Mr. Varnell subsequently explained the lesion that had taken place in the larger condyle of the humerus of a horse, caused by the animal suddenly and violently stamping while being shod.

The duty of the veterinary surgeon being that of alleviating the sufferings of all the lower animals, it becomes him not to refuse his aid whenever called upon. With this feeling is associated the diseased submaxillary bone of a cat, presented by Mr. Bird. The specimen of chronic pericarditis taken from a colt, and forwarded by Mr. T. Barrell, was one possessing considerable interest. From him we also received a case of abscess existing in the lesser curvature of the stomach of a colt, which in all probability was the result of checked or imperfectly developed strangles.

To Mr. Gowing we were indebted for a fractured ischium of a pony, with rupture of the ligamentum teres. Also for a specimen of abscess within the left auricle of the heart of the heifer; as well as a most unusual case of phrenic hernia in the horse, in which the whole of the small intestines had found their way into the thoracic cavity.

From Mr. Woodger were received specimens of fractured os suffraginis, and phrenic hernia; the history of the cases in which these occurred was given by Mr. Broad. Also a very large calculus, of the oat-hair formation, taken by him from the colon of a horse, which had been the cause of a rupture of that intestine. The extensively ulcerated state of the lining membrane of the larynx of a horse, with atrophy of its muscles, occurring in a "roarer," the result of an acute attack of laryngitis, related by Broad, presented lesions very unusually met with.

The Cases communicated by members of the profession have been numerous and varied. We have already referred to some read at the opening meeting. These were followed by a case of ventral hernia, related by Mr. Varnell, existing in the College Infirmary, which elicited from the members their several modes of treating similar lesions. This case ultimately got well.

The cases of poisoning with arsenious acid, communicated by Mr. G. B. Webb; with calomel, by Mr. J. Carter; and with lead, by Mr. R. Mead, are highly instructive, and bespeak the necessity of caution in the employment of these compounds, medicinally or otherwise.

The case of tetanus from Mr. T. Hurford, V.S., 15th Hussars,

in which the extract of purging flax—*cannabis sativa*—had been given by him with success, both in this and several other cases, is not without its therapeutical value.

The instances of purpura hæmorrhagica, transmitted by Mr. J. Mannington, were unquestionably of high interest; as was the case of rupture of the parotid duct forwarded by Mr. W. C. Sibbald.

The case of diseased heart, communicated by Mr. W. Stanley, was replete with instruction; and also that of acute gastritis, apparently produced by some corrosive agent having been administered, and which caused the death of the animal, as related by Mr. G. T. Brown. From him we also received the history of a disease similating glanders and farcy, which had been successfully combatted by him, and in which were shewn the advantages derivable from certain therapeutic agents when judiciously employed. He likewise related a case of glanders, the morbid parts being by him laid before the members, and described the changes which had taken place.

The case of stricture in the œsophagus of a horse, by Mr. Austin, is one not of every-day occurrence.

Essays.

The Prize Essays, received from a practitioner, Mr. S. Fisher, and a then pupil, Mr. G. T. Brown, will have been read with high gratification, and possibly no little profit. Both give proof of the onward march of veterinary science.

The first Essay for discussion was introduced by Mr. W. B. Lord, titled "On Organic Chemistry." The importance of the subject none can gainsay; the regret is that its details still remain enshrined in so much that is mysterious: it, however, awakened an interesting argument. To this succeeded one on "Spasm of the Bowels, and its consequences," by Mr. C. N. Carter. It was of practical worth, but contained nothing that was novel. Nevertheless, it was the means of giving publicity to a mode of treatment advocated by Mr. Wright, V.S., Burnham, who largely and successfully employs the extract of henbane in preference to opium, or any other antispasmodic agent. The debate was very discursive; still many points of interest were touched upon.

To this followed a thesis "On the comparative value of the

agents employed as counter-irritants by Veterinary Surgeons," introduced by Mr. B. Cartledge. The use of the firing iron and its consequences may be said fairly to have awakened the spirit of argument, which rested on the question, Does it or does it not act as a bandage? The majority of those who took part in the discussion thought it did not; yet there were others, who believed that, *practically*, the benefits resulting from it depended on its so operating. The second evening's debate on the subject was opened by a communication from Mr. Mellows, late V.S. to the 1st Dragoon Guards, in which he gave his opinion of the *modus operandi* of the actual cautery.

The paper on "Dentition in animals," by Mr. Fitter, elicited but little matter of any real importance during its consideration; yet the Essay itself evidenced a spirit of inquiry.

The very elaborate Essay on the "Anatomy, physiology, and pathology of the liver of the horse," introduced by Mr. Clements, is highly creditable to him as a compiler, and is also a proof of his industry and talents.

The paper "On the various accidents to which bone is liable," embracing fracture and dislocations, by Mr. R. Gray, was of a nature that admitted of but little discussion; it being simply a detail of facts, which nevertheless may prove of use to the junior members of the profession.

The subject introduced by Mr. Weston, "The anatomy, physiology, and pathology of the stomach of the ox," was one calculated to awaken an interesting debate, which, however, it failed to effect. This, perhaps, may be attributed to the indifference which will steal over the minds of members as a society approaches towards the close of its meetings. Yet, like an expiring taper, the adjournment of the Sessions was irradiated by an admirable thesis on "Inflammation, its causes, phenomena, terminations, and treatment," introduced by Mr. J. Gamgee, which alike gave proof of his professional zeal and love of scientific research and investigation.

If, during the debates that followed the reading of these several Essays, the questions propounded have not always received a satisfactory solution, nevertheless much has been adduced that is suggestive, and from which good has been derived by the student

of veterinary science, through the inculcation of right principles, true pathological views, and correct modes of the treatment of diseases; the legitimate objects held in view by the founders of the Veterinary Medical Association, so that, in great part, their wishes have been realised.

Having examined these Essays, the Council deem the following to merit the especial thanks of the Association, by which their respective authors rank as HONORARY FELLOWS of the Association:—

On organic chemistry, by Mr. W. B. Lord.

On spasm of the bowels, by Mr. C. N. Carter.

On the comparative value of the different counter-irritant agents employed by the veterinary surgeon, by Mr. B. Cartledge.

On dentition in the horse, ox, sheep, pig, and dog, by Mr. H. J. Fitter.

On the anatomy, physiology, and pathology of the liver, by Mr. W. Clements.

On inflammation, its predisposing causes, phenomena, terminations, and treatment, by Mr. J. S. Gamgee.

It may not be misplaced here to observe, that it never was the intention of the Editors of the VETERINARY RECORD that the whole of these Essays, and the debates on them, should at any time be published, as this would exclude other, and possibly more valuable, matter from the Journal. To them was given the power of selection, and, generally speaking, those papers have been chosen for which the THANKS of the members had been awarded; although it has been the case, that now and then, from their extreme length or some other cause, even these have been found inadmissible. The Editors would take this opportunity of expressing their regret that there should be such an arrear of Association matter; yet is this feeling not unmixed with gratification that the pages of their Journal should be deemed worthy to receive contributions from other sources.

They beg also to acknowledge their obligations to Mr. Ernes for the continuance of translated articles from foreign veterinary works, and to Mr. Gamgee for similar papers furnished by him.

Our readers will not be displeased to know, that, although our Journal has not yet gained the extensive circulation the Editors hope it will, it still maintains its position, and has received the

highest commendations from those whose judgment is highly esteemed; and the same undeviating course will be pursued as that with which it set out.

The Council have to regret the absence of all competitors for the Prize Medals. This apathy is altogether unaccountable, unless it be that the subjects chosen by them for the Essays were not such as possessed sufficient interest; still, after giving to the matter mature consideration, they feel convinced that this cannot be the case, and therefore they have determined that the same themes shall be proposed as last year, namely—

For Practitioners: Parturition, natural and difficult, in the mare. The means of ascertaining pregnancy in all its stages; the period of gestation, and signs of approaching delivery.

For Students: The anatomy of the tongue, larynx, and pharynx of the ox.

The Silver Medal was unanimously awarded to Mr. C. N. Carter, for his anatomical preparation of the muscles, bloodvessels, and nerves of the hind leg of the horse; although here, too, the Council have to lament the want of a spirit of laudable contest for the prize.

The Prize Preparation determined on for the coming Session is, "The vascular and nervous structures of the head of the horse, with the salivary apparatus."

Among the new and improved instruments used in veterinary practice, we must be allowed to give the precedence to those introduced by Mr. Gowing, assured that but one feeling can obtain among the members of our profession for the ingenuity he has displayed, whether in the invention of new forms of instruments or the improvement of old ones; as well as for the readiness with which he has given publicity to all his inventions, reserving to himself no registered or patent right, nor restricting their use in any way whatever. By him, at the commencement of the Session, were laid before the members an improved form of needle for carrying the suture wire; knives for paring out the feet of oxen; an ingenious and highly effective, and at the same time as simple as effective, tracheotomy tube; a universal cramp for compressing the caustic clams; and a pair of scissors for performing the operation of neurotomy.

Mr. G. T. Taylor forwarded some tin vessels which he is in the habit of using for the giving of draughts, instead of the usual horn.

Mr. Varnell suggested an alteration in the shape of the frog seton needle; and from Mr. T. Greaves was received a caoutchouc tube employed by him for the purpose of keeping bandages, or other coverings of an inflamed part, moist with either cold or warm water, as deemed desirable; it being connected with a vessel containing the water, which is placed above the animal.

Again have we to regret the loss by death of several of our members. They are gone "to the house appointed for all living." They have traced the airy road, "the path to which no fowl knoweth, and the vulture's eye hath not seen." In Mr. Mellows, late half-pay 1st Dragoon Guards, we lost a frequent attendant at our weekly meetings, and a contributor to our Journal. Mr. Clarkson, late of the Honourable E. I. Co.'s Service, had returned from India invalided, and was about to proceed to Guernsey for his health. He rested a few days in this locality, to recruit his strength after journeying, when death seized on its victim. Mr. Ward had but recently obtained his diploma, and was about to embark his vessel on the troubled waters of life, when it stranded on the shore. Mr. Foulding and Mr. Woolley were still students; but in both the canker-worm had eaten too deeply to be dislodged: they died of consumption. To these we have to add Mr. W. Fisher, of Biggleswade. And, very lately, we have been informed of the sudden death of the elder Mr. Mayer. He had taken an active part in the proceedings that have for some time past agitated the profession, and rejoiced in the anticipation of a better feeling actuating its members. May his anticipations be fully realised!

There is something, if not awful, at least solemnly impressive, in sudden death; yet, to the soul prepared for the inevitable change, 'tis sudden glory; for

> "Sure the last end
> Of the good man is peace. How calm his exit!
> Night dews fall not more gentle to the ground,
> Nor weary, worn-out winds expire so soft."

But of the bad man,—of him to whom the notice unexpected comes, who to the all-important subject has never given one serious

thought, but allowed his mind to be engrossed by care of sublunary things, and slighted, and by slighting has contemned, the proffered boon of mercy, it may be truly said—

"How shocking must thy summons be, O Death,
To him that is at ease in his possessions!
Who, counting on long years of pleasure here,
Is quite unfurnished for that world to come."

Death's unerring shafts fly thick around us. The time of our departure hence is fixed, and all our days are numbered; and whether they be long or short, our duty is resignedly to wait until we are bidden to depart, so that 'that day may not overtake us as a thief.'

Thus has a review of the past been attempted, and we think there is much to encourage us to perseverance. At the beginning of this report we stated that onward progress had been made, and, we think, ample proof of this position has been adduced. Nor have we any doubt but that, if the same feelings continue to animate the body as those that have hitherto prevailed—for the utmost harmony and the kindliest sentiments have always existed and been reciprocated—the Veterinary Medical Association will prove an institution to which its members will look back in that period of their life when even "the grasshopper becomes a burthen," with a pleasing remembrance, from its having been instrumental in establishing those principles which, on being carried out in after-life, met with their reward.

"Concordiæ res parvæ crescunt, discordiæ
Maximæ delabuntur."

As it respects the Library, considerable additions have been made to it by purchase and presentations, and the number of its volumes is now nearly eight hundred. The books throughout the year have been in constant request by the members.

The funds of the Association present a favourable aspect; all outstanding liabilities are paid, and a small balance remains in the Treasurer's hands.

As an exponent of that which has taken place, and having watched the progress of the Association from its commencement, and noticed its varying phases, these felicitations may perhaps, by some persons, be considered as not unmixed with irony. But is there any institution of a similar nature in which changes have not

occurred? Many of a like kind, we know, have discontinued altogether to exist. And is it not gratifying to be assured that in some measure at least the object of the Association has been obtained, even if all has not been done that might have been, and was hoped would have been? It is true we have lost the countenance and support of many who were wont to be with us, but we have gained that of others: still, we could have wished to have secured the friendship of both, believing it would have been for our profit; nevertheless, we are altogether ignorant of the cause for which they left us, and institute no inquiries. We have wended on the "even tenour of our way" without allowing any desire of change to turn us aside, or love of novelty to divert us. We believe, and therefore have acted in consonance with our sentiments, that the Veterinary Medical Association is pre-eminently calculated to be the means of advancing the best interests of the veterinary profession; and while these sentiments are retained by us, our best efforts shall be given to the maintenance of its integrity, so that it may be handed down to those who may follow us unsullied, and of worth, and also enriched by the fruits of age and experience.

W. J. T. Morton, *Sec.*

The Rules of the Association having been read, the following officers were elected for the present Session:—

President—Professor Spooner.

Treasurer—Professor Simonds.

Vice-Presidents:

Mr. J. Turner.	Mr. J. S. Gamgee.
Mr. W. Ernes.	Mr. J. Yates.
Mr. G. Varnell.	Mr. R. S. Blake.
Mr. T. W. Gowing.	Mr. J. Barford.
Mr. J. Broad.	Mr. W. Smith.
Mr. G. T. Brown.	Mr. J. Lawrence.

Secretary and Librarian—W. J. T. Morton.

November 7, 1848.

The President in the Chair.

On the table were placed the presentations made to the Association during the recess, with several morbid specimens that had been received, and the accompanying histories of the cases in which they occurred were read.

The former consisted of,

1. From Mr. J. Western, V.S., Calcutta,
   A Box of Saltpetre Earth from Salem.
   Specimens, preserved and dry, of the flowers and fruit of the Areca Catechu.
   A Tenia Solium, taken from among sixteen others found in a horse.
2. From Mr. J. Carter, V.S., Specimen of "Trifolium Hybridum."
3. From Mr. W. Baker, V.S., a quantity of Rye Grass highly ergotized.
4. From Mr. E. Braby, V.S., a Shoe made of Gutta Percha, invented for Horses when turned out at Grass.
5. From Mr. E. Crundall, V.S., E. I. Co's. Service, a preparation of the bloodvessels, nerves, &c. of the fore leg of a horse. Mr. Carter also presented his prize preparation to the Museum.
6. From the inventor, Mr. Markwick, a quantity of "Spongio Piline."

To the Library were presented the following works :—

Simonds on Variola Ovina. By the Author.
Digestion in Ruminants. By the same.
Quincy's Dispensatory. By Mr. P. Fry, V.S.
Morton's Manual of Veterinary Pharmacy, 4th edition. By the Author.

Mr. Gowing exhibited a simple but effective instrument, used by him to force back the fœtus into the womb in case of false presentation, as that of the breech, &c., designated by him the parturition crutch or fœtal adjuster.

The subjoined woodcut, engraved to measure, shews that it is attachable to one of the handles of the hooks, so often resorted to during difficult parturition.

Mr. Shave directed the attention of the Members to the bones of the head of a horse, affected with an unusual interstitial deposit, by which they had become very considerably thickened, and which disease had also involved other portions of the osseous system. He gave briefly the history of the case as follows :—

" This horse was brought to our stables in the month of May last, shewing general symptoms of catarrh. There was a slight discharge from the nostrils, accompanied with febrile excitement, and an enlargement just over the superior maxillary bone. We gave the animal a laxative, and stimulated the sides of the face with ammoniacal liniment, but with very little benefit. To this succeeded a course of alteratives for about a fortnight, during which time the compounds of iodine were freely employed.

About five or six weeks since the animal was brought back to us with the enlargement much increased. We then had recourse to repeated blisters, without any good resulting from them; and afterwards introduced setons over the parts, which did not seem to diminish the enlargement of the bones of the face in the least.

Observing that the power of mastication was interfered with, we carefully examined his teeth, and found the crowns very even and firm. Cathartic medicines were again resorted to, and setons; but the animal gradually fell away in condition, and at last became much emaciated. Being in this state, about a fortnight ago the owner thought it advisable to have him destroyed, more especially as he had become very lame, and evinced much pain. It being a very obscure case, he thought it would not be unworthy of the notice of the members of the Association.

Mr. Varnell having made a section of the facial portion of the head, found a large quantity of viscid pus imprisoned in the frontal maxillary and ethmoidal sinuses. Moreover, he found that not only were the external bones thickened, but the internal ones also; thus the inferior turbinated bones were full half an inch in thickness. The fangs of the teeth having been examined by him, he perceived only one tooth at all diseased, and that but slightly: it was evident, therefore, that this was a constitutional affection, the nature of which may be occult. Perhaps, however, it can be referred to interstitial inflammation of bone, as described by Mr. Benjamin Bell, which he states is sometimes met with as an idiopathic affection, both in the acute and chronic form, and in some cases of the latter so severe, that the minute foramina, through which the nutrient vessels of the bone, covered by their cellular sheath pass, become much enlarged, and considerable cavities are formed in consequence of the absorption of the bone. These cavities are sometimes filled with gelatinous matter, which in process of time becomes ossified, and thus renders the affected part more dense and compact in its structure than healthy bone. It is this state of the bone which corresponds in the phenomena which it presents with those appearances that are met with in thickening and consolidation of the other tissues.

The President remarked, that, when the morbid parts were first seen by him, he was not only struck with the singularity of the disease, not having before met with the osseous tissue in a similar state, but he felt convinced that other portions of the bony structure must be likewise affected; he had therefore requested Mr. Shave to obtain other bones of the animal, which having done, it appeared there was scarcely a bone in the body not implicated in the change. In the articulations extensive ulceration had been

going on, which accounted for the pain and lameness evinced by the animal during progression. The whole system seemed to have been in an unhealthy condition, and the case shewed that bone is subject to all the diseases to which the softer portions of the animal body are liable. He thought the disease might be designated "general enlargement of the bone, the result of specific inflammation;" and he considered it partook of the character of scrofula.

[Possibly the following extract from an article on Osteitis, in Hurtrel d'Arboval's "Dictionary of Veterinary Medicine and Surgery," vol. iv, p. 456, may throw some little light on this very uncommon case.—Editors.]

M. Dêle, veterinary surgeon at Anvers, has described in the "Record of Veterinary Medicine," for July 1836, a disease designated acute Osteitis, which reigned as an epidemic disease among cows, in 1833, in some parts of Belgium, and which was complicated with arthritis and necrosis.

The essential nature of this malady was inflammation of the osseous tissue, of the periosteum, medullary membrane, and sometimes of the adjacent parts. It attacked the long bones, and the articulatory surfaces manifested itself on the shaft of the bones, or near their extremities, and occasionally existed simultaneously on several bones: it was frequently remarked in the vicinity of the ilio-femoral articulation. It terminated in resolution, in disorganization, or spontaneous fracture of the osseous tissues, and of the periosteum; sometimes in softening or hypertrophy of these parts. In accordance with the generality of the diseases to which bone is liable, its progress was slow throughout its various stages.

The symptoms which characterised this affection were divisible into three distinct stages. During the first an abundant salivation was perceived, and considered as the first precursory sign: the coat became dull and staring, the animal gave evidence of very marked stiffness in the extremities, was with difficulty urged to move, and the gait was awkward. A great rigidity was remarked in the muscles of the neck, and of those which are situated laterally to the dorsal and lumbar spines; on which account the ani-

mal could only lower the head with difficulty, and experienced considerable pain in the general progressive movements.

During the second stage, all the preceding symptoms were augmented in intensity, with the exception of salivation: the hind quarters were raised, and the animal rested for a considerable period on its knees, and would ultimately fall, unless mechanical support were afforded it to rise. The extremities became the seat of painful swellings, which were most marked in the vicinity of the joints, especially the hock, the ilio-femoral, radio-humeral, scapula-humeral, and pastern joints. Similar enlargements were observed on the buttock, the hip, and between the ribs.

Sometimes only one leg was engorged; in that case the animal was lame in the affected leg. The general loss of condition, and depression of the vital powers soon became manifest.

Lastly, during the third stage, the animal laid prostrate, never to rise again. The temperature rose in the swollen parts, the increase of which progressed, until, occasionally, a monstrous size was attained. The diseased bone, to which the soft and contractile tissues were attached, broke, and from that time the extremity hung pendulous. Any movements were a source of great suffering to the animal, particularly in some cases, in which the fractured bone lacerated through the muscles and integument. Notwithstanding this deplorable condition, the animal partook of liquid and solid aliment, and the principal functions (with the exception of locomotion) only presented a very slight derangement.

Upon cadaveric inspection, all the digestive organs presented their normal characters, except the mucous coat of the omasum, which had a reddish blue tint. No organic lesions were remarked in the genital and urinary organs, nor in the nervous centres and thoracic viscera. When the osseous intumescences were cut down upon, traces of inflammation were discovered in all the tissues around the fractured bones; they likewise exhaled a gangrenous odour, and presented infiltrations of a yellowish colour, approaching to a livid black. In the centre of those enlargements were found portions of dead bone of various sizes. The muscles were lax, and in their interstices existed yellow concretions. The fractured bones, which had not yet been displaced, were softened, and their tumefied extremities emitted a

fetid odour. The fatty matter within the cancellated structure was unusually liquid. The periosteum and medullary membrane were engorged and thickened. The blood contained in the adjacent vessels was of a dark colour, and similar to it, in aspect, was the blood extravasated into the cellular tissue around. Red patches were seen in the centre of the articular cartilages, and the vessels of the synovial membranes were inordinately engorged.

This extraordinary malady could not be attributed to any other cause, except to the aridity of the season, and total absence of fresh vegetable food : the provender was not found to contain any poisonous plants.

The water was pure, the stables well ventilated, and other hygiènic measures had not been neglected.

From the commencement, the treatment consisted of vascular depletion, followed by antiphlogistic regimen and diet. Sudorific medicines were administered, and to the extremities was applied a lotion composed of hydrochlorate of ammonia dissolved in slightly acidulated water.

Dry rubbing was simultaneously employed over the body, in order to facilitate transpiration.

When the malady made considerable progress, the stiffness augmented ; and when engorgement occurred in the extremities or other situations, an ammoniacal liniment was applied.

If the termination in resolution was not facilitated by these measures, but the enlargement persisted, and the gait of the animal became more embarrassed, the hair was closely clipped, vesicating ointment was applied, and, after a few days, the blistered surface was repeatedly dressed with mercurial ointment. Although these measures were not immediately followed by success, nevertheless, at the expiration of a few days, the lameness and rigidity were observed sensibly to decrease, and the patients gradually regained their pristine vigour.

Case of Rupture of the Vessels of the Meninges of the Brain of a Horse.

By Mr. G. Lewis.

Dear Sir, *Monmouth, Oct.* 29, 1848.

On Friday last, I was requested to make a post-mortem examination of a remarkably fine cart-horse which had expired suddenly the day previous. He had been drawing manure in a cart up rather a steep hill (but the cart and its contents were not more weight than an ordinary load of itself would have been, adapted to the powers of the horse), when the lad placed him to stand upon level ground to rest, while he went to look at some sheep in another part of the meadow, which time occupied about five minutes. Upon returning and taking hold of the bridle, the horse suddenly dropped down, gave one groan, and expired.

The result of my examination is as follows :—Upon making a division of the ribs on the right side, a considerable quantity of serum escaped; and upon a similar division on the other side being made, on removing the sternum, the remaining cavity of the chest (the horse being upon its back) was perceived filled with the like fluid.

The lungs were healthy, except the lower lobes of each, which were in a state of hepatization. The pericardium was fully distended with the same kind of effused fluid the chest contained, but in other respects it appeared healthy,

The heart :—The left ventricle was much dilated and full of blood, as was also the auricle. The right ventricle was quite empty, its walls being of an ash colour, and flabby; and when made to present a superior surface, fell in against the septum. The auricle contained its usual quantity of blood. So far as I was then able to perceive, the day being very unfavourable, there did not appear to be any other disease of the heart or its vessels.

The stomach presented a healthy appearance.

The liver was of a very pale colour, and easily broken down; its vessels contained an unusually small quantity of blood.

The brain :—The cerebrum, the vessels of the dura mater and pia mater, were very much congested, and one of the latter had

become ruptured. The vessels of the cerebellum had also ruptured, and their contents were effused over the base of the brain, and on the medulla oblongata. In the ventricle of the cerebellum was an effusion similar to that found in the chest.

I was informed that the horse had had an attack of pneumonia some time previous, and had been thick winded ever since. At the time of his death he was in high condition, and fat.

As I am writing, I take this opportunity of sending to you the following, which, I think, is a somewhat singular case.

I was called in to attend a little "pet" spaniel dog of the King Charles breed. It had been ill two days previous, and had had (as the ladies described them to me) several fits. Purgatives had been administered, but the bowels had not responded. I found the abdomen tense; rectum empty; pulse scarcely perceptible at the side; respiration much quickened; extremities cold. I ordered a warm bath, and administered ol. croton tig. gtt. ss. In about three hours the bowels responded, and a quantity of viscid mucus was voided; but the little "pet" was not at all relieved. I now felt convinced that it would not live long, and it died in a very short time afterwards.

Post-mortem.—The whole of the abdominal viscera were found much inflamed, as were the pleura and pericardium. The lungs did not appear to have participated in the disease.

Upon making an opening into the stomach, hanging in the pyloric orific, and extending its whole length through the intestines, was found a *knitted garter*, which, of course, had been the cause of the death of the animal. There was food in the stomach in an undigested state; but all the food that had passed into the intestines must have been voided, as they contained nothing except the garter, and the same kind of mucus the animal had voided prior to death, with a large quantity of bile.

With this case I should not have presumed to have troubled you, had I not been writing on one of more interest.

Believe me, very truly your's.

To Professor Spooner.

On the Interposition of Vulcanized Indian Rubber between the Shoe and the Foot of the Horse as a Preventive to Corns.

By Mr. T. W. Gowing.

It is a fact well known to all horsemen that a great number of horses are very liable to what are designated corns, by which they are rendered both less serviceable and less valuable to their owners; my remarks, therefore, will be entirely confined to the best method of palliating or warding off concussion from the part liable to the injury.

A short time since I was requested to attend some horses at the London and Birmingham Railway; and in the course of conversation with one of the gentlemen engaged on that line, a material was shewn to me which they were then using as a buffer-spring: the material to which I allude was vulcanized india-rubber. The idea struck me at the time that it might be rendered useful, if properly applied, to prevent pressure and concussion to those feet which were affected with or predisposed to corns. Communicating my views to Mr. Varnell, he concurred with me that such a thing would be most desirable, but he thought the material, of which I shewed him a specimen, would be liable to undergo an alteration in density, and also be affected by heat; therefore it would not enable me to carry out my views. In deference to Mr. Varnell's judgment and practical experience, I gave up all thoughts of putting it into practice, until some time after I had a further conversation with my friend Mr. Austin upon the subject, who very wisely came to the determination of putting it to the test of direct experiment; and the result was highly satisfactory, the only drawback being that the agent used by him could not be made to last more than ten days or a fortnight, from the downward force being almost continuous, and the elastic substance being cut through by the unyielding edge of the shoe and the resisting pressure of the wall or crust. It was by him applied to the shoe in the form of a cross band from heel to heel, thus covering and protecting the posterior part of the frog. The value of such an agent, and the manner in which it was applied, cannot be doubted for a moment, when we take into consideration the parts that are exposed to pressure, and the uneven surfaces and unyielding bodies the foot

is so liable to meet with. It must also be serviceable in protecting the frog when affected with that disease termed thrush, as we know that lameness is frequently the result of such a disease, and the rider is endangered and the horse likewise by the hard and irregular bodies the foot may come in contact with. To Mr. Austin it will be seen that the credit is due for carrying out this experiment; and since his former trials, he has overcome the difficulty I before stated of making the material last for the ordinary space of time allowed by us for a horse to wear his shoes.

But for this we are again indebted to some suggestions thrown out by Mr. Varnell, who considered that, by a combination of substances, a material might be made possessing the requisite properties, and the means resorted to by Mr. Austin were that of placing a piece of fine sail-cloth above and below the surface of the india-rubber; consequently there was a fibrous material added more dense than the indian-rubber, but not so hard as the horn above, nor so unyielding as the iron shoe below, still it possessed all that was required for durability. He has also applied it to each heel without the cross band, and the method I suggested to him for this purpose was to sink or lay the shoe off from the heel, and then rivet the material to the shoe by means of a counter-sunk rivet; or to nail the rivet, not in the least interfering with the elastic substance placed within the shoe and the foot; as it will be seen, by the process of riveting, that the head of the rivet or nail becomes sunk within the substance made use of, so that the elastic material only is offered to the foot surface. With reference to the kind of shoe best adapted for feet subject to corns, I think as yet no improvements have been made upon the plain shoe laid off at the heels, and the ordinary bar shoe. I believe I am correct in stating that Mr. Turner considered he had made some improvement in recommending the use of a shoe sunk or laid off the heels from the ground surface, and it is likewise quoted by Mr. Spooner, of Southampton, in his work on the diseases, &c. of the foot of the horse. With all due deference to two gentlemen of such high standing and authority, I must beg leave to differ from them; for I think that no advantage is gained by such a method: it appears to me that, however taking at first sight the theoretical view may be, it will not bear out in practice; for, looking at a shoe thus made, the object it appears we are desirous of ob-

taining is, that no degree of pressure shall be transmitted to the heel. Now, if we could insure our horses to travel on a firm level surface, such an object might be obtained; but when we take into consideration the unevenness of roads, and the existence of loose macadamized stones, and more particularly the uneven surface of a London paved road, it will be clearly seen that such a method of shoeing will not enable us to effect our desired purpose, nor do I consider that it is of any use beyond the ordinary shoe.

The usual method of relieving a foot affected with corn and having a strong wall or crust, is to pare away a portion of the crust, so as to leave a space between the wall and the shoe. If a weak, low, flat, and fleshy heel, the process then usually adopted is to bevel or sink the web of the shoe from the part affected, thereby gaining the required space. Such methods as these described have been long known, and at present we have not arrived at a better plan, excepting that I think some advantages may be gained by the method adopted by Mr. Austin. Mr. Reeve has been similarly engaged in an experiment of this nature, but with what results I cannot say, as his plan is not yet before the profession. I have been given to understand that his material with his mode of applying it is registered; and I hope, when that gentleman brings it forth to public notice, he will meet with all the patronage and reward that are due to every man who exercises his talent to relieve the sufferings of animals.

1, Stucley-terrace, Camden-town.

The *President* remarked that there was nothing absolutely new in the interposition of elastic materials between the shoe and the foot, since leather soles had been resorted to almost for ages, and these he believed to be the most effective. Many years since he had tried India-rubber for this purpose, but found it was destroyed by the action of the foot on the shoe.

Mr. Gowing replied, that the leather sole was very useful for many feet; but still he thought, from what he had seen of this substance—vulcanized india-rubber—that it would prove of much more service in some cases than leather, for instance, in protecting a sensitive weak heel from injury; and one advantage attending its use was, that it did not become hard like leather.

Mr. Austin observed, that, the first time he applied it, it failed,

by causing the nails to spring; but that he attributed to the improper method in which it was applied, as on its second application he found it to answer very well, and to last as long as leather.

Mr. Reeve said, circumstances had compelled him rather prematurely to lay his views on this subject before the Association; but, being now called upon to do so, he hesitated not to communicate to the members all he had as yet done: only claiming the priority of the application of the agent for this purpose, which he knew would be conceded to him, since the plans first adopted by him, and seen by Mr. Austin, have been superseded by others which he ventured to hope were improvements.

The necessity of some such application as that under notice had long been apparent, but it was not until the nature and properties of the patent vulcanized indian-rubber became generally known that a material suitable to his purpose presented itself.

The apparent necessity for something of the kind arose out of the following views which he had taken of the physiology of certain parts of the foot. It appeared to him to have been the opinion of authors (and this opinion seems to have met with general acceptation) that the grand use or object of some of the posterior parts of the foot, viz. the lateral cartilages, sensitive frog, with its superincumbent structure, and horny frog, was that of constantly dilating the crust of the quarters and heels; in other words, counteracting contraction.

Now, although he could comprehend their reasoning, and perceive that such effects were produced, still it seemed to him that this was not the primary object for which these parts were constructed.

Again; the power of expansion which had been assigned to the lateral cartilages did not appear satisfactory, because the action of cartilage, generally, is to regain by its elasticity the form and position from which it had previously been disturbed by some adventitious force or power; therefore, instead of dilatation being their function, it appeared to him the very contrary, and that their action, whatever it might be, was called into operation upon regaining their natural position.

In considering the construction of the foot and leg, and the mechanical arrangement of the parts for the purposes of elasticity and power, there appeared to be so singular a coincidence between

the necessity which existed for some body of support to the oblique pasterns, connecting ligaments, and tendon, and the adaptation of the elastic cushion, forming the upper portion of the sensitive frog, to the very point where the support was most required; that the real office of the sensitive and horny frogs appeared to consist in affording a bed or resting-place for the tendon, and giving, through the medium of the horny frog when resting upon the ground, that degree of support which was rendered necessary by the oblique conformation of the pasterns.

Having arrived at this conclusion relative to the functions performed by the sensive and insensitive frogs, he found no difficulty in discovering the object effected by the *contractile* action (or that which he had been inclined to consider the direct physiology) of the lateral cartilages. It appeared that a bed of support for the tendon and pastern was necessary; and that this, from its very position, would be subject to constant pressure. The body which performed this office must of necessity have possessed sufficient elasticity to regain its primitive dimensions and shape after each compression, and yet have been of so soft a nature as to admit of the motions of the tendon without abrading its texture. He thought there could scarcely be mentioned any substance possessing these requisites, but that the density of its texture would have injured the tendon, or whose substance would have been compressed into a hard mass.

For this purpose Nature has furnished a cushion, in the peculiar substance composing the superior portion of the sensitive frog, which, though elastic, does not possess a sufficient amount of that property for the purpose required; the elasticity resides in two powerful springs compressing this cushion on either side, and these springs are the *lateral cartilages*.

Their action he conceived to be as follows. When the pastern descends, the cushion is compressed, and bulges out on each side, dilating, at the same time, the lateral cartilages and upper portion of the crust; and after a few repetitions, were there no power to restore the cushion to its former size and shape, the process would so far disorganize the mass as to render it unserviceable; but the cartilages, by their inherent elasticity, and assisted by that also of the crust, compress the cushion in a lateral direction, and thus restore it to its pristine form and lightness. It

is evident that the parts which form this piece of mechanism are brought into action by the counter-pressure received from the ground through the medium of the horny frog, upon which the whole apparatus is based. The cleft in this latter body permits of its divergence, and thus the inferior portion of the crust at the quarters and heels is dilated simultaneously with the expansion of the cartilages to admit of their motion, and, upon the removal of the pressure, assist them in compressing the upper part of the sensitive frog. It needs no demonstration to prove that by this repeated dilatation, any tendency of the crust to contract would be counteracted; but that this was the primary or *sole* object for which nature designed those parts is inadmissible.

In addition to these properties, which we have seen that the posterior parts of the foot possess, they serve, by extending the area of the base, to give greater stability and security to the footing; a duty which the frog, from the very position it occupies, materially assists in.

Seeing, therefore, to what important purposes the frog, by obtaining a bearing upon the ground, conduces, we are consequently aware of the importance of giving it pressure; and if it was considered necessary to attain this object, when the frog was supposed only to perform the office of expanding the foot, how much more does it seem a desideratum when we demonstrate the plurality of its functions!

Influenced by these considerations, he had had recourse to the application of the vulcanized Indian rubber, so adapted as to bring the frog again into communication with the ground, and impart that pressure of which it was, of course, deprived by being elevated through the intervention of the shoe.

Its other advantages are these:—1st, by covering that part of the shoe which rests upon the extreme quarters and heels, when instead of an iron surface, an elastic cushion is presented to the angle included between the crust and bar: the production of corn from pressure is thereby rendered an impossibility.

And, secondly, from its occupying the very centre of tread, and being under that portion of the foot which the horse naturally uses to avoid slipping, it restores to the animal this power; for, by adapting itself to the inequalities of the surface, it gives a security to the footing which is unattainable by any other method.

The accompanying sketch will further illustrate the details of his plan, and the appearance of the elastic material when on the foot.

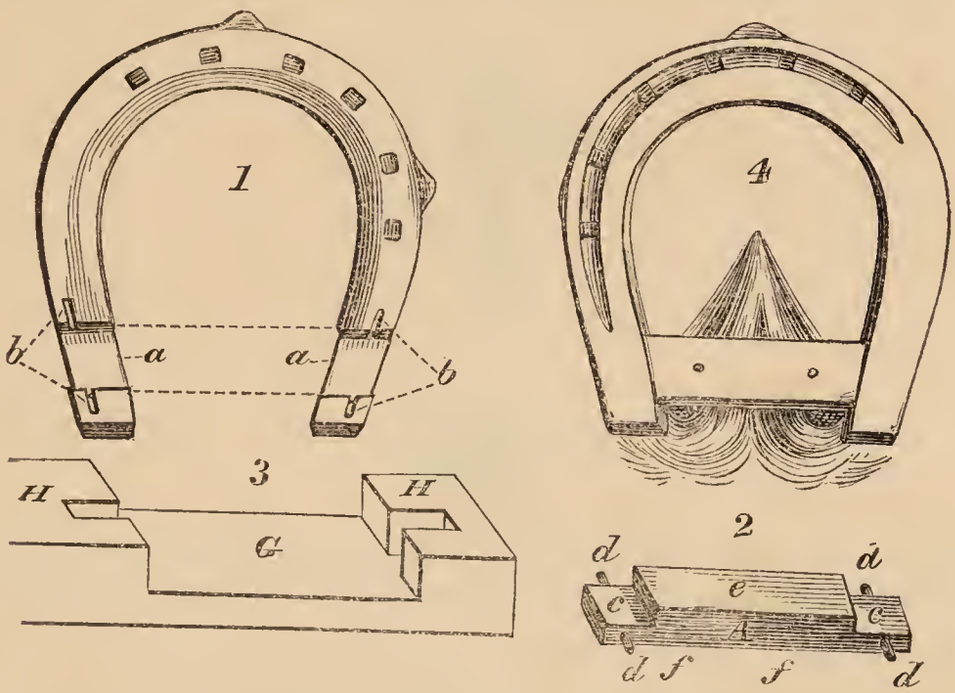


Fig. 1 represents the shoe prepared for the reception of the vulcanized rubber. The under or foot surface is seen.

a. a. Mortices to receive the ends of the cushion, *c. c.* Fig. 2.

b. b. Longitudinal slits into which the ends of the pins *d, d, d, d,* Fig. 2, fall, and are retained therein by closing each slit with a blow on each side from a centre punch.

It will be observed that the unilateral shoe is called into requisition.

Fig. 2 represents the vulcanized rubber prepared for the shoe, A, the body affording a bearing to the frog.

c. c. The ends prepared to fit into the mortices of the shoe.

d,d,d,d. Steel pins passing through the ends which fall into the slits *b, b,* Fig. 1, and by means of which the cushion is secured.

e. The ground surface. *f.* The foot surface.

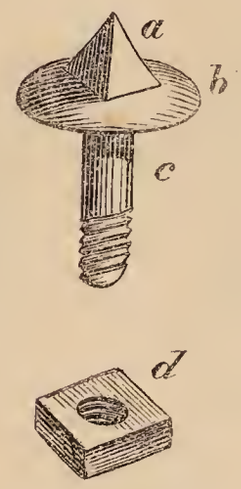
Fig. 3. A side view of the heel of the shoe, shewing G, the mortice, for the reception of the end of the cushion; and H, H, the slits for receiving, the ends of the pins, *d, d, d, d.*

Fig. 4. The ground surface of the foot, with the cushion adjusted to it.

He would further remark, that, in order to be prepared for the frost, he had successfully adapted to each cushion a pair of steel studs; which, in addition to the purposes of ordinary roughs, possess the advantages of being applied and taken from the shoe without the necessity of its removal from the foot. They are also placed in a position so far removed from the outside of the foot as to obviate the danger of injuring the opposite coronet by treading

thereon; and as this brings them more immediately under the centre or point of tread, greater security of footing is thereby attained.

The following figure represents one of the studs, with its nut.



a, the point or rough; *b*, the shoulder which comes against the India-rubber; *c*, the shaft and screw, which passes through the same, upon which *d*, the nut is fastened.

The method of applying the stud is as follows:—

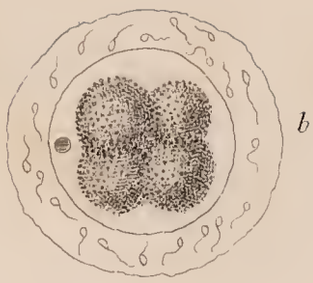
A hole having been made by means of a hot wire through the india-rubber immediately over the commissures, the shaft of the spike is passed through, and the nut applied to its end (the elasticity of the india-rubber permitting of the introduction of the fingers for that purpose). The nut is then held firmly with a pair of small plyers whilst the spike is screwed home. The operation of fastening both pairs does not occupy five minutes; and they can be removed with much facility in a shorter space of time.

On the Lacrymal Ducts in Animals.

Animals with an active respiratory apparatus, and which are swift of foot, will be found to have short and wide lacrymal ducts; and such as pass rapidly through the air, as birds. Whilst animals with a sluggish respiration, and inactive, will have longer and narrower ducts. Or they may be entirely wanting, as in the elephant, which is without the lacrymal gland, and moves its eye in a very deliberate and placid manner, which gives it the appearance of mildness and docility.

There will, of course, be exceptions to this as a rule; and it must not be forgotten that most animals breathe through the nostrils, and man principally through the mouth.

Dr. Moses, in the Medical Times.



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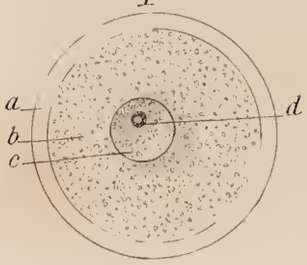

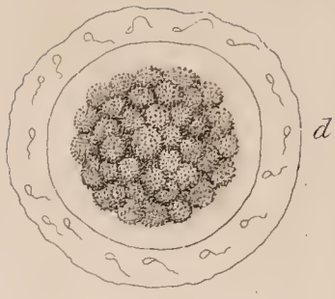

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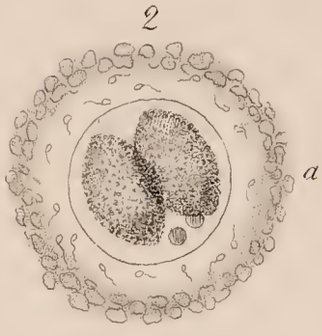

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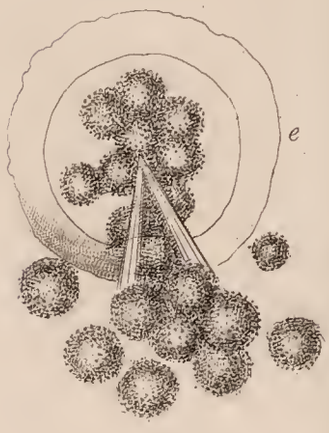

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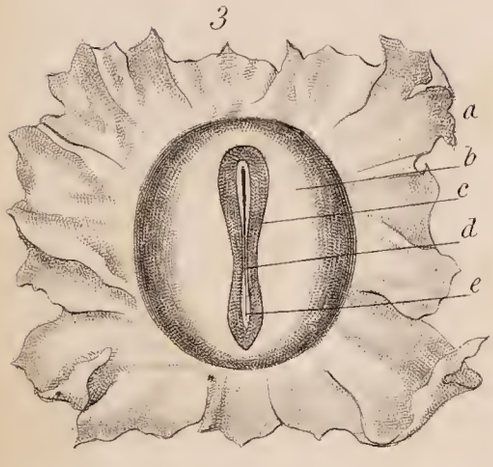

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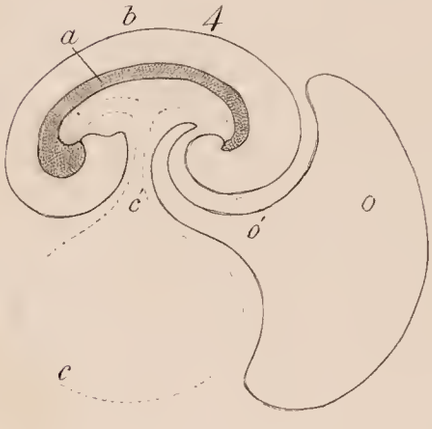

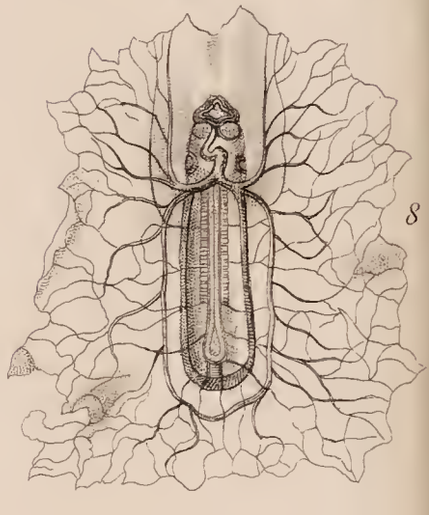

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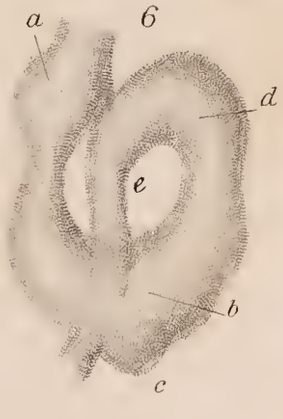

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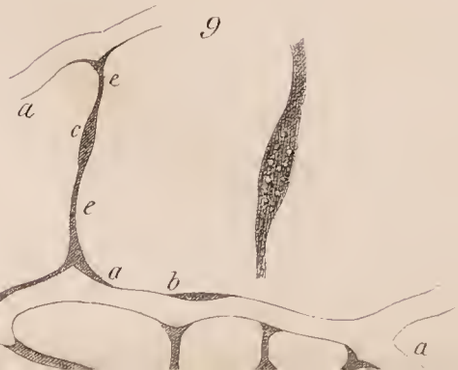

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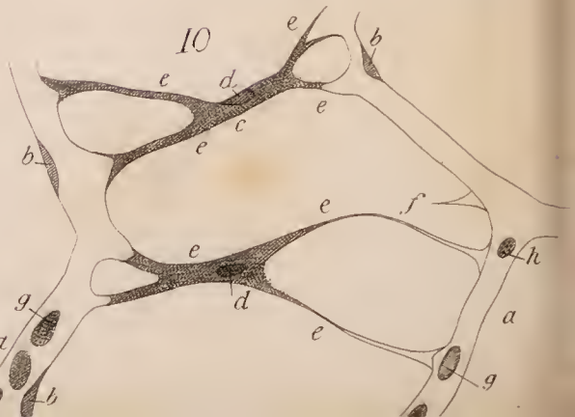

EXPLANATIONS TO PLATE I, VOL. V.

Fig. 1. Ovum from a rat at the period of œstrum, magnified 280 diameters.

a. zona pellucida. *b.* very pale yolk. *c.* germinal vesicle. *d.* germinal spot, seen by very strongly refracting light, after Bischoff *(Annales des Sciences Naturelles,* 1846.)

Fig. 2. A. Ovum of a bitch from the Fallopian tube, half an inch from its opening into the uterus, shewing the zona pellucida with adherent spermatozoids; the yolk divided into its first two segments, and two small granules or vesicles contained with the yolk in the cavity of the zona. B. Ovum of a bitch from the lower extremity of the Fallopian tube: the cells of the tunica granulosa have disappeared: the yolk is divided into four segments. C. Ovum of a bitch from the lower extremity of the Fallopian tube, in a later stage of the division of the yolk. D. an ovum from the uterus: it is large, the zona thicker, and the segments of the yolk are very numerous. E. Ovum from the lower extremity of the Fallopian tube, burst by compression; the segments of the yolk have escaped, and in each of them a bright spot or vesicle is visible. After Baly *(Supplement to Müller's Physiology.)*

Fig. 3. Portion of the germinal membrane of a bitch's ovum with the area pellucida and rudiments of the embryo, magnified ten diameters.

A. germinal membrane. B. area vasculosa. C. area pellucida. D. laminæ dorsales. E. primitive groove, bounded by the pale pellucid substance of which the central nervous system is composed. After Bischoff *(Entwickelungs-geschichte des Hurde-eies.)*

Fig. 4. *a.* represents the dorsal structure of the embryo. *b.* the amnion. *c.* the yolk sac. *e.* the vitelline duct. *o.* the urachus. After Müller *(Elements of Physiology, Vol. II.)*

Fig. 5. Heart of an embryo chick, 32 hours after incubation.

a. the cavity of the organ. *b.* is the spot where the two sides of the heart appear to join. *c.* line of demarcation between the auricle and ventricle. After Prévost and Lébert *(Annales des Sciences Naturelles,* 1844.)

Fig. 6. Heart of an embryo chick of 48 hours.

a. is the bilobed auricle. *b.* ventricle. *c.* apex of the heart. *d.* bulbus arteriosus. *e.* commencement of the aorta. After Prévost and Lébert *(ibid.)*

Fig. 7. Anterior view of the heart of a chick 140 hours after incubation.

a and *b.* the auricles. *c.* the left ventricle. *d.* the right ventricle. *e, e.* the aorta. *f, f.* the pulmonary artery. After Prévost and Lébert *(ibid.)*

Fig. 8. Embryo of a bitch at the 23d or 24th day, magnified two diameters. It shews the network of bloodvessels in the vascular lamina of the germinal membrane, and the trunks of the omphalo-mesenteric veins entering the lower part of the S shaped heart. The first part of the aorta is also seen. After Bischoff *(ibid.)*

Fig. 9 *and* 10. Capillaries in process of formation in the larva of the frog.

a. capillaries permeable to blood. *b.* nuclei attached to the inner surface of the membrane. *c.* bodies of the radiating cells. *d.* nuclei of these cells uniting with offshoots from vessels already permeable to blood. *f.* offshoot from a capillary. *g.* red corpuscles. *h.* pale corpuscles of the blood. After Koelliker *(Annales des Sciences Naturelles,* 1846.)

THE

VETERINARY RECORD, &c.

Vol. V.] APRIL 1849. [No. 19.

The Vitality of the Blood proved by Physiological Experiment, and its Application to Veterinary Pathology demonstrated.

By J. S. Gamgee, *Student, Royal Veterinary College, London.*

[Read before the Veterinary Medical Association, Session 1848-9.]

WITH the intention of proving by inductive reasoning, founded on physiological experiment, the truth of the doctrine first advocated by Hunter, that "the blood is a living fluid," and for the purpose of establishing thereon principles applicable to veterinary pathology, one important question first requires solution,—What is the nature of the attribute life? which we affirm to be an inherent endowment of the blood.

To account for the infinitely varied and beautiful phenomena presented by living bodies, many physiologists have exercised their ingenuous minds from the very earliest periods; and, launching into ideal regions of mystery and fancy, have too often been satisfied with the adoption of chimerical hypotheses, rather than adhere to undeniable facts.

Aristotle referred the organization of the numerous individuals constituting the animal and vegetable kingdoms to "a series of animating principles;" whereas Hunter conceived "the materia vitæ diffusa" to be the main cause of the constant activity manifested by an organism in the processes of development, decay, and repair.

These theories have been successively combatted by those of Müller and Prout, who, consonantly with prevalent notions, were desirous of attributing the functional activity of the animal eco-

nomy, and even the existence of organized bodies, to a distinct vital principle, or an organic force.

Similar views are by many entertained up to the present period, on the plea that all the phenomena presented by living beings cannot be accounted for on the principles, whether physical or chemical, which science has hitherto established; and, therefore, they allege the necessity of framing an imaginary theory to compensate for that which cannot be rationally interpreted.

The argument "that, because we cannot account for many of the actions of which a living body is the incessant scene, we are to assume the existence of a vital principle," is not valid; because, if it were, equally should we be justified in imagining that many of the marvellous and inexplicable occurrences in inorganic nature are dependent on a similar abstract agency, rather than refer them to the one great and only source of all mystery and wonder, The Omnipotent Creator.

The alleged necessity of supposing that "vitality" is the ruling agent of organized beings, is refutable for the following reasons:—1st, Because the march of science has developed facts which collectively prove the dependence of many phenomena presented by living bodies on the ordinary laws of nature. Thus, it is now a well-known fact, that venous blood is rendered fit to maintain the functional activity of animal textures in virtue of a chemical change; also, that general absorption is due to the property of permeability, which alike pertains to organic and inorganic substances; and that many of the changes to which the alimentary matters are subjected previous to assimilation are explicable by and in accordance with chemical laws.

These notable advances in the pursuit of truth diminish the evidence in favour of the notion that organization is dependent upon an imaginary principle or force; consequently we cannot admit an hypothesis, which, while it envelops in clouds of mystery important facts, does not aid in the solution of any of the pending obstacles in the study of nature, and which, in the absence of doing good, must necessarily be prejudicial.

2dly. In the supposition that vitality governs organic bodies, are we to suppose, with Aristotle, that each animal and plant has a separate and distinct vital principle? If so, whence is it derived? Where does it resort when organization is extinct?

The impossibility of surmounting these objections urges the necessity of abandoning the theory which gives origin to them.

3dly. Experimental evidence corroborates our views. If an animal be destroyed, and its component parts severed from one another, each, in greater or less degree, evinces vital properties. The blood, even if placed in several receivers, coagulates spontaneously; and on applying galvanism to the nerves which supply the various extremities, the head and other parts, muscular contractions are induced. These are all indubitable signs of vital attributes, which cannot depend on "a vital principle," because, as single, it could not be participated by a plurality of tissues, when these are no longer in apposition so as to constitute one grand whole.

If the animal textures afford proofs of vital endowments even when subdivided, these properties must be referred to the indivisible organic atoms; consequently the phenomena of life are not referrible to "one distinct organic force," but to "one series of organic laws," with which organic matter must have been impressed at the creation of the universe; and we consider the reproduction of organisms from pre-existing parents, and the subsequent exercise of their functions, as the necessary consequence of the transmission of organic particles endowed with the powers of assimilation and development; just as inorganic matter presents varieties of forms by virtue of the co-existent laws which govern it.

In accordance with these premises, in our endeavours to prove that the blood is a living fluid, we shall simply have in view to demonstrate that, as a whole, it is subject to the same laws as all living bodies are, and that its constituent molecules possess organic properties, viz. development, assimilation, growth, and decay.

In the pursuit of this object, we shall, first, adduce the physiological and chemical proofs of the blood's life; secondly, the pathological evidence of the same fact, or, in other terms, the study of those deviations which the blood presents in its composition and function from the normal standard, and the operation of those pathognomic states on the animal economy.

In tracing the development of the blood from its origin to its perfect elaboration in the animal organism, we shall pass in review

the most striking changes presented in the evolution of the mammalian embryo, more particularly elucidating those which relate to the vascular system.

That the existence of the ovarian ovum in mammalia is essential to the propagation of their species was first maintained by De Graaf in 1690; but subsequently opposed by the ingenuous Haller, who prevailed over the Dutch physician in the opinion that the ovum was first formed in the Fallopian tube out of a substance emitted from the ovary. Sixty years since, Cruikshank ineffectually attempted to revive De Graaf's theory, which, however, remained in abeyance until 1827; when Von Baer discovered the mammalian ovulum in the ovary, erroneously considering it as analogous to the germinal vesicle of oviparous animals. This statement was contradicted by Coste and Wharton Jones, who clearly demonstrated that the ova of mammalia, like those of birds, contain a germinal vesicle perfectly distinct but proportionately smaller.

The ova in the ovary are contained in Graafian vesicles, lined by the membrana granulosa, which is composed of granules arranged in linear series: each ovum consists, first, of an external, thick, but transparent envelope, the zona pellucida; secondly, the yolk; thirdly, the germinal or Purkinjean vesicle; fourthly, the germinal spot or macula germinativa, first observed by Wagner. [*See Fig.* 1, *Pl.* 1.]

In harmony with the researches of Purkinje in birds, Dr. Martin Barry has shewn that, in mammiferous animals, the germinal vesicle (consisting of a structureless membrane, distended with an albuminous fluid, and having attached to its walls a Granular germinal spot) is the first formed element of the ovum. Bischoff, on the other hand, accords the priority of formation to the Graafian vesicle; but, comparing the experiments from which these inferences were drawn, we are inclined to favour the opinion of the English embryologist. By aggregation of oil-like globules and granules, the yolk surrounds the germinal vesicle, and acquires a vitelline membrane or zona pellucida.

The production of ova is said to commence, in the cow and sow, at an early period of intra-uterine life, but not until birth in the human species, dog, and rabbit.

The position of the several parts of the ovum varies in attain-

ing maturity. By the traction of retinacula or granular cords attached to the membrana granulosa, the ovum is conveyed from the centre to the surface of the Graafian follicle; the Purkinjean vesicle and macula germinativa being subjected to a similar translocation from their central situation to the superficies.

Bischoff (in a memoir communicated to the Academy of Natural Sciences at Paris) relates a series of experiments which have enabled him to infer the important law, that in all mammalia (not excluding the human species) the ova are subject to periodical maturity; and that, independent of the influence of the male seminal secretion, they are discharged and conveyed along the Fallopian tube into the uterus, where they disappear if not fecundated.

But although ova are perfected in the higher mammalia independent of conception, nevertheless their expulsion is not constant during an animal's life. At the period of heat or rut changes are operating more or less generally on the system, but especially on the generative apparatus, preparatory to the reproduction of the species.

The vessels supplying the ovaries carry an increased quantity of blood, in consequence of which those structures present a turgid aspect; the inner vascular tunic of De Graaf's follicles thickens at its inferior part, so as to press against the base of the ovum, which, aided by the retinacula, escapes from its envelope into the Fallopian tube; and the solution of continuity thus inflicted on the Graafian coats is filled up by a yellow body, "the corpus luteum," which is indispensably formed after the expulsion of ova, even independent of fecundation.

Zwicky, who has investigated the structure of the corpus luteum in the cow and sow, attributes its formation to the fibrous arrangement acquired by the cells constituting the inner layer of the Graafian follicle, which enlarge and present various nucleoli destined to become centres of secondary cells: these elongate and assume the character of fibres, thus adding continually to the internal stratum of the theca, which is finally converted into a perfect corpus luteum.

The ovum having escaped into the Fallopian tube, it is here, according to Pouchet, invariably fecundated; whereas Bischoff

believes that in some cases conception may occur previous to the rupture of the Graafian coats.

Contact is obviously the leading phenomenon in the fecundative process, and it is effected between the maternal ovulum and the male seminal secretion, containing spermatozoids, which have been considered by Valentin and Henle as organized animalcules. Wagner having lately contradicted his statement that strychnine and other narcotics arrest the movements of those filaments, and Köelliker having proved that their structure is homogeneous, we conclude that the spermatozoids are but parts of an organism, being themselves destitute of independent life, but by means of cilia they are enabled to propel themselves to the uterine cornua as elaborators, and probably carriers, of the seminal fluid.

Soon after fecundation, the mammalian ovum becomes the seat of infinitely varied changes, for a knowledge of which we are principally indebted to Bischoff and Dr. Barry in their respective researches on the bitch and rabbit.

The most striking feature in the first stage of embryonic development is the disappearance of the germinal vesicle: the ovum, in its subsequent passage along the Fallopian tube, is surrounded by a thin membranous production separated from the pellucid zone by the interposition of a fluid which imparts to it a gelatinous appearance. Vesicles speedily become manifest on that membrane, "the future chorion," and, by aggregation into tufts, constitute its villi.

Midway the length of the oviduct, a clear area is perceived between the yolk and the zona pellucida, in consequence of the former having shrunk from the inner surface of the latter. In a similar manner to the cleaving process witnessed by Vogt, Dr. Sharpey, and others, in the ova of fishes, amphibia, and parasitic worms, the mammalian yolk cleaves into two masses, and each of these repeatedly subdivides, until the whole vitelline substance presents a mulberry aspect, which gradually vanishes by a continuance of the cleavage, so that, when the ovum reaches the uterus, its yolk resembles a mass of granules arranged in spherical partitions; and in each of these is a central vesicle non-invested by a membranous envelope, but which is soon added to every one of the globular segments of the vitellus, transforming it into a congeries

of cells, whose nuclei are the central vesicles previously alluded to. [*See Fig.* 2, *Pl.* 1.]

The most external cells coalesce at the periphery of the yolk in a membranous layer, "the vesicula blastodermica," or germinal membrane, which increases in thickness by the increment of cells developed in the interior of the vitellus. Soon after its appearance the germinal membrane divides into two strata: the outer or serous one is the basis of the osseous, muscular, and tegumentary structures, whereas from the inner or mucous layer the viscera originate. Between these strata numerous granules accumulate to produce the "area vasculosa;" and on the vesicula blastodermica the germinal area is discerned as a dark spot, composed of cells and granules, the central part of which, being clear and transparent, is named the area pellucida.

In the last-mentioned space the first trace of the embryo, or nota primitiva, appears in form of a hollow groove, beneath which is laid the foundation of the vertebral column by a mass of cells, "the chorda dorsalis." [*See Fig.* 3, *Pl.* 1.]

While the nota primitiva acquires a pear-shaped figure, the contiguous cells, ascending in convergent ridges, form the laminæ dorsales; these coalesce, converting the groove into a canal, which is perfectly closed, except at its anterior part, where three projecting vesicles represent the future cerebrum. The extreme ends of the embryo now become inverted, and the oblong blastoderma gradually separates from the evolving intestinal tube as the umbilical vesicle. From each side of the dorsal laminæ two laminæ viscerales take a direction forwards and inwards, mutually aiding each other in forming the anterior walls of the trunk.

Having thus briefly sketched the earlier stages of embryonic development, some of the more important points deserve further consideration. During the first twenty-four hours, from the first appearance of the nota primitiva, projections from the external layer of the germinal membrane form anteriorly the involucrum capitis, posteriorly the involucrum cauduæ, and laterally the laminæ laterales: these unite in a visible cicatrix over the lumbar region, enclosing the embryo in a complete sac, designated the amnion.

From the caudal extremity of the embryo, the allantois first protrudes as a mass of cells. In carnivora this membrane extends

entirely around the young animal; in ruminants it is bicornuated; and in the solidungulata an albuminous deposit separates its vascular layer from the mucous.

So soon as the Wollfian bodies and the kidneys appear, they are placed in direct communication with the allantoid sac, through the medium of the sinus uro-genitalis; and by the closure of the visceral arches the allantois is divided into a superior small portion, "the urinary bladder;" and a central canal, "the urachus," leading into the inferior and larger compartment external to the body. [*See Fig.* 4, *Pl.* 1.]

Throughout the earlier period of these changes the ovum is perfectly free in the uterine cavity; but, concurrently with the growth of the embryo, the vessels supplying the uterus increase in caliber; the coats of that viscus acquire a greater degree of thickness, and an exudation from the tubular follicles of its mucous membrane produces the decidua. This, in the generality of mammalia, consists of epithelial cells and bloodvessels united by an albuminous deposit, in which the villosities of the chorion shoot and grow, so as to form one common fœtal covering, "the placenta;" which exists in all mammiferous animals, with the only exceptions of the marsupalia and the monotremata.

It is a fact worthy of notice, that the villi of the chorion assume various modes of distribution in different classes of animals. In the pachydermata, the camel, and the lama, they stud the membrane throughout its whole extent; but in the cow, sheep, goat, and their congenera, those villi are collected into cotyledons at different parts of the chorion, corresponding to uterine cotyledons, where the fœtal blood undergoes the necessary changes for its adaptation to the functions of nutrition and growth.

Important changes in the early epoch of embryonic life have already been narrated; and we have endeavoured to explain the process of cellular development, from the original cleaving of the yolk into two masses: we have likewise described the appearance of the true germ on the germinal membrane, which is produced by vesicular arrangement of the vitelline contents; and, finally, we have alluded to the foundation of the nervous system by a part of the embryo cells.

The vascular apparatus in progress of development now remains to be considered; and, since we have undoubted proof that the

primary formation of organs in the chick does not materially differ from other vertebrata, we shall give an account of that process in the bird's egg, this being much easier obtained for examination than are the ova of mammalia.

In the egg of the fowl, twenty-two hours after incubation, a congeries of vesicles is all that can be seen of the future organism; shortly afterwards the vertebral elements are laid, and at twenty-six hours the first vestige of the heart appears as a mass of embryo cells, resembling a cylinder in form, but not closed at either extremity.

By multiplication of cells, and their adjustment in a linear series, projections advance from the rudimentary heart to join a net-work of bloodvessels formed in the vascular layer of the germinal membrane. A few of the primitive vesicles in the interior of the heart become free, and float among the nuclei and granules of others, which liquefy, and aid in the formation of the blood. In this state all is motionless; a few minutes elapse, and by a kind of peristaltic action the vesicular heart effects movements, which, at first irregular and slow, gradually become rythmical, and display to our view the apparatus of circulation in functional activity.

The cells originally composing the heart do not define its contour; but they subsequently acquire a closer relation to each other, and unite superiorly, transforming the previous cylinder into a cone.

Preparatory to the first oscillatory movements the ventricle is separated from the auricle, whose appearance soon becomes bi-lobed; and by transverse cellular partition the septum auriculorum is completed.

The bulbus arteriosus, formed at an early period of embryonic life, suffers considerable decrease during the division of the heart into cavities; and at forty-eight hours, the pericardium, pulmonary arteries, and venous trunks, complete the foundation of the central circulatory system. [*See Fig.* 5, 6, 7, *Pl.* 1.]

Ere we describe the manner in which the blood and its conduits are perfected, a marked proof of economy and design presented by the embryo chick, between the second and third day of its evolution, deserves notice. Although a vascular system is required at this early stage, still a less perfect form of it suffices to fulfil the wants which are as yet comparatively limited;

and Nature, who never expends too great a share of complexity to attain perfection in any of her works, but only just so much as is compatible with the invariability of her laws, so arranges the heart and two arteriæ omphalo-mesentericæ, as to convey blood into the sinus terminalis, whence two venous trunks return it to the central organ. [*See Fig.* 8, *Pl.* 1.]

This provision soon becomes too restricted to fulfil the demands of the growing textures, and the vascular net-work is extended into numerous inosculations, by the union of offshoots from the previously existing vessels, with radiating cells at the extreme end of the dorsal chord.

In the formation of the bloodvessels, two distinct plans present themselves. The larger trunks are derived from rows of embryonic cells whose external envelopes coalesce: while their interior is liquefied, and admits of the free movement of the granules and nuclei, and also of the elementary blood propelled into them by the heart.

Köelliker has ascertained that in the young tadpole's tail the capillaries are derived from cells placed at some distance from each other; and they acquire a radiate appearance, sending out processes which reciprocally meet. The meshes of the vascular net-work thus formed increase in density, either by the radiation of intermediate cells, or by projections from other capillaries whose calibre is in progress of perforation for the reception of the circulating blood. [*See Fig.* 9, 10, *Pl.* 1.]

These metamorphoses are nearly completed, and still the heart and bloodvessels have a granulo-vesicular appearance. It is only at the ninety-fifth hour of incubation that their constituent cells are converted into a fibrous tissue.

We have previously mentioned that the blood owes its origin to embryo-cells, moving to and fro in the interior of the rudimentary heart, and of the vessels in the germinal membrane. The dim outline of those cells becomes translucent, and their nuclei beset with nucleoli are more clearly visible, in consequence of the liquefaction of interposing granules. Between the nucleus and the envelope, colouring matter is deposited, and perfects the transition from pale vesicles to red blood discs.

The best authorities concur in the statement, that even in the mammalian embryo, the primitive blood corpuscles are nucleated,

and multiply in one of two ways; either by the formation of infant cells within older ones which ultimately dissolve, or by the division of the nucleus and cell-wall of a previous red disc, so that two or more perfect cells are derived from the materials of one.

When the lymph corpuscles are added to the circulating fluid, it is from them that red blood discs are reproduced by dissolution of granular matter, and addition of colouring constituents. At that period, in the mammifera the multiplication of the primitive nucleated blood discs ceases; and these are substituted by a new set of red corpuscles destitute of nuclei.

From a variety of facts established in the preceding paragraphs, we deduce the inference, that the blood is a living fluid.

The cells which originally compose the embryo present uniform characters; some of them are the elements of the nervous system, others lay the foundation for the blood and its conduits. That life pervades the nervous centres has never been doubted; and if the blood is derived from the same materials as they are, the identity of its vital properties is an inevitable consequence.

From the fact that a few hours after the dorsal chord is evolved, provision is made for the circulation of the blood, and that before any organs or definite structures exist, it may be safely argued, that the blood is more essential in the production of vital actions than the solid tissues of the animal frame are.

So long as the rudimentary nervous centres existed alone, the embryo presented no signs of functional activity; but when the bloodvessels and blood were formed, motion became apparent in various parts of the young animal. The nervous system was not of itself adequate to maintain that marked feature of life, viz. development and rapid growth, but it required the co-operation of the vascular apparatus. Hence we conclude, that in the first manifestations of life, the blood is concerned as pre-eminently as the nervous centres.

Having explained how the blood increases in quantity and perfects its composition, independent of the influence of organs, what more demonstrative proof of its life can be required, when it is borne in mind that living objects alone are capable of reproducing their species, and of self elaboration?

The embryonic cells having been totally expended in the

formation of the blood, the muscular, cartilaginous, osseous, and other textures must necessarily be derived from it; and the various degrees of vital properties with which they are endowed must likewise pre-exist in this fluid in the acme of perfection.

That the blood is not simply a carrier of nutriment for the repair of decaying textures, but is intimately connected with the functional activity of the most vital organs, is proved by a mere cursory glance over the comparative morphology of the vascular system in the several classes of organized beings.

In vegetables, fluids ascend from the roots to the leaves, through the medium of cells, leaving the matters which have been taken up from the earth in the body of the plant, while the solvent fluid evaporates. This circulation is carried on without the aid of any propelling organ, and is similar to that met with in the lower classes of animals, such as polyps, entozoa, &c.

In the animal kingdom, two principal varieties of vascular system prevail. First, in the invertebrata a colourless fluid circulates; secondly, in the vertebrate class, red blood is propelled by a heart through a double system of vessels.

From the fact, that in all animals, fluid plasma containing pale corpuscles circulates, it is evident that it is essential to the reparation and growth of tissues; accordingly, it is found in the mollusca as well as in man. Nutrition being the chief function in activity for the maintenance of the former animals, they are endowed with a fluid simple in composition, but adequate to the support of a machine whose uses are so limited, and whose phenomena of vital actions are so few.

In ascending to the reptile tribe (many of which are no larger than some of the mollusca, but perform a greater variety of movements, and have a more acute instinct) we find that their nervous system is more complex; and to the pale nutrient fluid is superadded a set of nucleated corpuscles, chemically combined with hæmatosine; a heart is likewise provided, with double auricle and single ventricle.

In the higher classes of vertebrata, and more particularly man, the physical powers are not more developed than in many huge serpents, or even minute insects, whose agile movements and consequent decay of tissue and demand for nutriment by far exceed in proportion the activity of those functions in the higher mam-

malia, in whom the distinctive characters are, a capability to perform a great variety of actions, and the gradual ascendancy of reasoning faculties over the instinctive.

The structure of the brain, and distribution of the nerves, acquire complexity in the more elevated classes of animals, in proportion as their vital functions are more numerous; and in the same ratio the composition of the blood progresses, its red corpuscles being destitute of a nucleus. The nucleated cell is generally considered the most complete; but in the red blood discs the absence of the nucleus obviously denotes perfection of organic structure, because the red non-nucleated corpuscles are substituted in embryo for a primitive set having a central macula.

If, in proportion as the blood acquires more perfect forms, its use as a nutrient fluid be not adequately increased, but, on the contrary, that ascendancy in the scale of organization keeps pace with the more numerous manifestations of life, we necessarily conclude that the blood in circulation must be alive, because it would be subversive to all sound physiological doctrine to suppose that a dead fluid became the source of vital functions; or, in other terms, that dead matter could be an "origo vitæ."

Having dedicated the preceding observations to a description of the blood's development in embryo, it now behoves us to elucidate the process by which the constant loss sustained by the blood in the renovation of adult animal structures is repaired.

That organized materials alone can serve as food to animals, and hence that the chyle is an organic fluid, are well-known facts. The means by which the alimentary substances are triturated in the mouth, there subjected to the action of saliva, and subsequently to the joint influence of pepsine and gastric juice in the stomach, are not appropriate changes for consideration in these pages; neither shall we stop to detail the processes by virtue of which the pancreatic and biliary secretions tend to separate the nutrient from the excrementitious matters, but shall commence by an examination of the chyle.

The chyle, procured from its appropriate conduits near the intestinal canal a few hours after the animal has been fed, is a white milky fluid containing water, salts, albumen, and numerous corpuscles, of which four kinds have been distinguished. First, a molecular base, containing very minute and numerous particles of

a fatty nature ; secondly, a quantity of oil globules, varying in size ; thirdly, spherules, which are not acted upon by ether, but are probably of an albuminous composition ; fourthly, proper chyle corpuscles. In its onward course through the mesenteric glands, the chyle is susceptible of spontaneous coagulation, which proves the gradual increase of fibrin. It is a question of much interest, Whence is this fibrin derived? Most probably it is by a conversion of albumen, which in chemical composition is very similar to it, but differs in its physical properties. Still, how fibrin is derived from albumen, cannot be precisely explained. According to some chemists, the change consists in an oxidation of the latter substance, while others view the chyle corpuscles as cells destined to elaborate the plastic material.

The proper chyle corpuscles become more numerous as the chyle advances onwards in its conduits ; and it is evident that they are all formed within the lacteals, because their size would impede their introduction from the intestine. Henle was of opinion that two or three fat molecules united to form a nucleus, over which a cell wall was developed, so as to perfect the chyle globule. Professor Goodsir, of Edinburgh, alleges that the epithelium lining the lymphatic glands is the source of the chyle corpuscles ; but, notwithstanding the merits of both these observers, we cannot decide the point until further investigations corroborate the views of the one or of the other.

When the chyle reaches the thoracic duct it receives, in addition, a colourless fluid named lymph ; which has been said by many physiologists to be composed of the *effête* materials of the body. Thus another obstacle is opposed to the doctrine that the blood is a living fluid ; because, if it be true that lymph is *effête*, viz. disorganized and useless matter, it is contrary to reason to suppose that it would be allowed to deteriorate the vital properties of the blood.

But I do not agree with the theory which inculcates lymph to be composed of the refuse materials of the organism. I contend that it contains the superabundance of nutriment conveyed to parts ; or, in other terms, that the tissues not appropriating the whole of the nutritious material which exudes from the capillaries, the excess is returned by the lymphatic vessels in the circulatory system, for the purpose of supplying, at some future period, the animal

wants- In support of this opinion the following observations are offered :—

First. Lymph consists of a fluid with granules and white particles, similar to, if not identical with, the pale corpuscles of the blood. If the prevalent notion be correct, that the white particles are mainly concerned in nutrition, they must exist in the lymph, because not appropriated after their separation from the blood; for it is not possible that decaying tissue should resume the aspect and properties of those elements which were destined for its formation.

Secondly. Lymph being coagulable, no doubt can be entertained as to the existence of fibrin in it. From the fact that, in a state of health, the excretions are destitute of the fibrinous element, the idea suggests itself that lymph containing fibrin to a considerable amount cannot be *effête*, viz. destined to be thrown off as refuse.

Lastly. From a knowledge that all useless materials are rapidly separated from the body by appropriate excretory organs, whereas lymph flows into the great veins, whence it is conveyed throughout the whole course of the circulation, we infer that the lymph, in taking so circuitous a route, must be adapted to perform the functions of the circulating fluid; viz. to repair the loss of the animal tissues. Lymph cannot, therefore, be *effête*, but is obviously susceptible of organization.

This conclusion was arrived at by *à priori* reasoning upon the phenomena presented by the lymphatic system ; and it is satisfactory to add, that, since the above views were committed to paper, I have had occasion to test their truthfulness by a careful study of the most modern authors on physiology, who unexceptionally refute the supposition that lymph contains the *effête* materials derived from the organic textures.

In proportion as the fibrin of the chyle increases in amount, its albumen and oil particles diminish ; and, simultaneously with the greater development of chyle corpuscles, the milky fluid acquires a reddish tint. This has generally been attributed to the production of red particles in the lacteal system ; but, according to the researches of Mr. Lane, it depends upon the adventitious mixture of red particles in the operation performed for the obtainment of the chyle. Leaving this point, as yet somewhat undecided,

we may remark, that no doubt can exist as to the eventual conversion of chyle corpuscles into red discs, in the mode already described when treating of the blood's development in embryo.

Abundant proof has thus been afforded of the blood's renovation by elaboration of the chyle constituents ; this change mainly consisting in the formation of organizable principles from solved and plastic materials, through the medium of repeated sets of corpuscles or nucleated cells. Since, therefore, it can no longer be questioned that the blood is endowed with the power of assimilation and self-reproduction, its vital properties are satisfactorily proved in accordance with the general law, that living objects alone are capable of reproducing their own species.

One of the most palpable and instructive differences between living and inorganic substances results from their comparative chemical analysis ; and we are accordingly informed that the striking feature of inorganic compounds is the simple ratio in which their elements unite ; whereas organic bodies are remarkable for the high proportions of their elementary combination. The qualitative analysis of Liebig, Mülder, and other chemists, demonstrates the fact, that the organization of a body, and hence its manifestations of life, are in direct ratio, nay, in inseparable relation, with the nature of its elements. Thus, while carbon, hydrogen, and oxygen are the constituents of vegetables, nitrogen is indispensable for the formation of animal tissues, and the exercise of their respective functions.

Based on these principles, one or two reflections suggest themselves on the chemical constitution of the blood, in search of additional testimony of its high organization and life.

When the primordial chyle is analyzed, it is found to contain binary, or at the utmost ternary compounds. Tracing it from its absorption into the lacteals (which is partly effected by endosmose, and through the intervention of cells in the intestinal villi) until its constituents are converted into cytoblasts and corpuscles, we have ample evidence of a quaternary and quinternary composition. If the cytoblast or nucleus be followed from its highest point of life in the more perfect tissues, through the successive stages of deterioration, unto its chemical aud organic dissolution, the retrograde steps are marked to the re-assumption of a binary combination of its elements. If, then, the blood gradually pro-

gresses in chemical constitution from its origin in the chyle to the accomplishment of its use in the repair of structures, the contemporaneous ascent of its vital attribute is a necessary result.

By the works which have emanated from the Giessen school, gelatine has been proved to occupy the lowest place in the scale of animal proximate principles; hence it must be admitted that tissues which contain gelatine are inferior in organization to those from which it is absent; and, insomuch as the blood affords no traces of gelatine, it is more highly organized, and, therefore, more truly vital than all those solids of the body into the formation of which gelatine enters as a necessary ingredient, and that in variable proportions.

The subject which now remains for examination is the coagulation of the blood, and its independent power of incipient organization into a fibrous structure.

When blood is abstracted from the vessels of a living animal, it gradually loses its fluidity, and forms a coagulum or clot, whence the serum is expressed. This change is so generally known, that it would be superfluous to expatiate on its stages; but it is the sum total of the causes which in any degree influence or prevent coagulation of healthy blood, and the peculiar arrangement of the clot, that demand our investigation.

That rest is not the only cause of the coagulation of the blood, is proved by agitating with a bundle of small sticks this fluid, when contained in an appropriate recipient; when, notwithstanding the constant movement, the fibrin solidifies in elongated strings. Neither is it by the influence of cold, or, more correctly, diminution of heat, that the clot is separated from the serum; since blood frozen immediately after its obtainment from the body coagulates as usual when thawed; and a clot is likewise formed, if the temperature of the blood after its withdrawal be kept up to its original standard.

Some chemists allege that heat and carbonic acid are evolved during coagulation. This statement needs confirmation, because the first-named is opposed by the negative results of Mr. John Hunter's experiments on the blood of the turtle; and, although it is certain that carbonic acid may be extricated from blood by chemical processes, still the question is doubtful whether that phenomenon occurs during ordinary coagulation.

Exposure to air is favourable to coagulation; but that even this is not the only cause is evident from the fact that an imperfect clot is formed *in vacuo*, and blood solidifies under oil, which precludes atmospheric influence.

The physical character of the blood is certainly modified by the contact of dead or living tissues; these do not, however, either prevent or cause its coagulation: clotted blood being occasionally met with in the cavities and even the bloodvessels of living animals, while it is not uncommon to find fluid blood in bodies whose life is extinct.

In our former remarks, decay and renovation have been alluded to as the prominent features of living bodies; and how admirably they are provided for by the circulation of a fluid conveying nutriment, has been demonstrated in reviewing the morphology of the vascular system from plants to the highest mammalian animals; and we have also proved that upon the circulation of the blood depend the first symptoms of life, for the support of which that fluid is required to preserve a definite form and quantity. When the demand made on the blood's function (as a source of nutriment or as a stimulus to vital actions) ceases, either by its being withdrawn from the body or by the influence of other circumstances operating on the system, it is but natural that the blood should no longer preserve that form of fluidity which was indispensable for the exercise of those functions, but which is no longer called for when they had ceased. Hence it is that fibrin, a solid in reality, and only a fluid "*pro tem*," abandons its liquid state when no longer required to circulate in all parts of the body for its renovation and support, and assumes its own physical state as a solid concretion.

Moreover, the very act of coagulation, so often adduced as proof of the blood's degeneration, is the precise evidence of its independent power of organization. The assertion that in coagulating blood dies, namely, that the separation into clot and serum is the act of death, is as untenable on the part of those who admit the blood to be a living fluid, as it is on the part of the others who entertain the opinion that the circulating fluid is dependent for its homogeneity on the solids of the body; because the phenomenon of coagulation is not a mere cessation of one state and transition into another, as death is to life the instant of extinction, but a

process with marked stages, gradually presenting, for a period of forty or fifty hours, a more beautiful aspect and a higher degree of organization, from a granulo-corpuscular mass to an intricate interlacement of fibres. The blood being, therefore, capable of self-organization, it is undoubtedly alive; insomuch as we have no example of a dead material being capable of assuming an independent organic form.

Having thus fulfilled our primitive intention of proving the blood's life upon physiological principles, we recapitulate in brief terms the evidence upon which that conclusion is based.

First. Blood is capable of self-development in embryo from primitive cells; in the adult, from the elements of chyle. It being a generally admitted principle, that living objects alone reproduce their own species, the former established facts prove that the blood is a living fluid.

Secondly. From an examination of the vascular system in various classes of animals, and the result obtained having demonstrated that the blood does not acquire a more complex composition in proportion as the demand for its nutriment increases, but in direct ratio to the ascent of the vital functions, we infer that the blood is alive, otherwise it could never be a source of vital actions.

Thirdly. The notable organic properties of the blood have been ascertained by a glance at its chemical composition; its life is, therefore, proved in accordance with the physiological axiom, that ascent in organic form implies activity of vital powers.

Fourthly. We conclude that life is a pre-eminent endowment of the blood from its capability to assume the character of an elementary fibrous structure, independent of the contact of dead or living tissues.

[The application of these principles to veterinary pathology will appear in the next Number.—Editors.]

COMMUNICATIONS.

Lithotomy successfully performed on the Horse.

By Messrs. Taylor, *M.R.C.V.S.*

Dear Sirs, *Nottingham, March 5th,* 1849.

We fully intended to have sent you the particulars of our lithotomy case for publication in the last Number of The Record, but the horse did not leave our infirmary until the 1st of February, and we were anxious to send you the result of a successful case, which, from some unfavourable symptoms that were manifested for the first week or two after the operation, did not appear likely to be so.

The horse was nearly thorough-bred, six years old, and valued by his owner, on account of his qualifications in the hunting field, at 150 guineas. He had evinced symptoms of a calculus in the bladder for some months prior to his coming under our care, which gradually increased in intensity until he became a truly pitiable object, being very much emaciated: he was continually endeavouring to evacuate his urine, which was frequently mixed with blood; the penis generally hung pendulous, to the extent of two or three inches, and it, as well as the surrounding parts, was more or less excoriated by the peculiar acrid quality of the urine. I should have stated, that the horse was sent to our infirmary by his owner, Mr. Malford, from Shelton, near Shrewsbury, who had accidentally heard of our having a similar and successful case about fifteen years since. The animal arrived on the 29th September, and, on our making a manual examination of the bladder *per rectum,* a calculus of large size was at once discovered. He was cast and operated upon by my father on the 4th of October, who was ably assisted by Mr. W. Wright, surgeon, of this town; several of our medical men being also present, who, from its not being a case of very frequent occurrence, expressed a wish to see the operation performed. The horse was placed on his back, in the usual position for castrating colts; the rectum was then emptied, and the bladder injected by means of a

catheter with warm water. The jointed metallic sound of my father's invention (of which there is a desciption in "The Veterinarian" for 1834, p. 202) was then introduced, and it immediately struck against the stone. An incision, about four inches in length, was then made below the arch of the pubis, close on the left of the raphæ, and continued down by the side of the anus until the sound was felt in the membranous portion of the urethra, beyond the bulb. It was at once cut down upon, and the opening sufficiently extended to admit of a pair of lithotomy forceps. The calculus was readily and at once grasped by them, and, by using a little force, the neck of the bladder dilated so to allow of its being extracted. It was of an oval form, and weighed eight ounces and six drachms. An artery of some size was divided in making the incision, but, the hæmorrhage not being great, it was not thought necessary to secure it. One suture was used to bring the lips of the external wound together, and the horse allowed to get up, an opiate draught being subsequently administered. In the course of half an hour afterwards considerable hæmorrhage took place from the penis and wound, but by continually sponging the quarters with cold water, and exposing the animal to a current of cool air, it gradually subsided. The horse now appearing to suffer some degree of exhaustion, an opiate combined with a stimulant was given. For a week or two after he evacuated the bladder partly through the wound and partly through the urethra, without any indication of constitutional disturbance, but at the end of that time almost entirely through the wound. The urine appeared to be of such acrid quality as to completely destroy the vitality of the parts it came in contact with, thus forming an artificial catheter, through which the urine ran down his thighs, and these became very much excoriated. Potass. bicarb. was given in half-ounce doses daily, with a dietary of linseed mashes: warm lard was likewise injected into the wound, and the thighs well protected by it. In a month or six weeks after the operation a slough was thrown off, measuring about six inches in length, and the horse now staled nearly equally through the urethra and the wound again. What was apprehended now took place; namely, infiltration of the cellular tissue and the formation of a second slough, greater in extent than the first; but during the time of this forming and being thrown off, the external wound

became nearly healed, having only a very small orifice remaining, but through this the urine still continued to pass freely. On the 1st of January the wound was dilated by incision, so as to admit two fingers being introduced, and the second slough was then easily removed; this having formed, like the first, quite an artificial catheter, and about the same length. Injections of warm lard were still continued, when the wound gradually assumed a more healthy aspect, and the urine, by degrees, was entirely passed by the urethra. The wound was quite healed in the early part of December; on the 13th he had a dose of aperient medicine, and was subsequently sent to exercise; a few days after which I rode him, and I think he was one of the pleasantest horses, with superior action, that I ever mounted. He remained at our establishment till February, to suit the convenience of the gentleman whose property he was. He was regularly exercised, and ridden home in two days, about sixty or seventy miles, and continues quite well.

I heard from his owner a day or two since, who states he was having two hours' exercise every day, and getting into condition for any active service he may be required. The stone I have not yet analyzed.

Believe me, dear Sirs,
Your's very truly,

To the Editors, &c. W. G. Taylor.

Œsophagotomy on the Horse successfully performed.

By Mr. G. T. Baldwin, *M.R.C.V.S.*

My dear Sir, *Fakenham, Dec.* 30, 1848.

Should you consider the following case worthy a place in The Record, please give it insertion.

An aged grey pony, the property of Mr. J. Ellis, of West Basham, was led to our infirmary on the 5th of May last, in a state approaching to suffocation from pressure on the trachea communicated by a piece of mangold-wurzel the boy had thoughtlessly thrown to him, and which she had swallowed without masticating it. I first endeavoured, by passing my hand down the throat, to

remove it; but had I not immediately withdrawn my hand, the animal would have fallen in a state of asphyxia. I then tried to force the portion of root upwards, manipulating on each side of the œsophagus, but this, too, proved ineffectual. Being convinced the animal would die in a short time unless relief were afforded, I now determined to perform œsophagotomy as the only remaining chance of removing the impacted body; a twitch was, therefore, placed on the nose, and held by an assistant, and I operated on her while standing, being afraid to cast her. An incision was at once made through the integument, &c. down upon the foreign body, in an upward direction, just below the bifurcation of the jugular vein. Introducing into the opening a small hook, I endeavoured to withdraw the piece of root, but found it so firmly lodged, that I was obliged to use my finger and thumb, and exercise considerable force. On being taken out, it measured between four and five inches in length, and was of a conical form. I need hardly add that the animal was immediately relieved. The wound now demanded my attention. I did nothing to the incision made in the œsophagus; but, as the external wound gaped very much, I drew its edges in apposition by means of silk sutures; but afterwards, fearing that these may give way, I introduced three or four metallic ones. The animal was now quietly led home, a distance of three miles, with orders to be allowed nothing to partake of but gruel. In four or five days after the sutures had sloughed out, and the suppurative inflammation was set up in the wound.

May 6th.—The animal appeared much distressed in her breathing, and had partaken of but little food; the neck also was much swollen. I ordered repellent lotions to be applied, and milk to be offered her, of which she drank a small quantity. On the 7th the inflammation about the wound had become less, from which pus was freely discharged. Directed the milk to be continued, to which some fine bran might be added. At the present time she is able to eat any thing without the manifestation of the least inconvenience in the act of deglutition; nor can I discover the slightest indication of a stricture in the œsophagus, all observable being the cicatrix in the skin.

In performing the operation, I made my incision underneath the substance in the œsophagus, in a longitudinal direction, by pressing my hand on the other side of it, by which I am of opi-

nion we had not so much trouble in healing of the wound, as the food was thus prevented passing out through the external opening as much as it otherwise would have done, the trachea being immediately under it. Believe me,

Very truly your's.

To Professor Morton.

Preputial Calculi taken from a Pig.

By Mr. W. A. Cartwright, *M.R.C.V.S.*

My dear Sir, *Whitchurch, 20th Dec.*, 1848.

Herewith you will receive the inferior portion of the urethra of a pig containing two calculi.

It was brought to me this afternoon by a butcher, who said the pig weighed about seven score pounds, and was fat.

I never saw any calculi in this animal before; and as it is in your line, I have taken the liberty of sending them to you in preference to Mr. Simonds, though I could have wished to have forwarded the specimen to him; but I know he will excuse me for doing what I have.

I have also thought it might be interesting at your weekly meeting of the Association.

I remain, dear Sir,

Your's most respectfully.

To Professor Morton.

[These concretions were taken from the preputial sheath, which had undergone a gradual dilatation so as to form a sac, in which they were lodged, as shewn in the woodcut, *Fig.* 1. The *weight* of the two calculi together was seventy-five grains, that of the larger one being fifty-five grains. The *form* of each was an obtuse cone; the *structure* crystalline and glistening, the particles having the appearance of being only loosely aggregrated, but such was not the case: no consecutive layers existed, yet there seemed a disposition to the formation of a radiated arrangement of the crystals.

EXPLANATION OF WOODCUT.

Fig. 1. Shews the relative size and position of the calculi as lodged in the preputial sac.

Fig. 2. Portions of the calculus in the form of spontaneous crystals of the neutral phosphates, magnified about 50 diameters.

Fig. 3. A group of precipitated crystals, magnified 100 diameters.

If any foreign body were present as a nucleus, it was a portion of a hair; the *colour* was light fawn, and the *odour* highly urinous.

Under the microscope a small mass appeared of an irregular granular form, not unlike a piece of lump sugar. Detached broken-up fragments being examined by reflected light, presented the appearance shewn in *Fig.* 2 of the woodcut. These crystals probably consist of the neutral phosphates, and are of spontaneous formation. A few grains being dissolved in hydrochloric acid, and ammonia added, the beautiful crystals seen in the woodcut, *Fig.* 3, were thrown down; among which will be observed the stellar, foliaceous, and penniform crystals of Dr. Golding Bird: the bibasic phosphate of ammonia and magnesia.

As the foliated and penniform edges are not seen when the crystals are first deposited, it would seem that these result from the accretion of minute particles on the primitive crystal, which is stellated in form, from acicular prisms adhering to each other at one end: these sometimes form small rosettes by superposition of smaller crystals. A portion being subjected to the action of the alkaline solutions was unaffected by them, shewing the absence of the *urates*. In the acids it readily dissolved, and water of ammonia precipitated numerous crystals; but the oxalate of ammonia gave not the slightest indication of the *salts of lime*. Heated with potass, ammoniacal gas was exhaled. Under the influence of the blow-pipe it first blackened, then became white, and small pieces underwent partial fusion on the heat being urged. The white ash being dissolved in dilute hydrochloric acid, on adding bicarbonate of ammonia to it the double phosphate was thrown down. Neutralized with soda, the nitrate of silver gave a faint yellow precipitate.

The inference deducible from the above *qualitative* analysis is, that the concretions consist of the phosphate of magnesia and ammonia, being what are designated by some writers *triple calculi;* respecting which, Professor Brande, when describing the characters of a calculus of this kind, says, "the colour is generally white or pale gray, and the surface often presents minute crystals; the texture is generally compact, and often somewhat hard and translucent; heated by the blow-pipe, it exhales ammonia, and leaves phosphate of magnesia. It is more soluble than the phos-

phate of lime calculus, and oxalate of ammonia forms no precipitate in its hydrochloric solution." Not very different is the description of the chemical characters given by Dr. Garrod: "Where exposed to the flame of the blow-pipe it melts, although with difficulty, first giving off ammonia; by treatment with potash it is not dissolved, but ammonia is given off. It is soluble in all acids, much more so than the phosphate of lime, and from the acid solutions it is again precipitated by ammonia."

The ammonio-magnesian phosphate is often deposited from human urine, or it forms a superficial crystalline film on this secretion, which is sometimes iridescent. Its presence indicates a diminution of the natural acidity of the urine, the result of an alteration of diet, or of disease.

If we are to view this salt as a constituent of healthy urine, then its precipitation under certain conditional circumstances may be easily accounted for. It is readily deposited from urine by ammonia. Now, since urea, by combination with the elements of water, undergoes conversion into carbonate of ammonia, we have present all the necessary conditional circumstances to effect this. The urine of the pig had doubtlessly been retained in the sac formed in the prepuce—which is by no means an uncommon occurrence—and the above change had taken place in the secretion; and when once this had been induced, the disposition to precipitate the salt from catalysis and molecular attraction being excited, continued; and thus particle after particle of the ammonia-magnesian phosphate was thrown down, until the concretions were formed, and, without question, had they been longer retained, they would have increased in size.

Dr. Walshe, in an article in the Cyclopædia of an Anatomy and Physiology, on "Adventitious Products," says—

"Phosphoric acid exists in healthy urine in combination with ammonia and magnesia, in such proportion as to form a perfectly soluble salt. If the proportion of base increases, the salt becomes insoluble, and, according to the amount of excess, is deposited either as the neutral or a bibasic triple phosphate.

"The *neutral phosphate of ammonia and magnesia* (the only one observed in urine at the moment of emission) occurs in white transparent crystals of perfectly regular forms, referable to the right rectangular prism.

"These crystals are often mixed with amorphous powder, commonly composed of phosphate of lime, rarely of urate of ammonia. They are instantaneously soluble in weak acids, and the solution is precipitable by ammonia in the form of the bibasic phosphate.

"The *bibasic phosphate of ammonia and magnesia* does not appear to exist in urine, even the most strongly alkaline, at the moment of emission. But its crystals are developed with the progress of decomposition, and may be obtained from any urine by rapidly adding large quantities of ammonia. Microscopically these crystals appear aciculated and grouped at angles of 60°, so as to resemble a pinnate or bipinnate leaf."

The origin of this compound in the organism is to be traced to the food partaken of. The phosphates are met with in all the gramineæ, especially in the coverings of grains, also in the potato, and the leguminosæ. This being taken into consideration, it is not at all surprising that the pig should be the subject of these peculiar formations, both in the bladder and elsewhere. The same constituents, in association with the phosphate of lime, form one variety of those masses so often met with in the intestines of the horse; the source of which is as readily assigned.

Dr. Golding Bird, speaking of the formation of phosphates in the urine, says—

"It is impossible to state with certainty in what manner, and with what bases, the phosphoric acid exists in the urine. Phosphates of soda and lime are certainly present, and in all probability the former is combined with phosphate of ammonia, forming the double, or microscomic salt. Ammonio-phosphate of magnesia, perhaps, is also an element of healthy urine, as on the addition of ammonia a mixture of this salt and phosphate of lime is precipitated. The following formulæ represent the atomic composition of these different salts; they are all tri-basic.

"Phosphate soda ..... ($HO, 2\,NaO, P_2O_5$)+24 HO
Ammonio-phosphate of soda .... (HO, NH_4O, NaO, P_2O_5)+ 8 HO
Phosphate of lime..... ($HO, 2Ca\,O, P_2O_5$)
Ammonio-phosphate of magnesia.. ... ($NH_4O, 2Mg\,O, P_2O_5$)+12 HO

"The soluble phosphates must be regarded as derived directly from the food, and from the blood when in the act of being organised into muscle. The insoluble phosphates forming part

of the structure of the body, derived originally from the blood, are conveyed to the urine in the process of metamorphoses of tissue. Some of the phosphoric acid of the urine is, in all probability, generated from the action of oxygen on many of the structures of the body, into the composition of which phosphorus largely enters, as in the brain and nervous system generally. The chlorine exists in combination with sodium, and is in all probability derived from the common salt taken with food. The greatest part of the phosphoric acid is derived, ready formed, from without, as it occurs in considerable proportion in most elements of food derived from the vegetable kingdom in combination with lime and magnesia; whilst the basic alkaline phosphates exist in flesh, in wheaten flower, leguminous seeds, as beans and peas, &c. The ashes of blood contains the basic alkaline phosphates; and muscle, when incinerated, yields much phosphate of lime and some phosphate of magnesia. The alkaline and earthy phosphates, in the opinion of Liebig, are chemically combined, the former with albumen, the latter with fibrine. During the formation of muscular tissue, whilst blood is becoming converted into muscle, the earthy phosphates remain in the new-formed tissue in a state of chemical combination; the greater amount of the basic phosphates of soda and potass re-enter the circulation, are separated by the kidneys, and thus find their way into the urine. A part only of the earthy phosphates contained in the food is absorbed into the circulation, the greatest portion escaping by the intestines."

It may be thought by some of our readers that we have been somewhat prolix on these concretions; but they are the first of the kind that have fallen under our notice, and we confess we have felt interested in them.]

Case of Albuminaria, associated with Destruction of the Tubular Portion of the Kidneys of a Cow.

By Mr. W. A. Cartwright, *M.R.C.V.S.*

Dear Sir, *Whitchurch, January 29th,* 1849.

Herewith you will receive a very excellent and rare specimen of diseased kidneys and ureters taken from a cow.

She was the property of G. Gill, Esq., agent to Viscount Hill,

of the Twemlows. He purchased her in July last from a neighbour of his. She was then rather thin, but this was thought to arise from her being a heavy milker; still the cowman did not think her a sound one. Soon after the cowman also observed that she did not void much urine at a time, and that it smelled very offensively. From that time till the beginning of January she continued in about the same state, giving a tolerable quantity of milk. On the 5th she had a purging drink administered to her, as she was said to be labouring under red-water. On the 13th I was sent for to attend her. I found her very thin; her urine of a dirty colour, and there was likewise a little coagulated blood in some of the last portions that were voided. She passed a fair quantity at a time. I bled her, gave a little medicine, and rubbed a mustard blister on her loins.

Jan. 16*th.*—Animal no better. I now discovered that there were some flakes of pus at the bottom of the vessel containing the urine. I also introduced my arm up the rectum to examine the kidneys, one of which I found very much enlarged; the other I could not feel. From finding the kidney so much enlarged, and the pus in the urine, and reflecting on her emaciated state, I thought it useless to place her under any treatment, having seen a few cases similar to it before. On the 27th, at my request, she was killed, and on opening her I found the accompanying morbid parts.

I did not examine them, as I thought they would be more useful to the Association in their present state, also knowing that I should obtain the particulars from you hereafter. It is astonishing that she voided so much urine all along, this being from two to three and even five quarts at a time.

I remain, dear Sir,

Your's most respectfully.

To Professor Simonds.

[The parts forwarded by Mr. Cartwright consisted of the kidneys, ureters, and bladder. An examination of the bladder shewed its coats to be thickened and corrugated so as to lessen its original size: this thickening was particularly apparent in the mucous coat. The viscus contained a small quantity of sanguineous urine, with which were mingled many shreds of a fibrous substance of a dirty white colour, having a fetid smell. On subjecting the urine to

the action of heat, coagulation took place, thus shewing the presence of albumen. The ureters were so much dilated, as to readily give passage to the finger, and their coats were considerably increased in substance; a condition which resulted from their having to transmit from the kidneys to the bladder the thick and glutinous matter hereafter spoken of. The kidneys were unequal in size, one being smaller than natural; externally they presented a distended aspect, and were paler than usual. A section carried through the long axis of each gland shewed their interiors to be filled with a semi-fluid mass, having at first sight an appearance similar to thickened and dark-coloured pus. On a closer examination this was found to be very tenacious or ropy, and, when placed under the field of the microscope, to be made up of disintegrated urinous tubes, epithelial scales, granular matter, globules of mucus and pus, and blood discs. The complete removal of this mass from the interior of the kidneys exposed a singular and unusual condition of these organs, namely, an almost entire removal of their medullary substance, chiefly by absorption, but here and there by the process of ulceration. In the smaller kidney the cortical structure had become involved in the diseased action, thus accounting for its diminished size; but in the other the ravages were as yet confined to the uriniferous tubes, where they are collected together to form the mammary processes. It is difficult to say whether this disease depended on some constitutional or specific cause, or was merely the result of an ordinary attack of inflammation of the mucous membrane of the kidneys, as all the consequences can be accounted for by taking either view.

We would further remark, that a similar morbid specimen was brought under our notice during the last summer by Mr. Gowing, who obtained it from the knacker's-yard; but of the case in which it occurred no history could be obtained. Mr. Cartwright's specimen is, therefore, of greater interest, and we thank him for his kindness in forwarding it so early, and in so perfect a condition.]

Contributions to the Pathology and Practice of Veterinary Medicine.

By Mr. W. Haycock, *M.R.C.V.S. Edin.*,
King-street, Huddersfield.

typhoid pneumonia, &c.

Case I.

August 23, 1843.—I was requested about five o'clock p.m. to attend upon a mare belonging to T. Brook, Esq., of this town.

History, &c.—The animal is of a brown colour, six years old, stands about fifteen hands two inches and a half high, of the coach-horse breed, and has been in the possession of her present owner about eight months, during which period she has not thriven well. She is far from being a hardy animal; not a mare at all of spirit, and, so far as I can learn, never was. For some time past she has coughed a little, which cough, from the first, has been somewhat short and dry in its character, and about four or five days ago she manifested symptoms of catarrh. This afternoon she appeared worse, and I am desired to attend.

Present Symptoms.—The extremities are warm; the eyes have a languid, dull appearance; the Schneiderian membrane is shadowy, i.e. some portions of it are redder than others, and a blue tinge over the whole is perceptible, at least so far as I can discern. The glands at the side of the throat are swollen; and a little difficulty is experienced in swallowing food and water. The mouth is far from clean; the pulse is 58, and the respirations are 14 per minute. On applying my ear to the chest, on the superior and inferior regions of both sides, the respiratory sound, generally, I find is subdued. I cannot detect, however, the least cessation in its course; it simply wants elasticity, or greater hollowness of sound. A soft mucous râle is present in the bronchial tubes; she coughs now and then, which is moist in character, but not sonorous: the appetite is moderate for a sick horse.

Treatment, &c.—I gave the following draught:—

℞	Potass. nitratis	℥ij
	Antim. potassio-tart	℥jss
	Aloës Barb.	℥ij
	Spts. Etheris nitric.	℥ij
	Aquæ	℥vj

To be made as comfortable in the stall as she can be; to have a bran mash to eat, and linseed tea to drink.

Aug. 24th.—Eight o'clock, A.M.: She has drank some gruel and eaten a portion of mash; but does not appear to have lain down during the night; pulse 70 per minute and respirations 17. The character of the pulse is somewhat peculiar: when lightly pressed, it feels full, strong, and round; but its action, by almost the slightest increase of pressure, is lost. The respiratory murmur is changed since last evening, it being more dead or subdued, and this deadness is more evident on the right than on the left side: still I cannot detect the slightest interruption to its course through the lungs. The mucous râle is also louder; the extremities less warm; cough more severe, and, when it comes on, she seems afraid to give it force; it is constrained and suffocative: in short, she is worse in every respect.

Treatment.—Gave the following draught:—

℞	Potass. nitratis	℥ij
	Antim. potassio-tartar	℥j
	Pulv. camphoræ	℥j
	Pulv. digitalis	℥j
	Spt. etheris nitric.	℥iij
	Aqua	℥vij

The hair to be closely cut from each side of the chest, over a considerable surface, and a strong blister rubbed on the exposed parts; bandage the legs; clothe the body a little more, and give linseed tea or oatmeal gruel to drink, also a few boiled oats and a little bran mash to eat.

Eight o'clock, P.M.—During the day I have seen the mare on two or three occasions; to-night, however, I again made another systematic examination. The pulse is 72, and softer than in the morning; respirations 17 in the minute; respiratory murmur faint and dead on the right side, on the left more clear; mucous râle not so loud; it however changes a great deal, as at times, during the day, it was loud, while at other times it could scarcely be heard at all. The legs are cold; the hair over the surface of the body looks dry; the eye is dim, and has a sunken appearance; the mucous membrane of the nose is bluer than when I last noticed it. When she coughs, she stands rigid, hangs the head, and seems greatly averse to the act; the cough is short and catching, and attended with a tremor of the muscles of the sides.

Repeat the medicine.—Cut away the hair along the course of the trachea and in front of the breast, and blister the parts; also apply more blister to the sides.

August 25th, 8 *o'clock*, A. M.—This morning she appears somewhat better in one or two respects. She has eaten a little, drank some gruel, and dunged twice during the night; the pulse is 74 and respirations 18 in the minute; but the cough is the same, the extremities are cold, the mucous râle is not heard in the bronchial tubes, but I hear a croaking sound, which apparently is confined to the nostrils or top of the larynx. The blisters have acted a little both on the sides of the chest and down the course of the neck.

Gave the following draught:—

℞	Potass. nitratis	℥j
	Pulv. camphoræ	℥j
	Pulv. digitalis	℥j
	Liq. ammoniæ acetatis	℥v
	Spirit. etheris nitrici	℥iij
	Aqua	℥vj

To have a little of any thing to eat she will take; the neck and sides to be washed. At noon I gave another dose of the solution of acetate of ammonia and spirits of nitric ether.

9 *o'clock*, P. M.—Much the same as in the morning: repeat the medicine.

August 26th, 7 *o'clock*, A. M.—No better; she however has eaten a little, and the bowels are regular; pulse 77, and wiry; respirations 14 in the minute; dulness over the whole chest, but sometimes the murmur is clearer than at others. On the inferior region of the right side I have twice distinctly detected the veiled puff. A little effusion has also taken place; the cough is still constrained and suffocative; the breath fetid; three of the extremities are cold, and the fourth is warm.

Repeat the medicine. The day being very warm and fine, I had her led into a field adjoining the stable, and turned loose: instead of attempting, however, to eat, she wanders slowly about; her walk is feeble, and she takes not the slightest notice of any thing. She remained out about two hours.

9 *o'clock*, P. M.—To-night the mare is in that peculiar lingering state which I much dislike. Pulse 75 and respirations 16 in

the minute, the mucous râle is so very loud, that I cannot detect any other sound—it masks it completely. I can hear the râle the length of the stable. When I was giving the medicine to her she coughed violently, and immediately afterwards there issued from both her nostrils a quantity of yeasty-looking matter, the fetor from which was really disgusting.

August 27th, 9 o'clock, A. M.—Pulse 75, respirations 18 in the minute; discharge from the nostrils copious, and of the same offensive smell. I can easily detect the metallic tinkle in the chest; the effusion, I also believe, has greatly increased; mucous râle at present subdued. Very little change took place during the day, and my treatment consisted of stimulants. I gave port wine and peruvian bark, brandy, spirits of nitre, and also a quantity of yeast.

August 28th.—Throughout the whole of the day she has been much the same as yesterday; mucous râle at times very loud; a diffuse sibulous sound was present, particularly on the left side; pulse 76, and respirations 15 in the minute; extremities warm. Continue the administration of stimulants, and give an ounce of yeast every three hours.

August 29th.—This morning she is weaker, and the appetite is gone; she begins to have a very emaciated appearance; the extremities, ears, &c. are very cold; the pulse 89 and respirations 22 in the minute; the muscles of both shoulders and the left hind leg exhibit an involuntary jerking kind of motion. During the day the mucous râle was sometimes uncommonly loud; when it subsides, I can detect a ringing kind of sound: it exactly resembles the sound caused by drops of water falling into a deep well. The action of the heart is masked; every time it beats, a quantity of fluid seems to be forced away from it. On the left side for about ten inches in length, and along its medium plane, I can detect the moist crepitus rhonchus. This sound, to which many comparisons have been made, exactly resembles the frizzling of paint when spread over a board or canvass and held before a large fire. Not only is the length over which this sound is heard considerable, but its breadth is considerable also. The effusion appears to have increased very much during the last twelve or fourteen hours; the discharge from the nose continues undi-

minished, and the cough exhibits the same peculiarity it has done from the commencement. Continue the use of the yeast.

August 30th.—On going this morning, I fully expected to find my patient dead, which however was not the case, but she was down upon the floor; a cold sweat bedewed the skin, the extremities were warm, and the eye glassy. She lay in this state about two hours, and then died.

Examination two Hours after Death.

State of the Digestive Organs.—The stomach contained a small portion of food which was scarcely, if at all, acted upon. The mucous membrane of this organ and of the small and large intestines was pale in colour. The external surface of the stomach presented a pale pea-green tint; its muscular tunic was easily lacerated, and this was the case with the coats of the bowels also, a very gentle force sufficing to tear them in pieces. The liver was moderately sound, its colour pale, and, when broken up, the granular character was evident.

Urinary Organs.—The kidneys in appearance were healthy, but their structure was softened: the ureters and bladder were normal.

Thoracic Organs.—When the chest was opened, its contents presented a highly diseased appearance. Throughout the whole of the lungs I could not detect a single portion of sound substance; their structure was destroyed, and, I may add, entirely gangrenous. The right lung had formed an adhesion along its whole length, a little way from the spinal column: the adhering substance was of a yellowish-white colour, and resembled a mixture of pus and fibrin; it was very abundant, and of the consistence of moderately thick jelly. The right lung also contained a large cavity, which was about three parts filled with yeasty-looking matter, similar to that discharged from the nostrils: a quantity of this substance was also present in the larger bronchial tubes. In the left lung the disease had not so far advanced; adhesive lymph between it and the pleura was present, but the surfaces involved were not so extensive: the same kind of sanious matter was also present in considerable abundance. The trachea was in a diseased condition; its mucous membrane along

its whole extent over the larynx, œsophagus, nostrils, mouth, &c. being more or less gangrenous. The serous membrane covering the costæ and the anterior surface of the diaphragm was of a dull dirty-green colour, and a very little force caused it to separate from the subtextures; it peeled away, in fact, like wet paper, and a dark liver-coloured surface was exposed. The chest contained about twelve or thirteen quarts of liquid, in which floated masses of lymph, portions of lung, &c.

Circulatory Organs.—The heart was moderately firm in its structure, but pale externally; its left ventricle contained a portion of blood of a blue colour, which was in a semi-coagulated state; the lining membrane of the ventricle had the same colour, or rather a greenish blue tint: the valves, to all appearance, were healthy. The heart, freed from all other textures, weighed exactly seven pounds four ounces avoirdupois.

Arteries.—The large arteries, in common with the aorta throughout its entire length to where it divides into the iliacs, appeared normal, with the exception of being softer than natural. The colour internally was darkish, but I could not say this colour resulted from disease in the serous membrane itself.

Veins.—I carefully examined all the large veins, such as the anterior and posterior vena cava, iliacs, jugulars, &c., and the internal membrane of these vessels was highly diseased; lengthened patches of blue merging into the dull green colour so commonly met with were present; and the coats of these vessels tore into shreds with perfect ease. They contained blood such as I found in the heart.

Muscular System.—With respect to the entire muscles of the body, including the voluntary and involuntary classes, I may observe, that every one I examined, such as the diaphragm, the intercostal muscles, the psoæ, and the muscles in the region of the shoulders, abdomen, &c., were all in a very softened state, very little force being sufficient to separate their fibres and tear them asunder.

Nervous System.—The substance of the brain was very much softened, and its colour changed. When the centrum ovale was exposed, instead of presenting the clear white surface of health, it appeared of a pale dirty brown colour mixed with white; some serum was at the base, and in the ventricles of the organ. The

medulla and spinal sheath, so far as I examined them, presented the same dirty aspect. I could not detect any change peculiar to the large nerves.

Case II.

February 3d, 1847.—I was requested, about 8 o'clock P.M., to attend upon a mare belonging to Mr. George Roberts, mill-owner, in this town.

History, &c.—The animal is of a bay colour, of the light draught breed, rising nine years of age, stands fifteen hands three inches high, and has been in the hands of the present owner for about three years. Six months ago she had an attack of the epidemic catarrh which prevailed at that time, more or less, in this district. This attack left the animal affected with a cough, which has continued from that period to the present. Prior to this illness, however, she was never, from a foal, known to have suffered from disease. Mr. Roberts purchased her of the individual who bred her, and, from only having been the property of two persons, her history was readily obtained. The labour of the animal is somewhat heavy, but regular; it consists in carting coals to supply the factory engine, with occasionally a little farming labour. On the 1st of the present month (February 1847) she was observed to be unwell; but as the symptoms did not, to the owner, appear at all urgent in their nature, he had her kept warm, and liberally supplied with bran mashes and linseed gruel: on the evening of the 3d day, however, she appeared so much worse, that I was requested to attend.

Present Symptoms.—The head of the mare is drooping, the eyes dull; three of the extremities are preternaturally warm, the other is cold; the hair over the surface of the body has a very dull unhealthy appearance; when the hand is pressed against the sides of the chest a soreness is manifested, and a slight tremor of the panniculus carnosus muscle is evinced: this soreness is a little more acute on the right than on the left side. The mucous membrane of the nose is of a dull red colour, and shadowy; the pulse is feeble, and 70 in the minute, respiration 15. On applying my ear along the course of the trachea, commencing superiorly, a soft mucous râle is heard, which slightly increases in loudness as the ear approaches the heart. Close to where the trachea enters

the chest, the râle is the most intense; the loudest tone, however, is very low when compared with the same kind of sound I have heard under similar circumstances. The respiratory murmur can be heard over the whole of the left side of the chest; its highest tone on this side is parallel to and about four inches from the spinal column. In the regions more inferior it becomes more subdued. On the right side, along its superior part, the sound is very similar; but along the median region it is decidedly more subdued, and in the inferior region it has entirely ceased.

In this case I need not take the reader through the daily progress of the disease; its course being so closely similar, in every respect, to the first, that to do so would be little else than to give a mere repetition of what I have already stated: suffice it to say, that the animal died during the afternoon of the 11th; that, for three days prior to death, yeasty-looking matter was discharged from the nostrils, emitting a most intolerable stench; and that, about the time this discharge commenced, the skin in one or two parts, particularly about the right shoulder, appeared a little emphysematous; and this, when pressed upon, caused a crackling sound, which I have no doubt arose from gas or air being collected in the cellular tissue of the part, and which, when squeezed, ruptured the cells of the tissue, and thus caused the crepitation alluded to.

Examination seventeen Hours after Death.

Abdominal Viscera.—The stomach was empty, also the small intestines—the large intestines contained brown matter in a semi-fluid state. The colour of the mucous membrane was a pale dull red, with here and there a darker tinge intermixed with blue: the colour of the peritoneum was normal. The liver was very sound, but pale-coloured. The intestines, from the commencement to their termination, were softened, and very little exertion sufficed to tear their tissues asunder.

Organs of the Chest.—The substance of the lungs and the bronchial tubes were in a state of disorganization, their structures being torn apart with very little force. Numerous abscesses existed in the lungs, containing brown-coloured matter, and which brown matter also existed in abundance in the bronchial tubes The mucous membrane of the trachea was of a dull green, the tube

itself containing frothy spume. In the chest were about four quarts of a dirty-brown liquid. The pleura costalis, for the depth of about ten or twelve inches at the inferior part, and on both sides, was of a dark dirty green aspect; the membrane easily sloughed away from the ribs, and a liver-like surface was exposed. The heart was moderately firm in its texture, but pale; both its ventricles contained portions of very dark blood in a semi-coagulated state: its valves and other appendages were blueish in appearance. The organ, when divested of other structures, weighed eight pounds eight ounces avoirdupois.

Veins, &c.—The serous membrane of the large veins, or rather the internal membrane of them, presented the same diseased appearance I have so fully described in Case I; only in this case the textures making up the veins were, I think, firmer. The blue tint of the lining membrane of the heart was, without doubt, the effect of disease: it parted from its muscular bed very readily.

Brain, &c.—The brain was much softer than natural, being nearly the consistence of weak jelly; its lateral ventricles were free from exudation: the plexus choroides were pale and bloodless, and the medullary portion of the organ had a dirty appearance.

Muscular System.—The muscles of animal life (and I examined a great portion of them in a rough way) were all of them very pale in colour, and so much softened that I could readily break down their structure with my finger. I hung a portion of the serratus magnus muscle in a place so as to expose it fully to the air; and in the course of sixteen or eighteen hours it began to emit an offensive smell, and to present other signs of rapid decomposition.

Remarks.—In no work on horse pathology that I am acquainted with will the veterinary student find a satisfactory account of typhoid pneumonia*. Blaine, in his "Outlines of the Veterinary Art," mentions the disease, but only in a very cursory manner. Mr. Youatt is somewhat more copious; but what he says, strictly bearing upon the matter, consists entirely of a quotation which he gives from a communication sent to him by Mr. Percivall. Beyond these authorities, I am not aware of any thing else upon the subject.

* A few cases have been recorded of it under the name of "Malignant Epidemic;" but I am not aware of any writer having regarded it in its true light. Strictly speaking, it is without a place, and almost without notice, in our recognized treatises.

The reason why this disease has not met with that consideration it demands, I conceive to be this. Typhoid pneumonia is always more or less prevalent during the existence of epidemic catarrh; and veterinary surgeons, from this simple fact, appear hitherto to have regarded the former affection more as an occasional or accidental termination of the latter than as a disease presenting specific characters, as it unquestionably does. Epidemic catarrh is one state, typhoid pneumonia another; and although the two, when observed, are frequently associated, yet their attendant phenomena are so very different, that careful observation is all that is required to establish the truth of what I state in the mind of every one at all interested in the question. During the last five or six years I have seen a great deal of this affection; and the cases which I now give, present, as a whole, about as clear a history of its commencement, progress, duration, and termination (in such cases as end fatally), as perhaps could be selected.

At the time I was called to the first case the disease was in that transitory state, or passing, as it were, from its first to its second stage. This is clearly shewn if we closely consider the morbid phenomena presented. On the 23d the respiratory murmur is subdued—mucous râle soft. On the morning of the 24th the murmur is more dull, particularly on the right side—mucous râle louder, and pulse 70. In the evening of the same day we find the disease has reached its second stage, and a portion, at least, of the right lung has become solid; which is marked by absence of murmur, and increased difficulty and soreness when coughing. On the morning of the 26th we have the "*veiled puff*," and fetor of the breath, which symptoms are clearly indicative of softening of the substance of the lungs, attended with decomposition; while in the evening this is more clearly proved by the discharge of yeast-like matter from the nostrils. On the 27th we have the metallic tinkle, which again is the unerring sign of further decomposition and excavation in the pulmonic substance. Thus we find cause and effect so closely allied one to the other, that in no other case, perhaps, could the progress of the malady have been more clearly marked. At the period I was called to the second case, here we find the disease more advanced. The absence of the respiratory murmur over at least one-third of the entire lung of

the right side proves that portion of it to have reached its second stage, or to have become solid, and consequently impervious to air. These facts, then, testify beyond the possibility of a doubt the value of auscultation in cases like the present. Many and many a time when called to such, when no outward symptoms evinced the dangerous state of the patient, have I discovered by it solely the instant necessity of putting into force all the powerful remedies necessary to combat successfully the destructive progress of the disease, and by so doing have unquestionably saved the life of many a valuable animal. I do not know of any disease more deceptive to the owners of horses than this; its commencement being so very insidious, and its progress so quiet. And most probably, at the very time such owners are congratulating themselves how cleverly they are managing without the assistance of a veterinary surgeon, is the disease, hour by hour, slowly but surely insinuating death into every fibre; and it is only when it reaches that stage when "he who runs may read," do they discover the necessity for assistance.

The causes which produce this disease are in most instances, I consider, very obscure in their nature. Assuming that it arises from a peculiar atmospheric poison, how are we to account for its action, save by its combining with the blood? Shall we assume that this poison, being inhaled with the atmosphere into the lungs, and there uniting with some element of the blood, and, by thus uniting, changes the chemical relations of the whole mass; and that, thus vitiated, it is circulated through the organism, producing changes in its solids and fluids of an asthenic nature; and giving rise to a train of phenomena which may be general or local, or both, according to constitutional predisposition in the system, or in particular organs of that system? Or shall we suppose that inflammation of an erysipelatous character, from some other cause, first commences in a portion of the mucous membrane of the air-passages; that this inflammation changes the secretions from an healthy to a morbid state, and that such morbid secretions, being imbibed by the blood-current, vitiate in a like manner to the former, its entire mass, producing effects such as I have described or detailed? Or, again, shall we assume that under favourable circumstances both these causes are occasionally, either singly or in combination, engaged in their production? Now, whether I

have hit upon a true explanation of this intricate question or not, I do not pretend to be certain. To establish my assumptions as positive truths would be a task of no little difficulty, and to dogmatize upon the matter would be absurd in the extreme. However, whether the primary cause or causes be local or general in it or their action in the production of the disease, it is, nevertheless, certain that the morbid effects produced admit of ready detection through the organism at large. This is clearly proved in the cases given by the softened state of the mucous, serous, muscular, and nervous tissues of the entire body. The disease in question prevails most in close and confined stables, and, if neglected at the onset, it generally destroys the animal in the course of ten or twelve days, or even earlier; and sometimes it terminates by very extensive effusion, in which case the animal either dies from suffocation, or very slowly recovers its wonted health and strength.

I have seen it associated with Asthenic Enteritis, Asthenic Gastro-Enteritis, Asthenic Pleuritis, Asthenic Bronchitis, and Epidemic Catarrh*; and also when it appeared to be the primary disease, or not complicated with any other. During the last five or six years it has been either more common among horses, or its existence previously was not recognised. Of the two, I am inclined to favour the former opinion. Be it, however, as it may, the veterinarian at times is subject to great annoyance and distrust from those who employ him for such cases. I have myself experienced this in more instances than one. The owners, seeing the animal linger day after day without any visible improvement, or any likelihood of such, become impatient. They ask what the disease is; and when told inflammation of the lungs, they directly refer to some stupid old author, such as Clater or White, or others of about the same caliber of mind; and in such works they find it stated, that, in all cases of inflammation of these organs, bleeding is the only remedy to save the animal; and they at once say, "Why, you have not bled my horse: if he had been bled, he would have recovered."

* For a case in which all these states were associated, see "*The Veterinarian*" for 1849, vol. ix, New Series, page 177. It is given by Mr. Copeman, and named "Malignant Epidemic;" and it is the only case I have been enabled to find recorded from 1841 to 1848 inclusive.

And, in most cases, it is in vain to tell them that the disease they have been reading about, and the one with which their horse is affected, are widely different in their nature: that though bleeding may be so necessary in the latter, yet to resort to it in cases like the present would be certain to destroy every possible chance of the animal's recovery, supposing any such to exist. The owner at last becomes impatient, and tells the practitioner, with emphasis, that White says so, and that what White says must be true, "*because he was a doctor in the army.*" The veterinarian goes away, inwardly lamenting that he is the victim of such gross prejudice; while the owner deems himself extremely unfortunate in having employed such an ignorant doctor. In vain will the reader search the old authors on farriery for enlightened or comprehensive views upon equine pathology; he might as well suppose that blood is to be had out of granite: they knew little or nothing about it, consequently could tell nothing. True, it may be urged, that many of these writers are very popular; but the popularity of any thing, generally speaking, I contend, is no criterion of its intrinsic worth; most frequently it is the reverse, particularly if holding any relation to medicine, for upon no other question does the public exhibit such lamentable ignorance as this. In many districts, human quacks, horse quacks, and quacks medical of every grade, colour, and degree, will prosper surprisingly; while the most enlightened surgeon, or veterinary surgeon, can scarcely obtain more than a bare subsistence: so much, then, for popularity—so far, at least, as medicine is concerned!

Having now considered, first, the careless manner with which veterinary writers have hitherto regarded this disease; secondly, enumerated the physical signs so well marked during the progress of the malady, especially in the first case, and from which I endeavoured to shew the great value of auscultation to veterinary surgeons in detecting the insidious commencement of cases like the present; thirdly, having touched incidentally upon its causes, and attempted to account upon rational principles for the probable mode by which these causes produce such general morbid results; fourthly, having hinted at the complications or associations of this disease which occasionally are manifested in the same animal, I now proceed to offer a few remarks on the anormal state of the lining membrane of the heart and the large veins; and shall con-

clude with a few observations respecting the condition of the pleura. The state in which I found the inner membrane of the heart and veins cannot be accounted for except by the action of inflammation, the cause of which arose from the constant presence of foul or poisonous blood, producing, in short, general phlebitis, an affection which I suspect to be far from uncommon in the horse. Local phlebitis, or inflammation of the large vein of the neck, occurring as a sequence of bad management when bleeding the animal, is a matter of common notoriety, and which the reader will find ably treated upon in most of our modern veterinary works. But with reference to general phlebitis, arising as consecutive to idiopathic disease, not even so much as a single hint of its existence could I find mentioned by any one of them, ancient or modern: it appears, in fact, to have entirely escaped the penetration of every observer, with the exception of myself; and its observance with me was entirely the result of the practice which I invariably pursue, viz., of examining every structure and organ in the dead animal, no matter from what cause such death may have resulted. The disease in the present cases was associated with asthenic inflammation of the pleura, for in both I found this membrane extensively diseased; indeed, the greater portion of it, in the first case, was in a complete state of gangrene.

"Gangrene of the pleura," says Laennec*, "is a very rare disease; it is hardly ever general, or ever of any considerable extent." This, I may say, is equally true with respect to the horse. I have attended numbers of cases like the present, and examined many after death, and I have very rarely found the pleura to be affected for more than a third of its costal surface, more frequently not so much. Whenever it becomes inflamed, and this inflammation is at all severe or extensive, it is generally attended with effusion into the thoracic cavity. The chief symptoms of acute inflammation of this tissue are a cramped state of the panniculum carnosus muscle, restrained respiration, feebleness of cough, and sudden cessation of respiratory murmur over the part affected. The existence of effusion is frequently very difficult to positively decide upon. Succussion of the animal is of no avail with us in determining the matter, and percussion probably

* Laennec "On Diseases of the Chest," translated by Dr. Forbes, p. 405.

is little better. There is one sound, however, which if it can be detected, may, in all cases, be relied upon with a certainty little less, I think, than demonstrative. I have spoken of its existence in the first case of the present contribution ;—it is the ringing sound, which I stated as bearing such a very close resemblance to the falling of a drop of water into a deep well. I could enumerate many other signs and states, which, if taken and considered in the aggregate, render the matter more than probable ; but I do not know of any one so certain as that above stated.

In conclusion, then, I have to observe that when we carefully consider the primary and secondary states of this disease, in the cases which I have endeavoured, step by step, to unfold before the mind of the reader, we need not wonder why the pulse in both animals should, day after day, maintain the peculiar character which it did. Health I regard in a great measure as being dependent upon a due balance of the chemical forces resident within the organism ; which balance if disturbed, either in the blood itself, or in the solid tissues with which it is in constant and immediate relation, a change is speedily made manifest by a series of morbid phenomena more or less extensive, according to the nature and degree of that original disturbance. Of the nature of this disturbance, in a primary point of view, we at present know nothing ; we can judge of it only through its manifest effects : and what the scientific practitioner has to do, and in fact all he can do, is closely to observe its workings, and, if possible, eradicate or controul its destructive tendency.

Cases illustrative of the Usefulness of Collodion in Open Joints.

By Mr. T. Taylor, *M.R.C.V.S.*

Victoria-street, Derby, Jan. 30th, 1849.

My dear Mr. Morton,

After reading some remarks made by you in The Record for January respecting the new preparation Collodion, I thought from its adhesive qualities that it would be a useful agent in cases of open joints ; and, having at the time a severe case of the kind under treatment, I applied it as follows :—My patient was a brown horse, having an open hock-joint, occasioned by a kick

from another horse, the calkin of the hind shoe of which had entered the joint. Of course a profuse discharge of synovia took place from the wound. My first step was thoroughly to cleanse the wound from dirt, &c.; I then wiped it very carefully with lint, and covered it with a square piece of goldbeater's skin, to prevent any moisture from the wound interfering with the action of the collodion. I then applied the latter with a camel-hair pencil, my assistant constantly painting the wound with the same; and to my great satisfaction, after using it for an hour or so, it formed a plaster so adhesive as entirely to prevent any further discharge. I continued the application of it (of course not removing the first layer) several times a-day; and I am happy to say the horse is now nearly well.

Another case of open joint I have now under treatment;—a grey horse with very bad broken knees. I applied the collodion the same as in the former case, but the lacerations were so extensive that I thought it best to use a broad tape bandage (first covering the joint with a thick plaster of flour and white of egg), thereby giving more support to the solution. It is now eight days since I applied it; and although I have a discharge of pus, I am quite convinced the orifice will soon close, as I have never detected any synovia since the application, although it is the worst case of open joint I have ever met with. I will write you the issue of the case. I of course combatted the febrile excitement such a wound would naturally produce by resorting to the usual antiphlogistic remedies; and in all cases of this description I have the patients placed in slings.

I have ventured to trouble you with these cases, and, should they be in any way worthy of your notice, they are quite at your service.

Case of acute Congestion in the Lungs of a Horse, terminating in Hydrothorax, successfully treated.

By Mr. G. T. Brown, *M.R.C.V.S.*

On Saturday, Nov. 4th, 1848, at seven o'clock, P.M., my attendance was requested to a chestnut mare, the property of Captain Hall, Riding School, Albany-street. The mare had been carrying a lady in the afternoon, and came in rather warm; soon after

which she was seized with rigors, and acceleration of the respiration. On my arrival I observed the following symptoms :—

Rigors ; respiration considerably quickened and laboured ; the submaxillary artery much distended, but the pulse nearly imperceptible : auscultation indicates a characteristic increased rumbling murmur in the lungs ; ears, extremities, and breath, cold.

Diagnosis.—Acute congestion of the pulmonary apparatus.

Treatment.—Administer, as a diffusible stimulant, ammoniæ carb. ʒij, cum spirit. æther. nit. ʒij, in aqua Oj.

Nine o'clock, P.M.—The symptoms remain nearly the same, with the exception of the rigors having ceased. Venesection to the amount of 10 lbs.

Nov. 5th.—The respiration is still more accelerated, and the circulation almost stagnant, no reaction having taken place. Repeat the diffusible stimulant ; give a laxative, throw up enemas, and apply a sinapism to which some acetum cantharidis is added to the chest ; also stimulate the extremities with the following liniment :—

℞ Liq. ammoniæ
Ol. terebinth.
Spirit. camph. āā ..... ʒj
Aquæ..... ʒij Misce.

Nov. 6th.—Mr. Varnell saw the animal with me, and, after a careful examination, he stated that he considered the case a very doubtful one. The coldness of the skin, the breath, and extremities ; the anxious and haggard countenance ; the feeble fluttering pulse, not less than 100 beats in the minute ; and the laboured and painful respiratory efforts, all combined to remove every hope of an ultimate recovery : however, under the cheering influence of the good old adage, that

"While there's *life* there's *hope*,"

it was determined to try all that could be done. Accordingly, counter-irritation was continued, by the appliance of mustard and water of ammonia to the chest and sides ; the extremities, also, were frequently stimulated; the bowels kept in a soluble state by small doses of aloes in solution, given as required; and ammoniæ carb. ʒj administered every eight hours in conjunction with a pint of port wine.

On entering the box at twelve o'clock at night, a marked

change in the animal was manifested. The laboured respiration and haggard countenance had vanished as if by magic ; the patient was perfectly tranquil, and stood with her head elevated, apparently gazing intently at the moon, which was then shining brightly through the stable window. Disturbed by my entry, she turned, and attempted to pass out of the box, whereas, four hours previously it would have been difficult to have moved her over from one side of it to the other. The ears and extremities were warm, the respiration tranquil, the pulse perceptible at the artery, and the counter-irritants had acted well.

The bloodvessels have evidently relieved themselves by some means—How ? was the question—and by *effusion !* was the ready answer. And although I still consider effusion had then taken place, nevertheless, the amount was so small as not to be detected by my examination. The same treatment was ordered to be continued.

Nov. 7th.—General improvement markedly apparent. The bowels are acting well ; the pulse is 70, and fluttering ; the action of the heart is not audible. Mr. Varnell again saw the patient, and with me concurred that effusion had taken place. Auscultation of the chest develops a spasmodic beat (the action of the diaphragm), and a clicking noise somewhat like that produced by a fluid in motion. Continue the same treatment.

Nov. 8th.—No visible alteration has taken place in the symptoms. Pursue the treatment as before.

Nov. 9th.—In conjunction with Mr. Varnell, I this day made another examination by auscultation, and certainly the evidence of the existence of fluid in the chest was now most conclusive and beautiful. The murmur at the upper part of the thorax was obvious, and heightened in intensity. About six inches above the level of the cartilages of the ribs, slight crepitus might be detected at times ; below, the air could not be heard to penetrate, but instead of the normal sound, the peculiar *click* was made. These phenomena were detectable more particularly on the right side, on which side, also, the pulse, taken at the jaw, was more oppressed. The existence of fluid being thus rendered indubitable, the operation of paracentesis thoracis was at once performed, and that on both sides. From the right side about three quarts of turbid sero-sanguineous fluid was withdrawn, which deposited a

large amount of plastic matter on cooling: from the left side the quantity obtained was very trifling.

Nov. 13*th.*—The operation was repeated on the following day with little further results; since which, and up to this time, the patient has been taking stimulating tonics, in the form of gentian, ginger, ferri carb., and spt. æther. nit., given in strong porter. Occasionally the spt. ammon. aromat. has been combined, and the bowels kept in a natural state by small quantities of sol. aloës. A great desire for water being manifested by the animal, in it was dissolved ferri sulphatis, and this was kept continually by her.

The symptoms to-day are as follow:—Pulse feeble; respiration 18, and short, being carried on principally by the abdominal muscles; the respiratory murmur is heard rumbling superiorly, and indistinct inferiorly; the coat is harsh, and the hair easily removed; loss of flesh considerable; and cough short, suppressed, and painful. Again the operation of paracentesis was performed low down between the cartilages, but no fluid followed the withdrawal of the trocar. Continue to give the tonics as before, and mix some common salt with the food, so as to provoke the appetite.

18*th.*—Considerable improvement manifest. The worst symptom remaining is a dry painful cough, such as might be supposed to be emitted by an animal with its lungs partly consolidated. Knowing the potency of iodine in causing the removal of abnormal deposits, I determined to try its action; and, therefore, gave iodinum ℈j in bol. omni alter die, and applied the ung. hyd. bin-iod. with friction to the chest and sides till slight tenderness was induced, and then desisted for a few days.

December 15*th.*—The mare has been ridden during this last week: she still coughs at times.

Continue to give the iodine.

31*st.*—No cough is present. Appetite good. Discontinue all treatment.

January 8*th,* 1849.—The animal has been regularly in work for some time past.

I made a careful examination this morning by auscultation, and that immediately after exertion, and was both surprised and pleased to find no trace whatever of any remaining disease. The respira-

tory murmur was quite normal; she coughed sound, and gave no more evidence of distress after a gallop than previous to the attack.

It will be observed, that the third time the operation of paracentesis thoracis was performed, it was low down in the chest, between the cartilages of the ribs. The advantage obtained by such a mode of procedure is only of moment, I imagine, in such a case as the above, where the quantity of fluid was comparatively small, and contained a large amount of fibrin. To remove such, and that as much as possible, being, of course, most important, and not to be obtained by the ordinary mode of puncturing at the juncture of the ribs and cartilages. In cases where the quantity of fluid effused is considerable, it is not advisable to remove the whole at once; here, therefore, the usual mode will be most applicable.

Some little extra care in the performance of the operation in this way is necessary, so as to avoid wounding the cartilage. Having felt for a place where, by its yielding to the finger, you find the space between the cartilaginous ends of the ribs, make the incision in the skin as usual, and at once introduce the trochar, passing it a little upwards and backwards, by which injury to the pericardium or lungs is obviated. In all recent cases of effusion this mode would certainly be preferred by me.

Case of Ruptured Colon and Inversion of the Cœcum of a Horse.

By Mr. B. Cartledge, *M.R.C.V.S.*

My dear Sir, *Market-street, Sheffield, Jan.* 1849.

I have forwarded to you a morbid specimen taken by me from a horse this morning, which was admitted into my infirmary yesterday at 4 p.m.

The symptoms then exhibited were those indicative of spasms of the bowels. He was an aged animal, and of the carriage breed. He had been driven from Worksop, a distance of sixteen miles, in the morning, coming with his usual spirits, and had, on his arrival at Sheffield, eaten a small quantity of food, but soon

afterwards shewed symptoms of great abdominal pain. Staying at an hotel, as a matter of course, prescriptions and prescribers were to be had without number. Several hours elapsed, during which time he had been given most of the nostrums advocated and extolled by each would-be Professor as infallible, without any marked improvement being manifested.

The animal was now removed to my infirmary, when I found the pulse ranging between 40 and 44 in the minute; the visible mucous membranes were a shade higher in colour than natural; the extremities and surface of the body of an ordinary temperature, but the horse in excruciating agony. I immediately administered a draught consisting of

Ol. terebinth.	℥iij
Tinct opii.	℥j
Ol. lini.	q. s.

At the end of a quarter of an hour, no change being perceptible, I directed the draught to be repeated, substituting sol. aloës Barb. ℥vj for the ol. lini, and adding tinct. crotoni ℥ss.; withdrew blood to the amount of sixteen pounds; passed my hand up the rectum, but found no fæces within reach; threw up enemas, and applied friction to the abdomen.

Two hours after this the pain remained unabated; the Schneiderian membrane had become considerably reddened; the circulation had increased considerably, the pulse being full, shewing that inflammation had been set up. I gave opium ʒiij in watery solution, and bled again until marked effects on the circulatory system were manifested. Nine pounds of blood having been abstracted, produced the desired result, and my patient seemed a little easier. This change, however, was but transient, and the urgent symptoms soon returned with increased violence.

I now passed the catheter into the bladder, the irritation of which caused the animal to urinate soon afterwards; but the urine had no peculiarity of appearance. No fæcal matter had been yet voided, nor did a second insertion of the hand up the rectum discover any existing there; but violent efforts to expel the arm of the operator were made.

9 P.M.—The pain is continuous and very acute; the animal is constantly throwing himself down, and as suddenly rising again: he sometimes lies on his back, then sits on his haunches, and when

up, occasionally stretches out his legs and places himself in the position assumed when staling; but no position affords him any relief whatever. The whole of one side of the box, within the reach of his feet, has by his kicking been deprived of plaster, and the part above is deeply marked by his teeth. To effect this the animal raises his head as high as possible, thrusting it over the top of the rack. Is this a pathognomonic sign of rupture of some of the larger intestines?

A wooden partition has also suffered considerably from his violence. I threw up opiate enemas; repeated the administration of the watery solution of opium, combined with aloes; and applied an active blister to the abdomen, although I had no hopes of an ultimate cure being effected, the exacerbations being so frequent and severe. Shortly after this the pain seemed in some degree to have left him; but it re-appeared very soon afterwards, and in the midst of an acute paroxysm he fell down as though shot, and died almost immediately.

Upon a post-mortem examination, I found the small intestines inflamed, but to no great extent, and the most posterior part of the single colon, or where it merges into the rectum, ruptured, and the contents, which up to that part were in a very fluid state, escaped into the cavity of the abdomen. The rectum contained about a dozen hardened balls of dung, which had evidently impeded the passage of this fluid egesta.

This mechanical impediment, in my belief, was the cause of all the symptoms enumerated, and also the result; but I have to direct your attention to the morbid parts sent, which, possibly, ere this will have arrived.

When the intestines were first exposed to view, my attention was particularly directed to the very peculiar shape of a large mass of bowels, consisting of the cœcum, colon, and some portion of the small intestines, all united together in such a way as I had never seen before. On a careful investigation of the mass, the cœcum was perceived to have become inverted, and lodged in the cœcum caput coli. Being thus turned within itself, the outer serous membrane had secreted a more than ordinary quantity of fluid, which was retained, and had the appearance of dirty serum. The once lining mucous membrane—now become the outer one—was intensely inflamed, and thickened from effusion.

The peritoneum attaching this intestine to the colon was, of course, ruptured. The horse had been in one man's possession for nine years, and never was known to be ill before.

Believe me,

Very faithfully your's.

To Professor Morton.

[Cases similar to the above have been already recorded in this Journal. At p. 276, et seq. vol. i, will be found two cases; one recorded by Mr. W. Robinson, and the other by Mr. J. B. Simonds; nevertheless they are by no means common, and we are obliged to Mr. Cartwright for the history of this case, and the morbid parts].

An extraordinary Case of Lusus Naturæ, with Rupture of the Uterus in a Cow, and Escape of the Small Intestines into that Viscus, successfully treated.

By Mr. A. S. Copeman, *V.S., Utica, State of New York.*

Early in the morning of the 15th ultimo, Mrs. Gordin (the owner) observed that our patient evinced symptoms of parturition, accompanied by an occasional violent struggle made by the fœtus. As no apparent progress towards delivery had been made at noon, an examination, per vaginam, was made by several persons; but they were unable to effect any thing except the extraction of the placenta. My assistance was requested about seven o'clock P.M. On a careful examination being instituted, both hocks and one knee were found in the vagina, with the head resting against the pelvis. Having pushed the fœtus back, and passed my hand into the uterus, I found it impossible, after repeated attempts, to alter its position; and, as it could not be extracted entire, an incision was made through the skin, first around the pastern, and then several inches up the inside of the hind limb; and now, by the aid of three men, the whole quarter was soon separated, bringing a part of the pelvis with it. Proceeding in the same manner with the other hind limb, it was quickly withdrawn, having attached to it the tail and the remaining portion of the pelvis. The fore limbs,

having been secured by a cord, previous to removing the last hind one, were now drawn forward, and another cord with a noose having been passed over the head to the back of the poll, the remaining parts were, with a little hard pulling, extracted.

The delivery was followed by a somewhat violent throe. My hands being placed over the vulva for the purpose of supporting the vagina and os uteri, they were almost instantly filled with the small intestines of my patient; but by the assistance of another person their further escape was fortunately prevented. On now passing my hand into the uterus, I found a rupture, about eight inches in length, had taken place one foot above the os uteri. After some few minutes, but with considerable difficulty, I succeeded in returning the intestines into the abdomen, and immediately afterwards grasped the lips of the wound in the uterus, which I held firmly for about a quarter of an hour. The hand was then gently withdrawn, our patient remaining quiet, and the uterus having contracted itself: or rather I ought to say, I thought it had, for although I frequently changed hands, I had lost nearly all sense of touch. The hind quarters of the cow having been now somewhat raised a few sutures of white leather were passed through the labia, and an opiate draught prescribed, to be followed by an aperient. The cow from this time appeared to go on favourably, with the exception of a slight attack of peritonitis on the third day.

Description of the Lusus Naturæ.—In size it was rather small for an adult cow, weighing only about 50 lb. On replacing the removed posterior extremities the entire spine formed a circle, and the right thigh rested upon the left shoulder and neck. The form of those parts was so much altered as to admit of their laying easily together, or upon each other. The left fore limb was not one-fourth as large as the right; the scapula being pushed down under the neck. The thorax and abdomen were both completely inverted, presenting an appearance somewhat similar to a calf when dressed by a butcher, except that the ribs were forced farther back, and the hind quarters turned end upwards. Anchylosis of all the bones of the dorsal and lumbar vertebræ prevented the least approach to the natural position. The viscera of the abdomen and thorax were simply covered by and protected from the liquor

amnii by a very thin membrane. I have little doubt that the uterus was lacerated by the end of the spine after the hind quarters were removed, as it then formed a hook projecting above the shoulders of the fœtus. It was a strange looking mass. You will excuse this very imperfect description.

EXTRACTS FROM JOURNALS.

On the Bile.

Perhaps no fluid in the organism has afforded less satisfactory results in analyzation than the bile. This has arisen from the multiplied products it furnishes when acted on by certain re-agents, and the ready decomposition which it spontaneously undergoes, so that its analysis being undertaken at different times, will give different compounds as existing in it. This want of uniformity is to be regretted, since doubtlessly a correct knowledge of the composition of this fluid is very desirable, while the statements by the many investigators of it are oftentimes apparently both discordant and irreconcileable. That it is a very important secretion, the study of comparative anatomy and physiology furnishes abundant proof, for in almost every animal, both in the vertebrate and invertebrate divisions of the animal kingdom, some organ can be found which corresponds to the liver of the higher animals, and which is doubtless destined for the secretion of bile; while the use of this fluid in the system, although perhaps still ill understood, cannot fail to awaken the highest interest. It is secreted from venous blood, and must not be viewed as an excrementitial fluid merely, for in health, when the functions of the body are duly performed, the true bile, after fulfilling certain offices in the process of digestion, is re-absorbed, and eliminated by other channels in the form of new compounds.

"*Physical Characters of Bile.*—The bile is a yellowish-green fluid, of a very peculiar and disagreeable odour. Its taste is at first very sweet, but afterwards a bitter and nauseous impression is left in the mouth. Its consistence varies much, from the dif-

ferent quantities of mucus contained in it, and its reaction is generally alkaline. The specific gravity of bile varies from 1025 to 1030. The colour also varies in different animals—in the herbivora, the green, but in man and carnivora, the yellow predominates.

The first analyses of bile were made by Newmann and Cadel: the former chemist found that, when incinerated, a fixed alkali was left; the latter, that this alkali was soda. In 1805, Thenard published an analysis of ox bile, which is shewn in the table :—

Water	875·6
Bile resin	30·0
Picromel	75·4
Yellow colouring matter	5·0
Soda	5·0
Phosphate of soda	2·5
Chloride of sodium	4·0
Sulphate of soda	1.0
Sulphate of lime	1·5
Oxide of iron	a trace
	1000·0

The picromel was considered as forming the essential organic constituent, and was obtained by precipitating the bile with acetate of lead, and afterwards removing the lead by means of sulphuretted hydrogen. It had a bitter sweet taste, and was found to possess the power of holding the biliary resin in solution.

Berzelius, in 1807, made an analysis of bile, which he afterwards slightly corrected, and published in his 'Traité de Chimie,' as follows :—

Water	904·4
Biliary matter, with fat	80·0
Mucus of gall-bladder	3·0
Osmazome, chloride of sodium, and lactate of soda	7·4
Soda	4·1
Phosphates of soda and lime, with matters insoluble in alcohol	1·1
	1000·0

The biliary matter of Berzelius very much resembles the picromel of Thenard, or rather, the picromel with the bile resin.

Dr. Prout next analysed bile after the manner of Berzelius, and with similar results.

The next important analyses were by Tiedemann and Gmelin, of the bile of the ox and other animals. From ox-gall they separated many substances, viz. an odorous principle, fatty substances consisting of cholesterine, stearic and oleic acids, cholic acid (containing nitrogen), biliary resin (free from nitrogen), taurine, or biliary asparine, picromel, colouring matter of bile, many undetermined substances, with mucus and salts.

After the earlier analyses of Berzelius and Thénard, the next important examination of the bile was made by Demarçay, who revived the ancient notion of its being essentially a soda soap of choleic acid: this choleate of soda was supposed by him to form the whole of the true bile. Under the influence of strong acids, as by long boiling with hydrochloric acid, &c., this salt, or the choleic acid itself, was shewn to become decomposed, and the products to be choloidic acid (a resin), taurine, and ammonia, which last united with the acid employed to effect the change. When boiled with an alkali, another metamorphosis was supposed to take place, and the choleic acid to be broken up into cholic acid (without nitrogen, and now named cholalic acid), and carbonate of ammonia or the elements of urea, the ammonia in this case escaping in the form of gas. Liebig adopted this view, and numerous formulæ were given, apparently explaining very perfectly the changes which ensued; but they have now been shewn to be incorrect, for these chemists overlooked the sulphur which exists in the bile, and hence the choleic acid cannot be broken up simply into this cholic acid and carbonate of ammonia, as neither of these compounds contain this element.

Berzelius, in 1842, again took up the subject of bile, and from his examinations came to the conclusion, that the essential portion consisted of a neutral principle, which he named bilin, with certain soda salts of bilifellinic and bilicholinic acids, fellinic and cholinic acids, together with dyslysin, ammonia, and taurine. Bilin was the real principle, but from its extreme falicity of decomposition it is resolved, almost as soon as secreted, into the resins, fellinic and cholinic acids, and dyslysin, the two former uniting with the bilin to form the compound acids abovementioned. Dr. Kemp afterwards made many examinations and analyses of bile,

and came to the conclusion that it was a solution of a soda salt of an acid termed by him bilic acid, and which, in some respects, differed from the choleic acid of Demarçay and Liebig. His analyses were performed on bile purified from fatty matters by ether, and afterwards dissolved in alcohol to separate it from the mucus and salts not soluble in that menstruum; the amount of elements were then determined by combustion. He thinks the true acid of bile differs from Demarçay's choleic acid, as the latter body is precipitated from its soda salt by even the weakest acids, whereas bile is not so precipitated.

MM. Thayer and Schlosser, from their experiments on bile, confirm Liebig's views, and consider that the picromel of Thénard, the biliary sugar of Gmelin, the choleic acid of Demarçay, the bilifellinic acid of Berzelius, and bilic acid of Kemp, to be one and the same substance.

The next important step in the examination of the bile was made by Plattner, who obtained both the bile salt, and the acid contained in it, in a crystalline form. Mulder endeavours to support the view of Berzelius as to its constitution, in contradistinction to those of Demarçay, Liebig, Kemp, Thayer, and Schlosser, &c.

Dr. Strecker's view of the constitution of ox bile appears to be this:—That the bile contains a nitrogenized acid, free from sulphur, identical with the cholic acid of Gmelin, which in the bile exists united chiefly with soda, and that, besides this body, there is also present another acid containing sulphur, united likewise with soda; that the first precipitate produced in the bile by acetate of lead contains the cholic acid, and that the subsequent precipitate by subacetate of lead differs considerably from the first, being a mixture of the cholate of lead, united with a lead salt of the sulphur acid.

From the above, it will be perceived that it is the peculiar *organic* constituent of the bile which forms that portion about which almost an endless amount has been written, and concerning the constitution of which very different views are still held by eminent chemical authorities; the cause of this difference depending, as has been already said, on the extreme instability of the substance, and its metamorphosis into various compounds under the influence of the smallest disturbing agencies.

The constituents of bile may be divided into two classes: one including the colouring and fatty matters, mucus, salts, &c.; the other, the peculiar organic constituents, or what might be termed the essential portion, of bile, and which distinguishes it from all other animal fluids. With regard to the first class, there is but little difference of opinion.

The mucus is similar to ordinary mucus found in various parts of the body, and is derived partly from the lining membranes of the biliary ducts, but chiefly from that of the gall-bladder.

The *colouring matter* cannot be separated from the bile by any known chemical process, without, at the same time, causing an alteration in the nature of the substance. It is sometimes deposited in the gall-bladder, but there usually mixed with other matters, especially cholesterine, and then forms concretions called gall-stones, or biliary calculi. In these it usually occurs of a yellow-brown colour. When present, it can be readily detected by the peculiar changes which it undergoes from the action of nitric acid upon it. The fluid containing it becomes at first blue, then green, violet, red, and brown: the changes take place more quickly when heat is employed. The colouring matter of bile, when heated to destruction, evolves ammonia, and therefore contains nitrogen in its composition. It is scarcely soluble in water, slightly soluble in alcohol, but easily so in an alkaline solution, as liquor potassæ, in which it becomes green by exposure to air, and from which, when an acid is added, a green matter, called by Berzelius biliverdin, is precipitated, which is a substance devoid of nitrogen, and apparently identical with chlorophylle, or the green colouring matter of plants. Bilifulvine—a yellow colouring matter—has also been described by Berzelius; but its existence as a constituent of bile is problematical; perhaps it may be formed along with the biliverdin, from the decomposition of the real bile pigment.

The fatty matters consist of cholesterine, together with alkaline soaps of oleic, margaric, and stearic acids. These can be separated from dry bile by exhaustion with ether.

The salts contained in ox bile, according to Enderlin, are—Tribasic phosphate of soda; alkaline sulphates; chlorides of sodium and potassium; phosphate of lime; phosphate of magnesia; phosphate of peroxide of iron; sulphate of lime; soda, united

with the peculiar organic principle. These, according to Berzelius, amount to about 9 or 10 parts in the 1000 of bile, but are, doubtless, very liable to vary.

Bile of different animals.—Most of the researches spoken of have been made on the bile of the ox, as from the difficulty of procuring healthy human bile it has been almost impossible to use this for an extensive inquiry. At one time it was asserted that human bile did not yield taurine; but this is an error, for taurine, in a crystalline form, has been obtained from this fluid by Dr. Ronalds. Dr. Bensh has made several analyses for the purpose of determining the amount of sulphur contained in the bile of different animals, the numbers given in the table represent the per centage in dry bile, free from fat, and decolorized by charcoal:—

In 100 parts of bile of the		calf	5.62
,,	,,	sheep	6.46
,,	,,	goat	5.55
,,	,,	bear	6.38
,,	,,	wolf	5.03
,,	,,	fox	5.56
,,	,,	chicken	5.57
,,	,,	dog	6.21
,,	,,	serpent	7.20

To which may be added, from other sources,—

,,	,,	fish	6.46
,,	,,	ox	4.00
,,	,,	pig	0.32

The only bile which has been recently examined, and found to offer any great peculiarity, is that of the pig, in which Gundelach and Strecker have demonstrated the non-existence of the sulphur acid, and therefore the impossibility of its yielding taurine when acted upon by acids. They have also ascertained that the nitrogenized acid differs somewhat from cholic acid, both in properties and composition, and have named it hyocholic acid. In the bile of the pig it is united with soda in the form of hyocholate of soda, and with it are contained cholesterine, fats, mucus, salts, &c.

Uses of Bile in the Economy.—From the constant existence of a distinct bile-secreting apparatus in all classes of animals, there can be no doubt of the important function performed by these organs, and the question arises,

Is the bile a secretion, or excretion; or is it partly one and partly the other? Until very recently, it was the opinion of most physiologists that it was altogether an excretory fluid, but that, previous to its being thrown out with the fæces, it performed certain important offices, especially in the process of digestion. However, from the analyses of Berzelius and others, it appears that the healthy excrements contain little or none of what we have termed true bile, although the colouring matter, fatty substances, and cholesterine, belonging to that fluid are found in them: this would seem to shew, that, after having been poured out into the duodenum, it became again absorbed in the system, and otherwise eliminated. Liebig is of opinion that, when so re-absorbed, it acts as fuel for the respiratory process, and thus becomes resolved into carbonic acid and water, which are thrown out by the lungs and skin, and a nitrogenized product (perhaps urea), which is eliminated by the kidneys. Omitting the sulphur in the constitution of bile, we can readily see how an oxidizing process would convert the true bile into these compounds: the existence of sulphur does not offer any difficulty, as we know that much more sulphuric acid is contained in the urine than is taken in with the food, and again we shall find that a non-oxidized sulphur substance also exists in that fluid.

With regard to the action of the bile in the process of digestion, many views have at times been entertained, but even at the present day we are by no means in possession of very accurate knowledge. Sir B. Brodie, from certain experiments made for the purpose of elucidating the point, came to the conclusion that the bile does not exert much influence in digestion.

Tiedemann and Gmelin, from their examination of the subject, also arrive at similar results; viz., that, when the supply of bile is cut off, digestion proceeds as usual; that the contents of both small and large intestines are the same; and that the bile is not essential to the formation of the chyle, which, however, was then perfectly clear, and not, as is usually the case, turbid from the suspension of fat, &c.

The uses of the bile have also been made the subject of investigation by Schwann, who removed a portion of the common duct, and caused the formation of an external fistulous opening into the gall-bladder in dogs. From the results of his experiment he con-

cludes that the bile is indispensable to life, and that, when it does not flow into the intestine, the animal, after a few days, begins to lose flesh, soon exhibits all the symptoms of inanition, and death ensues. It is also well known that the presence of a portion of the bile is necessary to cause the proper action of the intestinal canal; for when the flow into the duodenum is impeded, as in jaundice, constipation is a very constant symptom.

Enderling, when analyzing the ash derived from incinerating the contents of different parts of the alimentary canal of a hare, found that the duodenal portion only gave indications of the presence of a carbonate, which would appear to shew that that part only contained an organic compound united with a base. Liebig found that, when bile is administered in the form of an enema, it becomes absorbed; and that it is afterwards consumed by the oxidizing power of the blood is rendered evident by the fact, that it is not found in the urine, although mineral salts thrown up at the same time become eliminated by this excretion. From these facts, I think we may conclude,

1st. That the bile is partly a secretion, partly an excretion, the only excretory portion being that which we have spoken of as not forming the essential part of the fluid.

2d. That the bile plays an important part in digestion, but that the manner in which it acts is not understood.

3d. That the true bile becomes re-absorbed probably in the duodenum, for it is not found in the fæces in health; nor from Enderling's experiments does it appear to exist in any portion of the canal except the duodenum.

4th. That after its re-absorption it is probably consumed in the respiratory function, as Liebig's experiments prove that it is not eliminated as such by the urinary secretion.

Gall-stones, or Biliary Calculi.—These concretions occur both in man and in the lower animals; in their passage through the ducts they often give rise to obstruction in the flow of the bile into the intestines; and hence jaundice, &c. frequently results.

In size, they vary considerably, from a pin's head to that of a pigeon's egg. Their shape is sometimes round or ovoid, especially when they occur singly, or two or three only exist; but when many are contained in the gall-bladder they assume a polygonal shape, having facets corresponding to the points where they touch

each other; their surface is sometimes quite smooth, at other times tuberculated, and when broken the internal structure may either exhibit a crystalline or amorphous appearance, depending much on the nature and proportion of their constituents. The centre has usually a small cavity. Sometimes gall-stones have a specific gravity above, sometimes under, that of water, varying from 1061 to 803. When recently taken from the gall-bladder they not unfrequently sink in water, but after exposure for some time evaporation of fluid from their interstices takes place, and they then commonly float.

The two principal constituents of biliary calculi are cholesterine and the colouring pigment (biliphæin); besides these we not unfrequently find resinous matters, with traces of undecomposed bile: the centre often contains a portion of coagulated mucus, which has acted as a nucleus.

Sometimes they are composed almost entirely of cholesterine, in which case they are white and crystalline, the crystals radiating from a centre, and dissolving in boiling alcohol, with the exception of a small nucleus of mucus. Such calculi are generally lighter than water. Now and then they consist almost entirely of biliary colouring matter, but most frequently they have a mixture of both these principles, in varying proportions, in their composition, and then have usually a laminated structure; or sometimes the central portion is composed of crystals radiating from a central spot or line, and the external part of laminæ.

Tests for the Constituents of Bile.—One test has been already noticed; namely, the detection of the colouring principle by the peculiar reactions which it exhibits under the influence of nitric acid. The cholesterine may also be detected by its not being acted upon by alkalies, and by its solubility in hot alcohol, from which it crystallizes in tabular scales during the cooling of the liquid. But we must now see whether any tests exist for the detection of the true bile, or for that substance or substances which is peculiar to the bile. The taste is, to a certain extent, to be depended on; for the bitter and sweet impression left on the palate by bile is very characteristic. Again, when true bile is present in moderate quantities, the formation of a resin by the action of acids might be conclusive; but a far more delicate test has, within the last few years, been discovered by Dr. Pettenkofer, the principle of its action

depending on the fact, that true bile, when in presence of sulphuric acid and sugar, under certain conditions, gives rise to the formation of a beautiful violet-red colour. The mode of proceeding is as follows :—A small quantity of the fluid suspected to contain bile is to be put into a test tube, and two-thirds of its volume of sulphuric acid added very gradually. The fluid should be kept cool (under 144° Fahr.) by immersion of the tube in cold water; for should the temperature become much elevated, the bile is decomposed, and then does not exhibit the reaction. A few drops of the solution of cane sugar (about one part of sugar to five of water) are now added, and the mixture shaken; if bile be present, the fluid will then become violet-red, the intensity of the colour depending on the amount of bile present. Pettenkofer gives the following precautions, which it is necessary to attend to in order to ensure success :—

1. Attention to temperature, as I just mentioned.

2. Not to add too much sugar; if such is the case, the colour is rendered brown by the action of the sulphuric acid upon this substance, and sulphurous acid also generated, which destroys the red colour.

3. The sulphuric acid should be free from sulphurous acid.

4. The fluid to be tested; if it contains albumen, should be previously heated, in order to coagulate that substance.

5. A great excess of chlorides in the liquid should be avoided.

6. If the bile is in very small quantities, the fluid should be concentrated by a water-bath, extracted with alcohol; this also evaporated to a small volume, and the test applied. If the bile is suspected to exist in a solid body, it should be exhausted with alcohol, the fluid evaporated, and tested as before.

Pettenkofer's test has been found to give the reaction with Demarçay's choleic acid, bilic acid, bilin, Gmelin's cholic acid, and hyocholic acid from pig's bile.

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On Thrombus.

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The word Thombos or Thumbrus, is derived from the Greek word θρομβος, a clot of blood, synonymous with bad bleeding. A tumour, also, which is formed during bleeding, or shortly after, surrounding the vein that has been opened, and which is the result of infiltration of blood into the cellular tissue, receives the same name. The word thrombus has likewise been employed to describe some accidents following the effusion of blood into the cellular tissue, such as phlebitis or inflammation of the vein, and the partial abscesses which result from it. Veterinary surgeons have furnished the first works on this affection. It was from examining the state of the jugular vein in horses after death, which had been bled, that Hunter made his important researches into phlebitis in man. At the present time, thrombus has been more especially studied by Messrs. Renault, Rainerd, Hurtel D'Arboval, and Henry Bouley.

This affection may be considered as frequently preceding phlebitis, and is sometimes confounded with it ; their history presenting numerous points of contact.

Thrombus is more likely to occur in those veins which are largely enveloped by cellular tissue. Indeed, it is difficult to bleed from some veins without having this accident follow the operation, such as the brachial vein of the fore leg, the vena saphena, and the thoracic vein. When the extravasation of blood supervenes after opening the jugular vein, it is necessary to guard against the complicated results. It is in this last-named vein that we meet with thrombus in all its complicated forms.

Thrombus is more frequent, and also attended with more serious consequences, in monodactyles than in didactyles. Godine endeavoured to explain the difference by stating, that in the former the venous trunks were less extensible or dilatable. Rigot affirms, that the veins of the ox are not so extensible and dilatable as those of the horse, but are larger. We must, however, look for the causes of this predisposition elsewhere, and these, doubtless, are in the different development of the vital properties.

In the carnivora, thrombus occasionally shews itself around the

jugular vein, on account of the great laxity of the cellular tissue near this vessel.

Causes.—The causes are generally traumatic, which act during or immediately after bleeding; others only exercise their influence after a time more or less lengthened.

During bleeding, the extravasation of blood into the cellular tissue may be in consequence of an unclean instrument having been made use of, or the blade of which might have been too small, so that the incision through the integuments allowed only of a very tardy flow of blood; or the blade being too long, may have pierced through the opposite side of the vessel; or it may be from the use of too many pins in order to arrest the hæmorrhage. It may also be attributed to the awkwardness of the operator, who may have struck too hard, and perhaps several times, upon the fleam; or he placed his instrument in too oblique a position, so that the opening in the vein and that in the skin were not directly opposite to each other. M. Renault is not of opinion that cutting across the vessel will always produce thrombus, several dissections having shewn him that the fleam had penetrated through the vein without causing any lesion on the surface.

When thrombus shews itself immediately, or a few hours after bleeding, it may be attributed to the twitching of the skin whilst inserting the pin, thereby forming a vacuum near the opening in the vessel.

Lastly, thrombus occurring several days after bleeding, may be the result of rubbing, pressure, or the movements of the animal. The employment of a bad fleam, a pin too large, or some itching in the neck may cause the animal to rub against the place where he may be fastened. Care should be taken to fasten to the rack for some hours a horse which has just been bled in the jugular, and thus would his rubbing against the manger be prevented. Thrombus frequently occurs in draught horses that have been bled on the right side of the neck.

Thrombus may be occasioned by the horse being worked too soon after bleeding, or by his wearing a tight collar, thereby producing compression of the neck, thus causing the reflux of blood into the incision, and its extravasation; even the movements of the animal at pasture will occasion the same effect. Too low a manger, or the necessity of the animal bending the head in order

to seize the pasturage, are also causes of thrombus. M. Renault has observed several cases which were developed twelve or fifteen days after bleeding, without being enabled to attribute them to any rubbing of the part. Ulceration of the vein accompanied most of these cases, the curative treatment of which was very long and tedious. He likewise thinks we may attribute it to a difference in the plasticity of the blood, this fluid not being rich enough in fibrin so as to form a quick and solid cicatrization on the incision made in the vein. Three horses which had had this kind of thrombus sunk under acute farcy; and of others, a fourth part died from acute glanders.

Symptoms.—During or after the operation a round tumour, at first soft and elastic, afterwards hard and resisting pressure, shews itself at the place of bleeding. This obstruction is more or less considerable, according to the cause which has developed it. It remains sometimes stationary, and at the end of two or three days, generally speaking, becomes dissipated. In other cases, these symptoms become increased; the swelling spreads to the neighbouring parts, directing itself towards the bifurcation of the wounded vein, and even to the parotid gland around the ear, and upon the face, following the course of the bloodvessels. We are able to feel, under the skin, upon the track or gutter of the vein, a hard cord, which is the result of the coagulation of the blood, with adherence to the coats of the jugular, together with a thickening of them. It is remarkable that tumefaction of the tissues does not extend in other living beings affected with thrombus as in the horse. In man, the inflammation runs in the direction of the venous circulation; it is the same also in the dog. With the horse, on the contrary, the swelling proceeds from the heart, and spreads itself on the upper side of the wound in the vein. We see few subjects in which the obstruction to the flow of the blood is first developed on the side of the chest. Frequently a wound, the result of bleeding, does not cicatrize: and sometimes it has to be opened on account of the formation of an abscess; but more frequently it remains open, and its edges become moistened by pus.

Thrombus which is present for a length of time is sometimes complicated with phlebitis, or inflammation of the vein. This phlebitis is adhesive when it is arrested by the coagulation of the

blood, and adherent to the coats of the vessel. It is suppurative if abscesses are present, in the midst of which some clots of blood are found adhering. In this case we find some serious phenomena to be present, the description of which will be given farther on.

There are some general symptoms produced by thrombus; these consist of a febrile reaction, which is oftentimes very intense. The animal refuses his food, keeps the neck still, his movements being constrained by the size of the tumor; sometimes the respiration becomes laboured, and even suffocation may be threatened, as in a case of laryngitis, especially if the mucous membranes of the air-passages participate in the diseased action of the neighbouring parts.

When phlebitis attacks the jugular vein, the edges of the wound will be prevented from coming into contact by the altered blood, which is not able to furnish lymph proper for cicatrization. In this case the blood, not being retained by any obstacle, escapes, and occasions a considerable loss of the vital fluid, but which is sometimes arrested by the formation of a clot of blood on the outside of the vessel; but the clot, not becoming organized, is decomposed, liquefies, and does not remain so as to close the opening. It is especially during the mastication of oats that we observe this re-appearance. This kind of thrombus frequently precedes ulceration of the vein and suppurative inflammation, which is often complicated with typhoid symptoms.

Recent thrombus may terminate by resolution, when the vein preserves its normal state, and the course of the blood is not interrupted. Other terminations are not always so favourable. When suppuration has only one superficial point, it is easily cured; but it is not so when it follows the course of the vein, as fistulæ often remain in the region of the parotid gland. If the circulation be not interrupted in cases of ulceration, the pus passes into the blood and causes death by impregnation of the mass. The chronic state is observed when thrombus is associated with adhesive phlebitis: the cord upon the track of the vessel preserves its form for a long time, and at length disappears without suppuration. Thrombus may terminate in general phlebitis; then the animal becomes dull; the conjunctiva and Schneiderian membranes are of a yellow tint; spots appear in several parts of the body,

these sometimes are of a small size only, hot and painful, and are associated with obstructions of different articulations and tendinous sheaths ; at last, symptoms of purulent infection shew themselves, and death shortly supervenes. After the disappearance of thrombus, we frequently find the vein obliterated, and pressure on the lower part of the jugular does not produce any swelling. This obliteration is of comparatively little importance, and its effects on the cerebral organs have been much exaggerated. But intense inflammation, the result of the neck being rubbed too much in hot weather, is liable to terminate in gangrene. Lastly, farcy or glanders, either acute or chronic, may be the result of this diseased state of the vein, or the absorption of pus.

Diagnosis.—Thrombus may be confounded with phlegmon ; the distinction, however, will be the appearances. The form of the thrombus tumour will be cylindrical and hard, and in the track of the vein ; whereas phlegmon presents a surface more extensive. Phlebitis succeeding thrombus, has confounded with it two kinds of symptoms, the distinction of which we will establish hereafter.

Prognosis.—It is of little consequence when thrombus affects such a vein as the jugular ; but it becomes dangerous when tumefaction affects the parotid gland and elevates it. We may likewise fear death when symptoms of phlebitis shew themselves accompanied by those which attend purulent absorption.

Treatment.—We must vary our treatment according to the symptoms that may be developed. We will examine it at the commencement, in the case where hæmorrhage follows, and of phlebitis, local or general. At the commencement, refrigerants and astringents will dissipate the blood which is extravasated into the cellular tissue. If thrombus be developed during bleeding, or a little time after, we should apply cold water only, or the lead lotion, or a solution of the sulphate of iron ; and compression being in the mean time employed, especially around other veins besides the jugular, produces a prompt resolution.

When thrombus is not dissipated by the means above advised, it will be necessary to have recourse to more active treatment. Some recommend the antiphlogistic treatment ; but the majority prefer the following method :—Hurtrel d'Arboval advises the opening of the opposite jugular, so as to abstract blood, and to give the animal only nourishing and farinaceous substances pre-

viously soaked in water, in order to diminish the excitement caused by the motion of the jaws; to apply emollient cataplasms and hot fomentations. The employment of vesicants, however, is preferable, according to all concurring testimonies; indeed, all say, that the quick recovery from their application is wonderful, since they tend, more than any thing else, to produce a dispersion of it. In recent thrombus their effects are very marked, and almost infallible. Success, indeed, is frequent, even when we have an old fistula with a swollen state of parts; but the application fails when fistula indicates ulceration of the vessel: in the latter case vesicants ought not to be employed, but we should endeavour to diminish the tumor before their application.

Before proceeding with these applications, we must remove the hair over the tumor, then spread upon the tumor some blistering ointment. The next day we should apply more, and even a third time, if the first two applications have not produced a marked effect. Vesicants cause a serous fluid to be thrown out, which is albuminous and white. From that time tumefaction begins to diminish; the parts contract on the third or fourth day, and scurf forms, which is soon detached; then thrombus has disappeared. If it remains after the eighth day, vesication is to be renewed, and the action of the blister kept up by the application of basilicon.

In the majority of cases of thrombus, blistering applications are the most valuable agents to promote recovery. The *modus operandi* may be explained in various ways: we either effect resolution, or we may ascribe it to counter-irritation. We may also attribute the dispersion to an abundant exhalation of lymph produced from the vessels. Lastly, when local phlebitis yields to this treatment, vesication produces upon the serum of the diseased vein an effect analogous to that which we observe in the treatment of some of the affections of the serous membranes.

Hurtrel d'Arboval denounces the employment of vesicatories, to which he has attributed various accidents, such as gangrene, lesions of the lymphatic and nervous systems, and of the brain in particular. The blister formed by the mixture of basilicon ointment with cantharides and euphorbium is to be preferred. For it may be substituted, but not advantageously, a mixture of corrosive sublimate and turpentine. After we have applied our blistering compound, we must fix the animal by two cords securely to the rack,

and that in such a manner as to prevent him rubbing against the manger. Without taking this precaution the blister would be rubbed on the lips, the eyelids, and, perhaps, the eyes; and these, more than the diseased part, may become excoriated. Sometimes we are obliged, in severe cases, to place the animal in a narrow stall, with the hind quarters against the manger; and when he takes his food a hammock is supended, from which he eats it. We prefer this mode to suspending a pail, as that would enable him to rub himself. This should be observed in all stages of thrombus; for if it is not attended to, we may, in a few moments, have all our efforts baffled. There are few subjects that do not want to rub the affected part against any thing they can. A cord fixed on each side of the head does not always prevent the rubbing; but it is even necessary, sometimes, to attach a third to the head-band, and from thence to the ceiling above the head. Lastly; if he can rub himself against one of the side lines, we must fix him against one of the sides of the stall with a band which will embrace the trunk. Day and night a careful watching is recommended, and we must act according to the above instructions. There may, however. be some inconvenience arise from this treatment, such as swelling of the limbs, partial or general foundering, which we can always avoid by the animal being frequently walked about.

In certain cases of thrombus the least movement of the jaws or neck produces hæmorrhage, by removing the clot of blood which obstructs the opening from the non-cicatrization of the vein. This is one of the most troublesome complications, and one which most frequently precedes phlebitis. One more pin is to be applied to the opening in the skin to wind the suture round, and then lay upon it some blister ointment. The horse is now to be securely fixed, and we must avoid giving him any food that may require much mastication. At the end of two days it will be necessary to remove the pins, and apply pressure to remove the coagulated blood, which has already become changed in character. We moisten the part with water, and continue the application of it, as it induces cicatrization. But this treatment does not always answer. It sometimes happens that the suture cannot be employed, and the hæmorrhage is renewed; we are then obliged to have recourse to compression by a pledget of tow being kept to the part by means of a bandage. We are not advocates for stripping the surface of the vessel so as to apply a pledget and a bandage,

retained there by a suture. The application of a ligature has been recommended; but that is not always easy to accomplish, as it takes much time, and requires careful dissection. On the other hand, ligatures to the vein have the inconvenience of exciting phlebitis, which we should be anxious to avoid.

Suppuration may exist either with or without a fistula. When a superficial abscess is formed by it under the skin, it suffices to open with a bistoury, or the red-hot iron, the sac which is formed. When a fistula is near the surface, we lay it open, and introduce a pledget of tow immersed in *eau de Rabel.* Frequently, a fistula follows the track of the jugular vein as far as the parotid gland; it then announces the presence of suppurative phlebitis. Several modes of treatment have been recommended, such as the use of a seton, cauterization, and extirpation of the diseased parts. A seton established in the course of the vein by the side of the opening facilitates the flow of pus; but it becomes a cause of irritation, and does not always answer so to destroy the vein when ulcerated or even deprived of blood. Counter-irritation may be applied in several ways. M. Renard advises the crossing of the skin over the thickened coats of the vessel, in different parts, by means of the actual cautery. This is an excellent mode when the destruction of the vessel is not intended. In the latter case, it is preferable to pass the cautery along the track of the vein. After having cast and fixed the animal conveniently, an iron probe, bent in the form of the letter C, is introduced by the fistulous opening, so as to ascertain the depth of it, and at three equally distant points insertions are made by the actual cautery, directing it by the course of the probe, the extremity of which must be our guide. Suppuration continues some days after the application of the escharotic, the vein ulcerates, and the cicatrization is quickened. It is dangerous to operate very near the parotid gland, as by so doing we are likely to have arterial hæmorrhage. However, by acting in this way, we have been able to pursue the course of the gland as far as the articulation of the tempero-maxillary and jugular veins, and obtained almost unexpected cures.

The accidents we have to fear after a cauterization of this kind are salivary fistulæ, and venous and arterial hæmorrhages. On the under part of the parotid gland we may reach the carotid artery:

but I have never seen this complication. The cautery may also wound the trachea, and thus, by destroying some portions of the rings, give rise to chronic contraction. I have seen this accident cause the death of a horse. Cauterization in points is effectual against the chronic engorgements which remain after suppuration has ceased. The obliteration of the jugular vein, and of the degenerated or indurated parts, recommended by the ancient veterinarians, is a dangerous operation: it requires great caution, and may produce serious accidents. However, there are observations recorded which have proved its utility in some cases, especially when the vein was very large and contained many purulent points. A ligature around the vessel, near each extremity, ought to complete the operation.

Complicated thrombus, from general bleeding, requires both local and general means to overcome it, and these often prove ineffectual. Amongst other local means, mercurial frictions are extolled, and different medicaments are equally as strongly recommended; but unfortunately many, even to this day, are of very little use. General antiphlogistics, temperate diet, and antiseptics, have been found to be the best.

From Journal de Médécine Vétérinaire a l'Ecole de Lyon.

The Foot-ill of Sheep cured by an Electro-chemical Process.

By Dr. J. H. Gerold.

Perfectly new, simple, and cheap in its execution, is the following method of curing an epidemic disease so fatal to best bred flocks of sheep:—A measure of water is boiled, allowed to cool, and thrown into a moderately large earthenware shallow dish, in which previously were placed from six to eight pieces of zinc plate, each of the size of a penny piece, and four to six pennies; to which is added a quarter of an ounce of sulphuric acid of Vordhausen. The diseased feet are first cleaned by river water contained in a cask, and afterwards held in the said dish for three or five minutes. This operation is repeated the next day, and the following one, if the cure is not effected after the first time. One dish containing the above quantity of sulphuric acid may serve for 200 or 300 sheep without being renewed, for so long as bubbles of gas are rising it is an active remedy.—*Casper's Wochenschrift.*

Concluding Correspondence on the Small-pox in Sheep.

[Continued from page 66.]

Office of Committee of Privy Council for Trade,
Whitehall, 28 September, 1848.

Sir,

With reference to the former communications from this department on the subject of "Variola Ovina," I am now directed by the Lords of the Committee of Privy Council for Trade to transmit to you, for the information of the Members of the Royal Veterinary College, the enclosed copy of extracts of Letters received by Her Majesty's Consul at Oporto from British Vice Consuls in his district, containing information relative to the above disease.

I am, Sir, your obedient servant,

R. Mack,
pro Secretary.

J. B. Simonds, Esq.

(Copy.)

Extracts of Letters received by H.M. Consul at Oporto from British Vice Consuls in his district upon the subject of "Variola Ovina."

From Sn^r. B. da Costa Craveiro, *Vice Consul at Villa do Conde.*

(Translation.)

I find that the sheep and lambs in this district are not affected with virulent diseases of the skin nor mange, as in other localities, owing probably to the climate, which is cool, from the nearness of the sea. In this as in other districts the authorities employ no means to prevent the progress of these diseases. Private individuals, to cure their flocks when they are infected with small-pox or mange, shear them, and, making a mixture of the dregs of olive oil and sulphur heated together, anoint the diseased animals all over with it, and give them dry beds in the open air; and should they not be cured, they anoint them a second time. If not thus treated, nearly the whole of them die. The small-pox mostly attacks the young lambs. I do not know that other cattle have been diseased.

*From Sn^r^* T. D'Oliveira Torres, *Vice Consul at Caminha.*

(Translation.)

In the neighbourhood of this place there are hardly any cattle, either sheep or oxen, kept; and among the few that there are, it does not appear that the disease which you mention exists.

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*From Sn^r^* Jose Mendes Ribeiro, *Vice Consul at Vianne.*

The disease called "Variola Ovina," with which the sheep are sometimes infected, is known in this district under the name of bexigās, but it prevails only during the winter time, when it is very severe. It does not attack oxen nor any other beasts, or human beings; and experience has proved that the disease is not equally contagious to all sheep, but chiefly affects those which have been untimely shorn and weakened by want of food, and more particularly in the time of intense cold.

The Portuguese authorities have not, to my knowledge, taken any steps on the subject; but private individuals have found that the disease is easily cured, in its early stage, by rubbing the animal with lard; but afterwards the malady becomes more difficult to cure.

From Mr. Fowke, *Vice Consul at Aveiro.*

In this district the "Variola Ovina" generally destroys a great number of sheep yearly, in the spring and autumn; but this season the disease has not yet appeared.

It first shews itself in purple spots with a white speck in the centre, containing a liquid of a yellow colour tinged with red, and of a watery character. It begins among the young sheep in those parts which are bare of wool. It is contagious after suppuration takes place, and then it spreads quickly through the flock; but, before arriving at this stage, great care ought to be taken to separate the infected animals from the sound. When the pimples are few, the disease often passes off without any curative measures being adopted: at least, under these circumstances it seldom proves fatal.

The public authorities never do any thing for the prevention or cure of this disease, or any other that animals are affected with.

I cannot find that any remedy for this malady has yet been discovered by the farmers or shepherds. Some give the diseased animals straw, wetted with salt and water, to eat, and put a small quantity of sulphuric acid in the water they drink; others bleed them: and all agree, that there is nothing so beneficial as keeping them dry, free from the night air, and from eating the dew-wet grass. Bleeding seems to be disapproved of, as it weakens the animal.

From Mr. Joza, *Vice Consul at Figueira.*

I have been and am prosecuting inquiries respecting the disease in sheep denominated "Variola Ovina." From what I can as yet learn, it is unknown in this district: in the event of its appearance, I shall inform you.

Office of Committee of Privy Council for Trade,
Whitehall, 30 Sept. 1848.

Sir,

With reference to my letter to you of yesterday's date, I am directed by the Lords of the Committee of Privy Council for Trade to transmit to you, for the information of the Members of the Royal Veterinary College, the enclosed copy of a despatch from Her Majesty's Consul at Malaga, containing information relative to a disease among cattle known by the name of "Glosopeda."

I am, Sir,

Your obedient servant.

J. Mack,

pro Secretray.

J. B. Simonds, Esq.

(Copy, No. 32.)

Malaga, Sept. 7, 1848.

My Lord,

With reference to my despatch, No. 31 of this day's date, in reply to your Lordship's inquiry respecting the small-pox which has manifested itself among the sheep imported into England from the north of Europe, I have to inform your Lordship that although,

as reported, no symptoms of that peculiar disease have appeared in this district, still the cloven-footed horned cattle, and also the pigs, have been affected with a malady which has occasioned a great mortality and severe losses in Andalusia, as few places have escaped its direful effects.

This disease has been classified as "Alte ungula eso-labiales aphthora*," or "Glosopeda;" and is characterised by the appearance of blisters in the interdigital space or the cleft of the hoof, which form into a sore spreading all over the foot, and often to such a degree that the hoof falls off, more especially among the pigs. At the same time blisters are developed on the mucous membrane of the mouth, which, bursting, distil a thick and fetid slime. The animal becomes weak, falls away in flesh, is attacked with fever and loss of appetite, and with difficulty gets over the disease if not promptly attended to.

The plan adopted in this country is to separate the animal from the herd immediately that it refuses feeding and shews any appearance of the blisters or sores, and also to place it under cover. Barley, or maize meal, mixed with gentian or quinine water, is administered for food; and a small quantity of vinegar or sulphuric acid is likewise mixed with the water which is given to drink.

To avoid the hoofs falling off, either their points are cut off, or a hole is bored with a gimlet or sharp instrument in the horny sole of the foot, to allow the matter collected between it and the membrane to distil through. The animal is also subjected to a daily fumigation of chloride of lime, salt, and sulphuric acid. These means, added to the mouth being occasionally washed with a mixture composed of salt, vinegar, and rue, generally effect a speedy cure.

When the hoofs fall off, the feet should be covered with a mixture made of lime, spirits of turpentine, camphorated spirit, white lead, and eggs blended together: and during the convalescence of the animal the food should be well sprinkled with salt, which excites the appetite.

So general has this disease become, that even the wild boar and the deer in the Sierra Morene have been run down by the pea-

* This phrase is somewhat ambiguous: it probably is intended to describe the existence of *an aphthous disease above the hoof and within the lips*, and which is truly the case in Eczema Epizootica, the malady here treated of.—J. B. S.

sants and easily caught, although their flesh proves useless. From this circumstance, and considering also the incommunication between the wild and domestic animals, it is inferred that the disease is produced by atmospheric influences. The use of the flesh of the infected cattle is likewise prohibited, being unfit for food.

I have, &c.

(Signed) Wm. Penrose Mark.

P.S.—No cattle of any description are exported from this district.

The Viscount Palmerston, G.C.B.
&c. &c. &c.

Copy of the Circular issued by the Poor Law Board to the Chairman of the Board of Guardians in each Union relative to Variola Ovina.

Poor Law Board, Somerset House,
26th October, 1848.

Sir,

I am directed by the Poor Law Board to transmit to you, on the other side, a copy of a Letter which they have received from the Committee of Privy Council for Trade, in reference to the disease called Sheep-pox or Variola.

You will observe that their Lordships are desirous of obtaining information in regard to the prevalence of the disease in question; and I am directed by the Poor Law Board to request the favour of your supplying their Lordships with such information accordingly, as respects the Union of which you are the Chairman.

The Poor Law Board entertain no doubt that the importance of this matter to the Agriculturists of the country will induce the Chairmen of the several Boards of Guardians readily to comply with this request.

A Form in which the required information may be inserted is sent herewith.

I have the honour to be, Sir,
Your obedient Servant,
Geo. Nicholls,
Secretary.

The Chairman of the
Board of Guardians of _____

Office of Committee of Privy Council for Trade,
Whitehall, 11 Oct. 1848.

My Lords,

I AM directed by the Lords of the Committee of Privy Council for Trade to acquaint you, that my Lords are desirous of obtaining information as to the prevalence of the disease called Sheep-pox or Variola Ovina, and that it has occurred to them that such information might be obtained through the Boards of Guardians in the several parts of the country. I am therefore to request that your Lordships will move the Commissioners of the Poor Law to issue instructions to the Boards of Guardians to acquaint Her Majesty's Government whether this disease now prevails, and to what extent, in their respective districts, and whether it appears to be necessary that any measures should be taken with respect to it.

The disease appears to be at present in the Eastern and South-Eastern Counties, but it would be well that these inquiries should be made of a general character.

I am further to request that the Boards of Guardians may be instructed, wherever the disease may appear at any future time, to report to my Lords upon the above points.

I am, my Lords,
Your Lordships' obedient servant,
DENIS LE MARCHANT.

The Viscount Ebrington,
&c. &c. &c.

_____ UNION.

Statement respecting the Prevalence of the Disease called Sheep-pox, or Variola Ovina.

1. If the disease prevails in the Union, the names of the places in which it prevails.

2. The extent to which the disease prevails :—
The number of sheep attacked—
The number which have died under it.

3. Whether it appears to be necessary that any measures should be taken with respect to the disease.

Dated day of 1848.

Chairman of the Board of Guardians
of _____

Copy of the Instructions issued by the Eastern Counties Railway Company to the Station Masters on the Subject of Variola Ovina.

Eastern Counties Railway, General Managers' Office,
Bishopsgate Station, August 31, 1848.

Sir,

Your attention is directed to the annexed Extract of a Letter from the Board of Trade; and whenever you have reason to suspect that diseased sheep or wool have been conveyed in the Company's wagons, you must immediately adopt the measures recommended by the Veterinary College.

(Acknowledge.) Your obedient servant,

R. Moseley.

To Mr. ————

Extract from a Letter to the Board of Trade from J. B. Simonds, *Esq., Professor at the Royal Veterinary College, referred to in the accompanying order.*

"I beg likewise to state, in answer to the inquiry respecting the purification of the trucks or carriages in which diseased sheep may have been conveyed, that such carriages should be first thoroughly cleansed with soap and water, and then well washed with either Sir William Burnett's disinfectant fluid, or a solution of chloride of lime, as either of these agents (diluted) will prevent any injurious results following the use of the trucks for the sheep."

REVIEW.

LAMENESS *in the* HORSE: *with coloured lithographic Plates, illustrative of the different Species of Lameness. By* WILLIAM PERCIVALL, *M.R.C.S., V.S.*, &c. p. 271. London: Longman, Brown, and Co.

MUCH as Mr. Percivall has done with his pen for the science of veterinary medicine, there is nothing he has better done than the work that lies before us. And although, as he candidly informs his readers, the text matter of the present volume of his "Hippopathology" has appeared in THE VETERINARIAN in detached sections, yet here it is given in a connected, "corrected," and improved form, and likewise illustrated by many well-executed lithographic plates, true portraits of the diseases to which the joints and other parts of the body are liable, indication of which is the language of pain known by the common appellation "lameness." These plates, of course, have increased the expense of publication; but they enhance the value of the work in a more than corresponding degree. We are glad to see the system of illustration becoming more generally adopted in veterinary literature, since it not only facilitates comprehension, but conveys to the mind a knowledge of those changes in the organic textures which the most elaborate description would fail to do. We give to the present volume our warmest commendation, not for a moment doubting but that it will soon be in the hands of every horseman and every veterinary surgeon; and with one extract close our brief notice of it.

"LAMENESS IS BUT A SYMPTOM OF DISEASE, not of itself disease. It is the expression of either pain or inability, the result of disease, malformation, or accident, in the limb or limbs by which it is manifested: it may, however, arise from disease in the *trunk* of the animal, as is exemplified in injury or disease of the spine, in cerebral and nervous disease; and as has, on some rare occasions, been instanced in the case of acute hepatitis. But lameness may exist independently of disease: it may be caused by a stone getting into the foot or by a tight shoe. And when it has originated in disease it does not always quit the animal on the cessation of that disease, but frequently continues after all disease—in an acute form at least—has passed away. Disease in a limb, however, oftener exists without lameness than lameness without disease: a horse may have a tumour, a wound, or an ulcer in any of his limbs without evincing lameness; or he may have, and indeed commonly does have, a windgall, a splent, or frush, without lameness; nay, it is possible for him to have a spavin or a curb, and still shew no lameness. The diseases and accidents of which lameness is commonly a symptom or result are, inflammation and ulceration of the joints, inflammation and ossification of the periosteal and cartilago-ligamentous tissues, sprain and inflammation of the ligaments and tendons, laceration and inflammation of muscular fibre, disease of the structures peculiar to the foot, faults or accidents in shoeing, contusions, wounds of all sorts, tumours, ulcerations, fractures, dislocations, spasm, paralysis, &c."

TRANSACTIONS OF THE VETERINARY MEDICAL ASSOCIATION.

March 2, 1847.

Essay on Parturient Apoplexy in the Cow.

By J. S. Carter.

Parturient apoplexy, in common with all other diseases to which cattle are liable, has been comparatively neglected; but, happily for the ends of science, this branch of the veterinary art is at the present day making rapid onward progress. The veterinary surgeon no longer now confines his studies to the anatomy, physiology, and pathology of the horse, but extends his observations to all our domesticated animals. I am aware that there are some established practitioners who do not give their attention to this branch of veterinary science; but there are many others with whom it forms a large part of their practice, and who, consequently, are fully sensible of the importance to be attached to a scientific investigation of the diseases to which cattle are liable. With these few prefatory remarks, I will proceed to the immediate subject of the essay.

Of all the maladies affecting any of our patients, there are few which, from the suddenness of their attack, peculiarity of their symptoms, or rapidity of their termination, can be compared with parturient apoplexy. The name now given to the disease, I am of opinion, is very appropriate, and that the term puerperal fever ought to be laid aside as being altogether inapplicable to this affection. The general symptoms which accompany the malady, as well as the post-mortem appearances, evidently shew the nervous system to be chiefly involved. The classification of so many diseases under the head of dropping after calving, because they occur within a few days of parturition, has caused a great difference of opinion among practitioners, both as to the true nature of the malady, and the treatment which ought to be adopted. Hence also some state that there is acute inflammatory action in the uterus and peritoneum; while others affirm that these viscera are healthy, and that the morbid lessions are con-

fined to the brain and medulla spinalis. Again, many practitioners bleed largely, and administer purgatives, while others never bleed, but give stimulants, even at the commencement. General paralysis and paraplegia are often confounded with parturient apoplexy, from the animal being unable to rise from loss of power in the voluntary muscles; but in these affections the special senses are not involved, nor do the febrile symptoms run high. As the disease involves so many different structures, and varies so much in its leading symptoms, according to the extent of the morbid action, it is impossible to describe all the parts in which lesions take place, so as to confine the account to the limits usually allotted to an essay.

Predisposing Causes. — These are various, some being very apparent, while others are obscure, and require repeated investigation before we are able to satisfy ourselves respecting their influence. The cow is an animal intended by nature to yield considerable quantities of milk, and which must, of necessity, draw largely on the system; consequently we find the greatest amount of this secretion to be produced when the uterus is unimpregnated, and it gradually diminishes as utero-gestation advances, until about two or three months prior to parturition, when it is commonly suspended. From this we infer that, when utero-gestation takes place, the blood which previously supplied the mammary gland is required by the uterus for the formation of the fœtus, and this demand increases up to the time of parturition. Nature, in order to furnish this large quantity of blood, has given to the bovine tribe an increased development of the vascular system to an extent almost unknown in any other class of animals. Thus, at the time of parturition, when the fœtus has been expelled from the uterus, a check is given to the current of blood sent to that organ, it being now required by the mammary gland for the secretion of milk. Now this gland, not having been called into action for a length of time, cannot resume its proper function on a sudden, and, consequently, the blood not being appropriated to the formation of milk, is thrown back upon the system, and thus becomes an exciting cause of the disease; and as at this particular time the animal is labouring under great irritability, involving both the vascular and nervous systems, these structures are the first to give way, and such changes are produced in them as

subsequently lay the foundation for organic alterations of the brain, medulla spinalis, and the other parts which we find to be implicated. The kind of cow most liable to this disease is that which yields large quantities of milk, being also in a plethoric condition; consequently, cows that are kept in the immediate neighbourhood of large towns for dairy purposes are often the subjects of it. On the other hand, bad milkers, however plethoric they may be, are seldom attacked; which exemption may, perhaps, be accounted for in this manner: it is a well-known fact that fat animals have generally small calves, and lean ones, on the contrary, have often large ones; consequently, the former have not so great a quantity of blood thrown back upon the system as the latter after parturition. Those cows that have aborted, or those kept on indifferent food and more exposed to privations, are very seldom the subjects of parturient apoplexy. We may also remark, that this disease seldom appears before the third calving, but more generally at the fourth or fifth; nevertheless, it does occur occasionally at the second, and in some few instances at the first. Cows, however, are rarely the subjects of it after the fifth calving, unless they have been attacked at some prior period, when they are more predisposed to the affection.

Exciting Causes.—These are parturition, and indigestion also, if the animal directly after calving has large quantities of stimulating food given to her which requires re-mastication, for in many instances she will be in such a febrile state that rumination is suspended for some hours, or even days, after delivery; consequently, the food will accumulate in the rumen, and prove a means of keeping up the irritation. Exposure to sudden changes of temperature; retention of the milk in the udder, occasioned by a larger supply being secreted than the calf requires, or a neglect of drawing it away, become causes; and constipation also occasionally produces it.

Symptoms.—The disease sometimes occurs as early as the third or fourth hour after parturition; but more commonly it appears between the first twelve hours after and the third or fourth day. It is generally ushered in by slight febrile symptoms, such as a partial loss of appetite, diminished supply of milk, accelerated pulse, and injection of the conjunctival membrane accompanied with a peculiar prominency of the eyes. Such slight deviations from

health are seldom recognised by the persons who have the care of those animals; however, these symptoms are rapidly succeeded by more serious indications of illness, shewing the true nature of the malady: the secretion of milk is nearly suspended; the udder continues enlarged; the appetite is lost; the pulse increased and oppressed; the respiration hurried; the muzzle dry and hot; and a dull sunken appearance of the eyes is also presented; likewise a reeling motion of the body from side to side, with a constant shifting of the feet and a flexing of the pasterns forwards exists; the animal endeavours to support herself against the stall until she can no longer maintain the standing position, when she falls, and is frequently unable to rise again, although she makes many attempts to do so. She will now lie with her head inclined to her side, resting it on the ground; a state of coma comes on, and the respiration is performed by a kind of jerking movement, associated with a peculiar moan. When the coma is not present, or has passed off, she will be frequently seen dashing her head about, throwing out her legs, and struggling to get upon her side; from which position, however, she must be raised and made to rest upon her abdomen; for if she is not kept on her belly the rumen will be quickly distended with gas, and this condition of the viscus will greatly aggravate the severity of the symptoms. The loss of motion, sensation, and special sense, rapidly increases; the eyes become quite insensible to light, and assume an amaurotic appearance, and the lids lose their power of contractility; the bowels will generally be in a state of obstinate constipation, but not invariably so, for in some cases I have seen diarrhœa present; these instances, however, are comparatively rare; the pulse will rapidly increase in frequency, but become weaker; there is great impairment of the powers of deglutition; the extremities, ears, and horns, are intensely cold; and the patient frequently grinds her teeth. As the malady progresses, these symptoms increase in intensity, and, the head being elevated, the lower jaw often hangs pendulous, accompanied by a total loss of the power of deglutition; and if in this state liquids are given, they will pass into the trachea, and be followed by death. The pulse ranges between 90 and 100 in a minute, is weak and irregular; the respiration is quick and laboured, which is partly produced by an accumulation of mucus in the bronchial tubes; cold sweats bedew the surface of the body; and eructations of food,

emitting an intolerable fœtor, often take place, under which circumstances death soon closes the scene.

The severity of the symptoms will depend on the disease assuming either the acute or sub-acute form. In the former, death may occur as early as eight or twelve hours from the commencement of the attack; but more commonly twenty-four hours will elapse before a fatal termination takes place. Occasionally, in the sub-acute form, the malady is protracted to thirty-six or forty-eight hours, and, in some rare instances, even longer than this.

Prognosis.—To form a correct prognosis of this disease is often a matter of great importance, but it is unfortunately one of great difficulty. It will depend on the intensity of the symptoms, as well as the stage of the disease at the time we are called to the patient: if we see the case early, and find the symptoms are not severe, we may hold out some hopes of recovery; if, on the contrary, the symptoms are very urgent, and we do not see the animal until some hours after the commencement of the attack, then our hope of success will be greatly diminished, for we shall have much debility, great prostration of strength, and obstinate constipation, to contend with.

Prophylactic Treatment.—This will consist in keeping the animal on a spare diet, allowing no stimulating food to be given for some time prior to parturition; bleeding to the amount of Ovj to Oxij, according to the age and size of the cow, four or six days before parturition is expected to come on, together with the administration of a purgative, and the frequent withdrawal of the milk from the udder, more especially if it be distended: this practice I have seen pursued with great advantage.

General Treatment.—This will, of course, depend on the form the disease assumes, and also the stage of the malady. The propriety of abstracting blood will be indicated by the pulse, which, if full and somewhat oppressed, and the patient dull, with other symptoms that clearly shew the disease to be of a cerebral character, then by all means bleed largely, in order to produce a reaction. This desired result will be sooner obtained by making a bold orifice in the vein, so that the blood may be withdrawn quickly. I consider this to be a matter of some importance, as debility so soon succeeds, that in the course of a few hours there is not the slightest tolerance in the system for blood-letting; on which

account, if some time has elapsed before we are called in, we must use great caution in the employment of the lancet. If at the onset the pulse, although quick, be weak, or somewhat irregular, with great prostration of the vital powers, by no means bleed. The next thing to be done is to administer a powerful and energetic purgative. No time ought to be lost in doing this, for we find the rumen and the other stomachs, as well as the bowels, to be in a totally inactive state, and quite insensible to the effects of ordinary purgatives; this condition of them being produced by the withdrawal of nervous energy. Consequently large doses of cathartics are to be given. I prefer a combination of these therapeutic agents, as I think such more likely to produce the desired effect than if any one of them were given singly; and that which I would recommend consists of sulph. mag. lbj, ol. lini Oj, sem. croton 20 gr. to 30 gr., given in gruel with the addition of some treacle, increasing or diminishing the dose according to the size of the animal or the urgency of the case. The rectum should also be unloaded, and enemas of soap and water, or gruel with a little oil added, frequently thrown up. A stimulating embrocation consisting of liq. ammon. ʒij, ol. terebinth. ʒij, oleum com. ʒviij, should be well rubbed along the whole course of the spine. The patient must be kept well upon her belly, inclining a little to one side; but her position ought to be frequently changed by turning her on the opposite side.

The milk should be withdrawn repeatedly, and the surface of the body well clothed, so as to promote perspiration. One-half of the above-named purgative may be repeated every four or eight hours, according to the severity of the symptoms, omitting the croton, and substituting for it sublimed sulphur, in doses of ʒvj or ʒviij, until full purgation is established. If hoove be present to any extent, give spt. ammon. aromat. from ʒij to ʒiv; but when the rumen contains a large amount of undigested food, as is often the case, then the patient should have repeated quantities of gruel or boiled linseed given her, with a view to produce a semi-fluid state of the ingesta, so that it may pass more readily into the abomasum and bowels. If the power of deglutition is lost or imperfectly performed, all fluids must be given by the stomach-pump, to prevent their entering the larynx and trachea, where their presence would quickly occasion death. The bladder also, from having

lost its power of contractility will require to be occasionally emptied of its contents, to prevent an accumulation of the urine. It is, however, impossible to lay down any specific plan of treatment as being applicable to every case. Occasionally, if the constipation be very obstinate, solution of aloes in doses of ʒiv with tinct. zingiber ʒj to ʒij may be substituted for the oil or salts. Nevertheless, in most instances, let our treatment be ever so energetic, the disease will progress unfavourably. The debility generally increases with fearful rapidity, a condition which is accompanied by a sinking of the pulse, quick and short breathing, pendulous jaw, loss of the power of deglutition, &c. In such extreme cases our hope of saving the patient will mainly depend on the administration of some powerful stimulant, given with a view to sustain the vital energies until our other curative measures take effect. These cases I have occasionally seen treated with success, by the administration of alcohol in the form of whiskey, in doses of a half pint, repeated at intervals of three or four hours; but if after the second or third dose no relief is afforded, the case will be certain to terminate fatally. On the other hand, if the bowels begin to act, the secretion of milk be increased, the head voluntarily elevated, and the eyes become sensible to light, convalescence soon takes place. Gruel and mashes should now be given, but other food must be withheld until rumination is re-established. Should the animal be much debilitated, she must be supported by vegetable tonics and nutritious diet, which will probably be all that is required to restore her strength.

The Terminations.—These are resolution, the parts again resuming their normal functions, or partial paralysis of one or more of the limbs, this being generally confined to the hind pasterns, but occasionally extending to the hocks. Paraplegia, or paralysis of the hind quarters, is also a result. The treatment of this should consist of the administration of purgatives, and the use of external stimulants; but should this loss of power still remain, strychnia in doses of one grain, increased to three grains twice a day, may be given. Pneumonia is also another termination, for which the usual remedies must be had recourse to.

Post-mortem appearances.—On laying open the abdominal cavity, the viscera generally are found healthy, except there should be some chronic disease of the liver or other organ present, which

is not unfrequently the case. The uterus will be found more or less contracted, according to the time that has elapsed since parturition. The bladder is commonly increased in size, presenting slight patches of inflammation when much distended. The ingesta in the stomachs will be hard and dry, particularly that in the omasum, which in some cases will not admit of being removed without bringing away the cuticular coat with it. The large intestines contain accumulations of hardened fæces, but seldom are there any signs of inflammatory action. The liver is somewhat softer than natural, and its vessels congested, as are also those of the lungs. On exposing the cranial cavity, the membranes will present a dark red appearance, with patches of inflammatory action and effusion of fluid in the subarachnoid membrane, often extending down the medulla spinalis, as far as the lumbar region. The brain will frequently be softened in its texture, and present a more vascular aspect when cut into than in health. On opening the lateral ventricles there will be seen more fluid than is normal, except in the early stages of the disease, when there is generally an absence of all fluid. The bloodvessels of the brain, with the plexus choroides, are congested, and in some cases, I believe, spots of ecchymosis on the sciatic and other large nerves have been observed.

The Author of the Essay, in reply, reiterated the circumstances which would lead him to adopt prophylactic measures, namely, the animal being in a highly plethoric state, the mammary gland becoming much enlarged, and milk being freely yielded, accompanied with constitutional excitement; or her having been the subject of an attack of this disease at some former period. He had known an instance of a cow having had parturient apoplexy no less than eight times.

The measures he should resort to would consist in placing the animal on a low diet, abstracting blood a fortnight before the period of calving was expected, and repeating it eight or ten days after; likewise giving exercise for some time, and a brisk purge a day or two before parturition; and withdrawing the milk till the secretion began to alter. His subsequent treatment, so as to prevent an attack of apoplexy, would be, restriction of the diet to

mashes and gruel at the first, withholding all hay and such kind of food as required re-mastication, as rumination is sometimes suspended even for days; keeping the animal housed, so that she may not be affected by alterations of temperature; emptying the udder by the hand, as well as allowing the calf to suck, and if the bowels were in the least degree constipated, repeating the exhibition of the purgative.

Rarely does this disease shew itself after a protracted delivery, and the short-horn breed he had found most liable to it. He remembered three instances in which the symptoms of parturient apoplexy manifested themselves even before birth took place, and one of these animals experienced another attack after the calf had been born, so that within six weeks she may be said to have had the disease twice.

Mr. Twist related a similar case; and he observed, that the ill-bred long-horned Irish cattle appeared not at all obnoxious to this disease.

Mr. Aris remarked, that the Alderney breed, although good milkers, are also generally exempt from it. He had known it to occur in cows not plethoric and never housed. He would ask, Was this disease hereditary?

Mr. Dexter said, that although the Alderney cow was a good milker, she was not famed for laying on much flesh; and it was generally the case that, where a tendency to plethora existed, there a disposition to this disease was manifested. The subject under consideration was one of considerable importance, yet he was not disposed to concur with all that had been advanced by the Author of the Essay respecting it. For instance, the immediate cause of the disease could not solely depend upon the transference of the blood from the mammary gland, whose function had been interfered with for a time on account of the blood being determined from it to the uterus for the development of the fœtus, and which gland being unable to appropriate this fluid to the secretion of milk, it—the blood—was thrown back on the system, and became the exciting cause of the malady; since, were this the only cause, the affection would never shew itself long after parturition. Moreover, there is generally a great demand on the system immediately after the act of parturition in the form of other secretions, and thus the current of blood would be diverted.

It was certainly most desirous to co-operate with nature, and by manipulating the mammary gland endeavour to bring about a secretion from it.

But we may have apoplexy arise from other causes. It was not long since he was called to attend some cows that had been turned into the Park after having been much excited and hard driven, and within a day or two they were nearly all attacked with this disease, and in a few hours several died. Ordinary causes he thought quite sufficient to originate the affection, such as a plethoric habit of body, a system predisposed to congestion, derangement of the digestive organs, and especially an inactivity of the liver; also, the animal being fed, up to a day or two within the period of calving, on bad or poor food, and then immediately after parturition placed in a warm shed and imprudently allowed stimulating provender: and were more caution exercised in respect to this last-named circumstance, he felt assured that this disease would be less frequently met with. As to the breeds most likely to be the subjects of it, he had already stated that the Alderney cow, not being disposed to lay on flesh, is not, on that account, so liable to it as others; for on all hands it is agreed that plethoric animals are most obnoxious to it. What are called the short-horned breed, in which a tendency to make flesh and to give large quantities of milk are combined in a pre-eminent degree, are, therefore, most commonly attacked.

Mr. Twist differed with Mr. Dexter in the views taken by him of the causes of this disease. He held it to be one of a specific nature, and dependent on the existence of a peculiar crisis in the system, so to speak. Common causes, therefore, were not sufficient to give rise to it; they may predispose the animal to an attack, but they did no more. The act of parturition is essentially requisite to its production, if the pathology of the disease be a true one. In Liverpool, where he had had an opportunity of seeing many cases, it is true, the animals there, as in all large towns, were plethoric, but they were neither turned out prior to, nor were they improperly fed after, parturition, which had been so justly denounced by Mr. Dexter; still in them parturient apoplexy frequently shewed itself.

Mr. Merrick believed that the Alderney breed of cows was peculiarly subject to attacks of this malady, and he considered Mr. Friend to have been the first person who took a correct view

of the nature of this disease, by referring it to an impression made on the nerves of the uterus, and thence transferred to the ganglionic system. Professor Simonds extended this, by teaching that the impression thus communicated is transmitted through the spinal track to the brain, and hence we have those symptoms indicative of that organ being implicated. He would refer the diseased state of the liver to a withdrawal of nervous energy from it.

Mr. Carter stated, that this view originated in a supposition that during utero-gestation the nerves of the uterus were more highly developed than at other times, which has since been found not to be the case. He adhered to the opinion advanced by him, that the principal cause of this disease is the throwing back of the blood on the system which is not appropriated by the mammary gland; yet he perfectly concurred with Mr. Dexter in his condemnation of injudicious dieting after parturition had taken place.

Mr. Reeve thought the paralysis present to be referrible to effusion within the spinal sheath; this being caused by the great weight borne by the lumbar region when the uterus was impregnated; since this portion of the spinal marrow shewed after death the most marked traces of diseased action.

Mr. Twist observed, that it was extremely necessary to draw a distinction between simple paralysis following parturition and the disease under consideration, in which the brain is clearly implicated, the eye being always amaurotic, and phrenitis often present.

Mr. Carter considered a want of milk in the udder, and a dry state of the nostrils, to be most unfavourable symptoms. He had found pneumonia as a sequela of parturient apoplexy to occur about the second or the third day, and his prognosis was then unfavourable, such cases proving, generally speaking, fatal. In a very extensive practice he remembered only one case that had recovered.

Mr. Varnell.—It has been asked, Is this disease hereditary? While he was not prepared to answer the question positively in the affirmative, he was, nevertheless, inclined to believe that it often proved to be so. In the county of Norfolk, the system of breeding "in-and-in" is much followed by agriculturists, and the cows there met with are of a valuable kind, on account of their yielding much milk, and they are very subject to this disease. He well remembered the following case, which would, perhaps, be accepted

as an answer to the interrogatory. He had been asked by one of his employers, how a cow should be treated prior to her calving, which was expected to take place in about two weeks. She was eleven years old, rather of a plethoric habit of body, and the owner feared he should lose her, *as her mother died of parturient apoplexy, and about two years before a sister also died of the same disease.* He recommended the cow to be placed in a meadow, with some young stock, where the pasture was scanty, so that she would have to range about for the means of sustenance; and should the udder become distended, to withdraw the milk from it once a day, Moreover, should symptoms demand it, he would not hesitate to abstract blood a few days before calving. The usual period of utero-gestation, however, elapsed, and no indications of parturition shewed themselves. A fortnight more had elapsed, when he was requested to see the animal. She was down, unable to rise, and he was told had been so since five o'clock in the morning. The day was warm, but, as there were no urgent symptoms present, he did nothing beyond requesting that she might be kept quiet. At ten A.M. he saw her again, when she was about to calve. The presentation was natural, and the calf comparatively small, yet he had to render considerable assistance. After delivery, the animal did not rise, nor did she take any notice of the calf. He left her, ordering some gruel to be given, and enjoining quietude. Saw her again at one P.M., when she was still down. He now gave a full dose of aperient medicine, for there were some unfavourable symptoms present. At six P.M. these had become more marked: the pulse was quick, the nose dry, the eyes amaurotic, the countenance dejected, the breathing laboured, and no milk secreted. He repeated the exhibition of half the quantity of the aperient agent, threw up enemas of warm water, stimulated the loins, and ordered the head to be kept wet with cold water, believing that parturient apoplexy was now shewing itself. At eleven P.M. the patient was no better: she had not taken any notice of her calf, and the general symptoms remained unmitigated, The aperient was again repeated with enemata, as no fæces had yet been voided. Even on the following morning no action of the bowels had taken place, but the general appearance of the animal was more favourable. The bladder, which had become very full, was now emptied by

means of the catheter, and some enemas were thrown up ; but the purgative medicine was not repeated, being apprehensive of the consequences. About noon the cow got got up, recognized her calf, the bowels responded, and from that time she did well.

In the early stages of this affection, before the disease had fully developed itself, he would not hesitate to resort to copious blood-letting, which, he believed, would prove effective in staying its progress. When, however, despite this measure, parturient apoplexy shews itself, he would then employ stimulants of a diffusible nature, apply counter-irritants over the loins, and give active purgatives, from the effects of which he anticipated marked benefit. He had generally found this disease to attack cows on the second or third day after parturition ; if they went beyond that, they were usually exempt. He had never known it to exist in any other animal.

The following case might prove instructive, although it is one not uncommonly met with :—

A cow had calved on the 24th of May last, and on the 26th he was consulted respecting her. There was but little milk in the udder ; the eyes were dull ; she refused food ; the nose was dry ; the visible mucous membranes were injected ; the pulse 80 ; the breathing hurried ; the bowels constipated ; and she was unable to rise. A bold purgative was administered, enemas were thrown up, and the head ordered to be kept wet with cold water. Visiting her some hours after, she was found still down, the pulse more accelerated, the breathing stertorous, the pupils dilated, and the eye insensible to light, the bowels being still torpid ; but no hoove had taken place. A smaller quantity of the purgative agent was given, and clysters again thrown up. On the following morning the bowels responded to the medicine, she began to take notice of her offspring, got up, lactation returned, the febrile excitement disappeared, and the animal gradually recovered.

Mr. Twist, on the authority of a professional friend, engaged in an extensive practice, related a case in the bitch, the symptoms of which simulated parturient apoplexy in the cow.

Mr. Yeomans felt convinced that he had seen a case of it occur in the sheep, and *Mr. Foulding* said the disease was by no means uncommon in this animal in Lincolnshire. The symptoms generally resembled those present in the cow, and examination *post-*

mortem shewed the same lesions to exist. It is most commonly fatal.

Mr. Nobbs thought that Hysteritis had been confounded with parturient apoplexy, between which there is a similarity of symptoms, and in the last stages of which we have even the amaurotic eye.

MISCELLANEA.

Transfusion of Blood from Animals,

The Royal Society of England, in 1665-6, appears to have adopted this from similar operations made previously by the *savans* in Paris. It was thought by this means would be realized the long-sought for "elixir of life and immortality," and old men by it rendered young again. "Fortunately," observes a satirical philsopher, "it failed to effect this end, otherwise tyrants would have perpetuated themselves through all generations." It was proposed that the first experiments should be performed on lunatics. This the physician of Bedlam Hospital, Dr. Allen, properly objected to. A poor student of Cambridge, however, of eccentric habits, for a small sum was first operated upon. Some of his blood having been withdrawn, that of a sheep was substituted. The patient was well and merry afterwards, drank a glass or two of canary, and took a pipe of tobacco; then went home, and continued well all day, his pulse being stronger and fuller than before. In a month after he was again subjected to the same experiment, fourteen ounces of blood being transfused, with similar results.

Varieties of Milk.

As far as we know, no nation uses the milk of any carnivorous animal. There is no reason for believing that the milk of this order of animals would be either disagreeable or unwholesome; but the ferocity and restlessness of the creatures will always present an obstacle to the experiment. The different milks of those animals with which we are acquainted agree in their chemical

qualities, and is confirmed by the fact, that other animals besides man can be nourished in infancy by the milk of very distinct species. Rats and leverets have been suckled by cats, fawns by ewes, foals by goats, and man, in all stages of his existence, has been nourished by the milk of various animals, except the carnivorous. The milk of the mare is inferior in oily matter to that of the cow, but it is said to contain more sugar, and other salts. The milk of the ewe is as rich as that of the cow iu oil, but contains less sugar than that of other animals. Cheese made of ewe milk is still made in England and Scotland, but it is gradually being disused. The milk of the ass approaches that of human milk in several of its qualities. To this resemblance it owes its use by invalids in pulmonary complaints; but it has no particular virtue to recommend its preference, and is only prescribed by nurses. Goat's milk, perhaps, stands next to that of the cow in its qualities; it is much used in Southern Europe. It affords excellent cheese and butter, its cream being rich, and more copious than that from cows. Camel's milk is employed in China, Africa, and, in short, in all those countries where the animal flourishes. It is, however, poor in every respect, but still, being milk, it is invaluable where butter is not to be procured. The milk of the sow resembles that of the cow, and is used at Canton and other parts of China. The milk of the buffalo is also like that of the cow, though the two animals belong to different species. Every preparation of milk, and every separate ingredient of it, is wholesome: milk, cream, butter, cheese, fresh curds, whey, skimmed milk, butter-milk, &c. Butter-milk and whey will undergo a spontaneous vinous fermentation, if kept long enough, and alcohol can be distilled from it. The Tartars, it is well known, prepare large quantities of spirituous drink from mare's milk.—*Laing's Notes of a Traveller.*

Milk for the People.

There exist on Long Island, near Brooklyn, several manufactories of milk, the process of which should be known. One of these dairies covers a space of 600 feet front by 300 feet deep, carefully fenced in, so as to be as private as possible—the business of the people being to drink the milk, not to know how it is made—

in which enclosure 400 cows are kept the whole year round. These cows are fed on the refuse slop of whisky distilleries, and it is given to them warm. Each barrel costs six cents; but being adulterated with water and cheap feed, brings the price still less. Such is the fondness of the cows for this vile compound, that after having fed upon it for a week or more, their appetites become so depraved that they will take no other food. The result is, their milk-producing organs are stimulated to a wonderful degree; they yield enormously, but soon become diseased: their gums ulcerate, their teeth drop out, and their breath becomes fœtid. Though thus diseased they do not fall away in flesh, but, on the contrary, puff up and bloat to an appearance of great fatness; their joints become stiff, so that they cannot lie down, and rarely or never come out alive. Bad as this is, the milk is afterwards mixed with molasses, water, and whiting, and then sold to the people of New York for pure milk! Any one may observe the thirty-six vans that carry it around every morning. It is, of course, very injurious to children, who use it in much greater quantities than adults. Some idea may be formed of the profit by computing one barrel of slop to a cow costing sixpence, and the milk produced being 80 cents.—*New York paper.*

[The above extract reminds us of an incident that occurred some years ago. A boy carrying a milk-pail fell in front of the College, and on rising, seeing that the milk was running down the gutter, he looked most lugubrious, and yet with a certain degree of archness, as much as to say, after all a little water will replace it. Eyeing the pump in the yard askaunt, we said to the boy, "Never mind, my lad, we have some chalk also." "Ay," answered he, "that's all very well, but you hav'nt got any treacle!" Till this time we did not know the composition of that ceruleous fluid which we had been partaking of morning and evening.

Another accidental circumstance made us acquainted with the leading constituents of the pills of a celebrated empiric. A wagon stopped at the gateway, which was stated to contain several large packages for a Mr. Morton. They consisted of a cask of *cream of tartar,* another of *aloës,* a case of *colocynth,* a box of *gamboge,* and one of *scammony.* Not anticipating the receipt of these various articles, the receiving order was asked for and looked at, when the

name was perceived to have the letters *ris* in its middle, instead of *rt*. It was therefore conjectured that the carter, being unable to read, had addressed some peripatetic schoolmaster, who had directed him to the College; he thinking, perhaps, that so large a quantity of drastic purgative agents could only be for horses!]

TO CORRESPONDENTS,

AND SHORT NOTICES OF COMMUNICATIONS, &c., RECEIVED.

We have received a letter from Mr. T. H. Hurford, V.S. 15th Light Dragoons, dated Bangalore, 9th Nov. 1848, requesting us to correct an error at page 108 of the last volume, where it is stated that in a case of tetanus he took blood to the amount of 6lbs. It should have been 16lbs. At the close of his note he says the following is the way in which castration is performed in India:—"Having cut through the scrotum and seminal vessels, we then, with rather a rough-edged knife, *scrape* through the remainder of the cord, and find it a very good plan."

At the close of the last Number was recorded a method of using vulcanized Indian-rubber between the foot and shoe of the horse, as advocated by Mr. W. G. Reeve. In a note further explanatory of his views, accompanied with a Memoir on the physiology of the foot, published by him, he says "The plan is now in constant use, with only the following slight variations in the detail: viz. we find it necessary that the mortices for the reception of the ends of the Indian-rubber should be made with a 'set,' the edges of which are round; for by this method the angles are strengthened, and the shoe rendered less liable to break. I have also caused the rubbers to be made separate, and of a form which admits of their being applied at once to any sized shoe, so that their application is now rendered extremely simple. This is effected by attenuating the ends of the Indian-rubber, so that it may be used for either a wide or a narrow shoe, without the trouble of cutting to suit the size."

We thank Mr. J. F. Shaw, V.S., Cheltenham, for his strange morbid mass taken from a heifer. "Upon a post-mortem examination," he says, "I found the stomachs, and, in fact, all the viscera of the abdomen, adhering together: the rumen was filled with a hard curdy substance, and there was also a large tumour, as it appeared, within it; but on cutting into it I was surprised to find it to be a kidney."

We are like indebted to Mr. J. Carlisle, V.S., Carlisle, for an encysted tumour, containing pus in its centre, taken from the throat of a bullock, and shall be obliged by his promised history of the case.

To Mr. F. Silvester, for the diseased heart of a colt, with ruptured pulmonary artery, which took place while the animal was out with the hounds.

To Messrs. G. Draper, T. W. Gowing, and Page Wallis, for specimens of ruptured stomachs of horses, with brief histories of the cases in which they occurred.

To Mr. W. Baker, for a case of choaking in the horse, with softening and laceration of the lining membrane of the œsophagus.

To Mr. J. J. Hughes, for a case of suspected poisoning by some of the compounds of iron, probably the chloride.

To Mr. W. S. Wallis, for a case of a large stone being found in the colon of a colt, and which had apparently been the cause of a rupture of that intestine.

To Mr. R. Gray, for an account of a great number of bots existing in the stomach of a horse. In the post-mortem examination, he says, "Finding the stomach to be considerably distended and hard, I opened it, and having evacuated its contents, which consisted of dry ingesta, I perceived an immense quantity of bots to exist at the pyloric orifice, and so completely blocking it up as to preclude the possibility of any thing, excepting in a fluid state, passing through. On detaching some of these bots, and examining the coats of the stomach, I found they had become much thinner, and nearly ulcerated through. I should have liked to have sent the specimen to you, but the owner of the horse wished to keep it, he thinking it a great curiosity."

To Mr.. W. C. Sibbald, for cases of strumous tumours in a bullock, and fibrinous matter voided by a heifer.

To Mr. J. Jekyll, for interesting cases of influenza appearing in a virulent form among several cart-horses under his care.

To Mr. G. Murray, for a case of diseased heart of a cow, "in the parietes of the right ventricle of which was found a brass pin three inches in length, about half an inch of which was outside the pericardium."

To Mr. G. B. Webb, for his account of the manner in which he secured the fractured leg of a bullock, so as to keep the ends of the broken bone in apposition, without the use of the ordinary cumbersome bandages.

We regret exceedingly that many of these Communications were received by us too late for insertion in the present Number. They shall appear in the next.—Editors.

Since the above Notices were sent to press, Mr. T. W. Gowing has communicated to us a case of Fistula of the Parotid Duct of a Horse having been most successfully treated by him with Collodion. The agent was applied with considerable judgment and tact, and remained on for thirteen days, when the scab, with the layers of the collodion, was cast off, leaving a healthy-formed cicatrix beneath it. The full particulars of this case, with others already alluded to, will be given in the next Number.

THE

VETERINARY RECORD, &c.

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The Vitality of the Blood proved by Physiological Experiment, and its Application to Veterinary Pathology demonstrated.

By J. S. Gamgee, *Student, Royal Veterinary College, London.*

[Read before the Veterinary Medical Association, Session 1848-9.]

[Continued from page 119.]

THAT death is the ultimate destiny of all beings which are endowed with life, and that in the performance of the varied functions for the maintenance of their complex constitution living bodies are liable to disease, or, in other words, they afford evidence of deviation from a state of health, are truths impressed on the mind of the most casual observer of animated nature. In addition, therefore, to the physiological statements already advanced to prove that blood, being a living fluid, likewise dies, we now have to demonstrate by facts, what, *à priori*, cannot be denied,—that, if life be an attribute of the blood, it must occasionally betoken symptoms of disease.

Acknowledging analytical research to be the safest, and therefore the most profitable, mode by which scientific truths can be established, we shall pursue that method of inquiry in the hope that the disease of the blood (as a whole) may be made more clearly intelligible, when we shall have endeavoured rationally to investigate the pathological results of alteration in the quantity or perversion in the quality of the blood's constituents.

The vivifying influence which the blood exerts on the system is in a great measure due to its red particles; this being proved by the fact that, when these are absent from the nutritient fluid of animals, they become torpid, and their functions are comparatively

inactive; *vice versâ*, vigour of body and functional activity are invariable sequelæ of an abundance of red blood discs: it is, therefore, obvious that, if the blood contain an undue amount of red particles, its stimulating influence on the organism will be increased, and thus will be laid the foundation or predisposition to disease of an exciting character. In animals this excess is betokened by the red colour of the conjunctiva and caruncula lachrymalis, which is the concomitant of general systemic plethora; and experience corroborates what theoretical reasoning would have led us to suppose, that by lowering the amount of red particles, and thus impoverishing the blood, fatal maladies may be averted.

To the veterinary practitioner, and likewise to the farmer, it is well known that, when young cattle are "thriving fast," certain precautionary measures require to be adopted for the prevention of a devastating malady designated "Black Quarter," or "Quarter Evil." The means employed are, blood-letting, aperients, and the use of counter-irritants, such as the insertion of a piece of hellebore root or a seton in the dewlap. The *modus operandi* of these curative measures, and their efficacy in preventing the malady, throw light on its pathological nature.

One of the most prominent results of venesection is a diminution in the ratio of red particles; because, by decreasing the total bulk of the circulating fluid, we favour endosmosis from the interstices of the tissues into the vessels. Now, if we bear in mind that the red particles are reproduced with greater difficulty than any other constituent of the blood, it is clear that, as the loss of the watery element is compensated for by absorption, the red discs must relatively decrease in amount, because not proportionately regenerated.

The diminution in the proportion of fibrin in the blood, when the formation of pus is induced in any part of the system, is explicable in accordance with the chemical composition of these fluids, the latter product being derived from the excessive oxygenation of the former proximate principle; but how the purulent discharge should more especially waste the red particles, is not so easily accounted for; nevertheless, it is a fact unquestionably confirmed by the pallidity which follows excessive suppuration both in man and other animals.

When the prophylactic means before alluded to are neglected, it frequently occurs that among many of the most thriving beasts of a herd "black quarter" rapidly spreads. This malady, regarded by Youatt as inflammatory, by others as gangrenous fever, I attribute to a diseased state of the blood, and that for several reasons :—1st, It may be prevented by the adoption of measures which directly exert their influence on the blood. 2dly, Prominent symptoms during life are local heat and interstitial effusion into parts which rapidly die. This cessation of life may rationally be referred to the diseased state of the circulating fluid, since the parts do not exhibit signs of disease until their increase in heat or bulk betokens the sanguineous congestion and subsequent extravasation. 3dly, The principal pathognomonic change witnessed in cadaveric inspection of animals which have fallen victims to the affection, is general congestion of viscera and tissues, with effusion into the various cavities, and a great tendency to speedy decomposition.

That these changes are not the result of inflammation we infer from the rapidity with which the malady runs its course, and the great prostration of the vital powers evinced soon after its commencement. To the term "gangrenous fever" we object; because, although the febrile symptoms are accompanied by a great proneness to mortification of the tissues, yet, neither the fever nor the local gangrene being the primary elements of disease, we cannot adopt a name which might deceive as to the pathology of the affection without, at the same time, indicating the principles on which it can be treated. For the previously adduced reasons, we are of opinion that black-quarter owes its origin to a superabundance of the plastic element and red particles of the blood, which, for want of adequate expenditure in the function of nutrition, and of purification by the secretory and respiratory apparatus, accumulates within the body and becomes deteriorated in quality. To this explanation an apparent obstacle may be the local seat of the disease at its onset, viz., swelling, heat, and pain in the hind quarters and lumbar region, or occasionally in the muscular substance of the fore extremity. These symptoms are referrible to the inability of the heart to propel the current of blood, and its consequent accumulation among immense masses of muscles through which so large an amount of this impure fluid circulates.

The principles for the treatment of black-quarter, according to the preceding views of its pathological nature, may be classed under four heads :—1st, Removal of the impure blood. 2dly, Artificial support to the system to compensate for the defect of a nourishing and vivifying blood. 3dly, Attendance to the local effects of extravasation and menacing death. 4thly, The adoption of such measures as will ensure the reproduction of a pure vital fluid while the bad is being eliminated.

The first object may be effected in a twofold manner ; by venesection (which is to be had recourse to sparingly on account of the supervening debility), and the use of evacuants, which tend to purify the blood by increasing the various secretions. Stimulants, such as the spirit of nitric æther or liquor ammoniæ acetatis, are indicated under the second head with the view to maintain in vigour the nervous system, whose prostration, in consequence of a want of pure arterial blood, may be regarded as the immediate cause of the rapid death of the tissues, and, in fine, of the extinction of animal life. So soon as local extravasations occur, it will be prudent to evacuate the fluid by free incisions, and to employ disinfectant agents followed by friction, in order to promote the local circulation ; and lastly, when the urgent symptoms are abated, the reproduction of pure blood may be facilitated by keeping the animals in well-ventilated and light stables, and administering nutritious food, or on dry pastures, where luxurious herbage does not immoderately abound, attending particularly to the state of the secretions. As adjuvants to this system of hygiène, chalybeates should be daily administered, on account of their well-known efficacy in favouring the reproduction of the red particles of the blood.

In pursuance of our adopted plan, having considered the effects of an increase of the red blood discs, we shall now advert to the consequences of their deficiency. Such defect is a proximate cause of diseases of a debilitating or asthenic character, and therefore requires to be counteracted by those means which may promote the formation of red particles by maintaining the functional activity of the internal organs. But as the notable effects of that deficiency are most obvious when the blood is also poor in fibrin, we shall defer their consideration until we examine the alteration in the character and proportion of the fibrinous element.

Under ordinary circumstances the proportion of fibrin con-

tained in the blood varies from 2 to 4 parts in 1000. The fact that arterial blood is somewhat richer in fibrin than venous, denotes the rapidity of the process of fibrinous formation, and adds support to Mülder's theory of the composition of fibrin; namely, that it is an oxy-protein, or rather, a deutoxide of protein, formed by the oxygenation of albumen in the lungs.

The characteristic property of fibrin being that of spontaneous coagulation, we might at once predict that, when it exists in the blood withdrawn from an animal in excess, the clot will be compact, and assume a more organized form than usual. Accordingly we find that the process of coagulation is very marked in inflammatory blood, which always contains an undue proportion of fibrin. Excess of this principle is unboubtedly a predisposing cause to inflammation, which may frequently be prevented by moderating a plethoric condition of the system. But even when excess of fibrin in the blood is not the direct cause of inflammatory disease (and therefore our success in preventing the latter does not depend upon impoverishing the former), still the rapid formation and accumulation of fibrin in the blood, when once inflammatory action has originated in any one part of the system, is a means by which the diseased condition is prolonged, and its consequences aggravated; because the circulation of a vital fluid, whose nutritious element is in excess, is a source of undue excitement to the functions generally, but more especially to that of nutrition; the abnormal exaltation of which is the fruitful origin of the ravages of inflammation, as indicated by depositions of lymph, which according to its quality, whether plastic or aplastic, becomes converted into adhesive bands or membranes, abscesses or other morbid products.

Although inflammation may not owe its origin to any change in the composition of the blood, nevertheless it must be evident, for the reasons adduced in the preceding paragraph, that, as a too rapid production and accumulation of fibrin are immediate consequences of an inflammatory attack, and proximate causes of its unfavourable terminations, so must remedies be directed to the modification of the constitution of the blood, if, as rational pathologists, we are desirous of mitigating the cause as the most certain means of averting the effect.

If, as a general principle in the treatment of inflammation, the

superabundance of fibrin in the blood is to be moderated, let us inquire into the causes of that excessive production of the plastic element. Adopting Dr. Williams' definition of inflammation, that "it consists in the existence of too much blood in an organ or tissue, with motion partially increased and partly diminished," expressing the same sentiments in more explicit because more familiar terms, we may say, that while the vessels in the centre of an inflamed part are congested, nay perfectly blocked up, the collateral circulation is preternaturally accelerated. The vital fluid, whose motion is arrested in the centre, is exposed to the influence of blood which in the adjacent vessels circulates with unusual rapidity. Congestion—arrest of the blood's flow—implies suspension of its main function,—that of nutrition; consequently the albumen in the obstructed vessels remains unexpended. Whether we adopt the original view of Liebig that the red particles are the carriers of the oxygen in the blood, or his more modern theory, which attributes that function to the tribasic phosphate of soda; or finally, if we adopt Mülder's notion, that the oxygen in the blood is in combination with the protein, without committing ourselves to any one of these views in particular, by the common consent of all, it is clear that, as an excessive amount of blood circulates through an inflamed part, so must an undue proportion of oxygen be carried through it; and thus the albumen contained in the obstructed vessels in the centre being exposed to incessant oxygenation, is converted into fibrin, and this, becoming diffused by the circulating blood, adds considerably to the normal amount of the fibrinous constituent.

But, in addition to this local formation of fibrin in an inflamed part, its accumulation in the blood may be explained on two other principles. 1st. One great condition to the performance of the nutritive function being the slow movement of the blood in the systemic capillaries, taking into consideration the rapidity with which the whole mass of blood flows during inflammation, we perceive that its fibrin cannot be expended in the nourishment of the textures, and therefore superabounds in the blood. 2dly. It is a fact cognizant to all those who have even superficially glanced at the various symptoms of disease, that as a concomitant of inflammation the respiratory function becomes excited: this implies the absorption of more oxygen than usual in the lungs, and there-

fore the general process of fibrinous formation or the oxygenation of protein will be exalted.

In accordance with this explanation of the causes to which the excess of fibrin in inflammatory blood is attributable, we are now prepared for the investigation of the remedies by which it can be counteracted. Experience, in support of common reason, teaches us that this object is attainable by two great means; 1st, by venesection, which absolutely lowers the amount of fibrin in the system; 2dly, by withholding the supplies of nutriment whence fibrin may be obtained.

But are there no means by which that excessive oxygenation in the vessels may be counteracted? A definite and satisfactory reply cannot here be offered; but we are disposed to attribute the beneficial effect of the compounds of antimony in reducing inflammatory diathesis to their depriving the circulating fluid of its excess of oxygen. Medical men in England, as well as on the continent, have for a long time ranked antimonial compounds among the most valuable antiphlogistics, and we would suggest that their administration in small and frequently-repeated doses be more generally adopted in veterinary practice.

As one of the various means by which the blood of a patient labouring under inflammation may be impoverished, counter-irritation may, doubtlessly, be had recourse to with considerable benefit, and particularly when those agents are employed which tend to a speedy formation of pus. But while we recognize counter-irritants to be potent means in mitigating an inflammatory attack existing in an internal organ, we must advance an objection to their employment in the acute stage of the disease; and when sufficient time has not been allowed to transpire for the general febrile excitement to be reduced by antiphlogistic remedies, of which blood-letting is certainly the most potent.

When a counter-irritant is applied to any one of the patients that come under the care of the veterinary surgeon, several hours must elapse before a discharge of pus can be procured. In this interval local inflammation is set up around the spot where the blister or seton has been applied; and according to the theory previously established by us, that wherever local inflammatory action exists there oxidation of protein and the formation of fibrin progresses, it follows, that the counter-inflammatory action artifi-

cially induced will be a means of augmenting still more the proportion of fibrin in the blood, thus increasing the primarily existing inflammation and febrile excitement before any benefit is derivable from the purulent discharge. For the same reasons rubefacients are objectionable when it is desired to counteract inflammation in an important organ, because the revulsive effect which they induce is but slight, and they afford no relief by promoting suppuration; but, on the contrary, in virtue of the irritation which they set up, add to the state of general excitement by accelerating the local circulation, and thus favouring the production of fibrin.

If counter-irritation be had recourse to after the acute inflammatory attack has been partially subdued, we may reasonably expect beneficial results from the discharge induced, without any fear of aggravation of the previous disease, or the too rapid extinction of life, by the high state of inflammatory fever which is kept up by the increased supply of blood (containing fibrin in excess) sent to the nervous centres.

The superabundance of fibrin in the blood during inflammation is one of the prominent causes in the maintenance of that diseased action when it is once set up; and, therefore, such remedies as we have already alluded to must be employed in order to restore the vital fluid to its normal composition. In many instances, however, it behoves us to take into account the various terminations of inflammation, for the purpose of guarding against those which endanger the integrity of important organs before time is allowed for the gradual mitigation of the disease. Of these terminations the most dangerous is, perhaps, that of an effusion of plasma, the fibrin of which coagulates and interferes with functions whose exercise is indispensable to animal life. It follows that, to prevent this untoward result occurring, the prevention of the effusion, but more especially of the coagulation of fibrin, are important objects to be attained. Both mercury and opium have been long advocated, and are much extolled by practitioners of human medicine as medicaments of the greatest service in preventing extravasation taking place; and we are, therefore, warranted in giving a more impartial and general trial to this plan of treatment than has hitherto been awarded to it by veterinarians as a body.

In search of agents which may prevent the consolidation of fibrin, let us first inquire if that process can be in any way retarded out of the body. Alkaline carbonates in general, but particularly the nitrate and carbonate of potass, effectually prevent the clotting of blood if mingled with it immediately after its withdrawal; and, by the testimony of both continental and English physicians, we know the great good which is derived from the use of saline compounds in the treatment of inflammation. Basing our opinion on the foregoing explanation of the *modus operandi* of those agents, we recommend their employment, in frequently repeated doses, in those diseases generally where the consolidation of fibrin is to be dreaded; and especially in such an affection as pleuro-pneumonia in cattle, the most fearful result of which is the destruction of the structure of the lung, and consequent annihilation of its function by fibrinous deposition.

In the ulterior prosecution of our object, i. e., that of rationally investigating the signs, effects, and mode of treatment of perversion in quality and quantity of the blood's constituents, it is necessary to bear in mind the all-important physiological principle, that the health of the animal frame depends on the activity of the secreting organs in removing superfluous or impure matters from the vital fluid. Torpidity of any one of the secreting functions necessarily implies a redundance of noxious material within the blood, or the occurrence of serious consequences to the whole body, as sequelæ of the suspension or arrest of the uses which those secretions were subsequently destined to perform. In the former instance positive injury is done to the nervous system, and life impaired by the *éfféte* material which the blood contains; an example of such evil resulting is the comatose state that follows upon the accumulation of urea in the system when the urinary apparatus is suffering under acute functional or organic disease. The suppression of the respiratory function, by preventing the conversion of venous into arterial blood, likewise precludes the possibility of life being prolonged beyond a very short period. These changes in the quality of the blood have long engaged the attention of medical inquirers of all classes, on account of the suddenness of their occurrence, and the intelligible manner in which they are the source of such imminent disasters. But it is to the more gradual perversion of the

blood, or, rather, to the protracted imperfection of its purification by the secerning organs, that I am now desirous of alluding, in order to demonstrate the importance of taking minute cognizance of the effects of external agents and internal functions on the quality of the blood, so as to establish a sound and profitable, because scientific and well-based, system of veterinary pathology.

In the category of diseases to which the ovine race is subject "Rot" has long held a prominent place. The post-mortem appearances presented by animals which fall victims to it being effusion into the cavities, and an organic disease of the liver, undivided attention has been paid to these pathognomonic changes as constituting the real essence of the malady.

Subscribing to a prevalent opinion that the organ originally diseased in "rot" is the liver; protesting, however, against Mr. Youatt's statement, that the affection primarily assumes an inflammatory type, it is necessary to inquire how derangement of the function of that organ can produce such effects on the animal economy, and then to deduce principles applicable to medical treatment.

When a farmer or shepherd examines sheep for purchase he is accustomed to look at the inner canthus of the eyes. If the parts there existing are of a florid red colour (in the absence of all other signs of disease), the animals are pronounced sound; if, on the contrary, a pale or yellowish tinge is presented by the caruncula lachrymalis and conjunctival membrane generally, the sheep are condemned as being tainted with the "rot."

Another well-known incident is, that sheep thus betokening an incipient attack of the rot, for a short time rapidly accumulate fat; and so well was Bakewell aware of this fact, that, with a love of lucre which overcame his regard for honourable dealing, he was in the habit of placing his improved sheep on land which was favourable to the production of this disease, in order that the animals might accumulate flesh, and yet be unfit for breeding purposes when disposed of in the market.

Connecting these two important facts, additional proof is derived in support of the belief that the liver is primarily affected. The pale colour of the conjunctiva may either depend upon a retention of the biliary constituents in the blood, or upon the diminished number of red particles, the results of imperfect chylifi-

cation and sanguification, when bile is no longer secreted, or, at least, imperfectly so; whereas the accumulation of adipose matter is referrible to a non-elimination of hydro-carbon from the system by the liver, and its consequent accumulation in the form of fat. A moment's reflection will suffice to shew that, even in this early stage, the composition of the blood is impaired. The inability of the liver to perform its normal function, and the resulting retention of hydro-carbon, implies its accumulation in the blood; and although we have no proof that choleic acid exists in the vital fluid, yet it is certain that if the liver does not separate and elaborate its elements they must remain in the circulation and alter the qualities of the blood.

That these explanations are not merely theoretical, but based upon fact, is demonstrable by tracing the cause of the functional derangement of the liver. It is on low rich pastures that rot mostly prevails, and especially after a wet summer and autumn, when the herbage is unusually forced and of a succulent character. The grass having rapidly sprung up contains less of the really nutritious principles of the vegetable, but from its succulent character abounds in the elements of saccharine matter, the chief of which are carbon and hydrogen. To the liver pertains the duty of eliminating these elements from the system; and it is no wonder that, when so large an amount of labour is thrown upon this gland, that its secreting powers should become exhausted, and functional derangement ensue. We thus dispense with the gratuitous hypothesis of those who attribute rot to "miasm," or to "peculiarity of climate," and we recognize as its cause the quality of the herbage operating in an intelligible manner on the liver.

The uses of the bile in the digestive process are no longer fulfilled when its secretion is imperfectly performed, and hence in the progress of rot the animals become emaciated from an improper preparation of the material whence new blood is to be formed. It is, moreover, a point worthy of remark, that one of the prominent features assumed by the animal secretions when the function of the liver is arrested, is an acid reaction; and in a case of dropsy, accompanied with organic disease of the liver, I have been able to ascertain the acidity of the effused fluid.

Consequent upon this improper formation and purification of the

blood, its albuminoid constituent becomes deficient, i. e. the vital fluid acquires a watery character at the expense of its normal viscidity. It is an admitted fact, that a certain thickness is favourable to the circulation of the blood in its conduits; and we can, therefore, explain the effusion into the various cavities, as a sequela of the superabundance of the watery element, with a deficiency of albumen, which prevents the equable diffusion of the vital fluid throughout the numerous meshes of the vascular network.

Briefly condensing our opinions as to the pathology of rot, we admit, in the first place, that it owes its origin to functional derangement of the liver; secondly, we view the effects of the ailment of that organ as threefold:—1st, A non-elimination of hydrocarbon causes an accumulation of fat in various parts of the system. 2dly, In consequence of the blood being improperly purified, the secretions acquire a decidedly acid character; and, lastly, the process of sanguification being interfered with by interruption to the flow of the bile, the composition of the blood becomes so altered as to be unfit for the support of the organism; and, as the result of the watery character of the vital fluid thus induced, it does not flow uniformly in the vessels, but has a tendency to extravasate through their coats.

The principles which are to be our guide in the treatment of rot, simply resolve themselves into the restoration of the function of the liver, and the removal of those effects which exist as the sequel of diseased action; first, however, removing the animals from the pasturage where they have become affected, and allowing them to graze on well-drained land. As a cholagogue purgative, calomel may be of service in the early stage; but when the functional derangement of the liver has become chronic, useless attempts to restore that gland to health by the adoption of active measures are to be avoided, and we are rather to aim at the attainment of that object by purifying the blood through other means. The use of diuretics is certainly advisable, and based on the fact, that the secretions have an acid reaction when the liver is functionally deranged, alkaline agents, such as the carbonate of potass should be administered, in order to afford an additional quantity of base which may unite with the excess of acid in the system, and thus facilitate the elimination of the *éffete*

material. The chloride of sodium has also been long recognized as a valuable medicament in the treatmeat of rot. Its beneficial agency may be explained by its tonic effect on the digestive organs; or (when administered in large quantities) by its causing exosmose from the intestinal vessels, thus diminishing the amount of the watery element in the circulation.

To counteract the debility which supervenes as rot progresses, a tonic plan of treatment should be had recourse to; and with this view we advise the administration of diluted nitric acid in the proportion of from twenty to thirty drops of acid to six ounces of water. Nitric acid is certainly an invaluable tonic, and its efficacy in promoting the formation of firm flesh may probably depend on the large amount of oxygen it contains in loose combination, and which it yields up in aid of the respiratory function, for the combustion of hydro-carbonaceous matters, and the oxidation of protein, so as to form the more elevated proximate principles that enter into the composition of the animal textures.

Having already exceeded the limits within which it was intended to confine this Essay, I cannot abstain, in conclusion, from advancing a few reflections, which may attract the attention of some members of the profession to the importance of the subject here discussed, and to the baneful effects which must inevitably follow if the veterinary surgeon be not acquainted with the uses and diseases of the fluids as well as of the solids of the body; and how abortive must be all endeavours to found a scientific system of horse and cattle pathology, unless the normal and abnormal states of the blood, as well as of the organic tissues, be made the theme of persevering study, the subject of profound consideration.

For a long time did humoural pathology exercise an unrivalled sway over the minds of the followers of Æsculapius; but its errors were too numerous to bear up against the attacks of enlightened men of modern times. No sooner were some of the humouralist's theories justly discarded, than medical men at once overthrew all that ages had believed, and the doctrines of solidism totally supplanted the assailed opinions, these being admitted as true, to the exclusion of all others. But here was the error. Extremes are always prejudicial. Such, however, are the exhilarating effects of novelty to man's mind, that newly conceived and even extravagant notions often suffice to annihilate the work of ages, before mature

judgment regains dominion over transitory hypothesis or too sanguine expectations. Such was the case at this period of medical science. From humourism to the theory of solidism was a precipitous step, and one which could not fail to lead to inductions partially true but too hastily established. As science has progressed, it has accordingly been proved that, although disease in the fluids is frequently the result of pathognomonic changes in the tissues, yet occasionally it is independent of any such cause, and that many of the affections to which the animal organism is subject are consequent on a vitiated state of the blood, either in its physical properties or chemical relations.

Veterinary science having been for the first time cultivated in England, with any marked degree of success, about sixty years since, precisely at the period when the dispute was rife between the olden theory of humoural disease and the modern one of solidism, the result has been, that the followers of our common art having gradually adopted those innovations, no one has ever sought to investigate their truth or repudiate their error. True it is, that in some treatises on horse pathology, and by an early and distinguished teacher of veterinary science, Professor Coleman, some forms of disease were attributed to the blood, but such surmises (for in reality they were nothing more) have eventually fallen into oblivion with the decease of their propagators, who merely alluded in ambiguous terms to "a poisoned condition of the blood," without demonstrating the nature of such perversion, or the mode of counteracting it.

We have already alluded to the fact, that on the quality and quantity of the blood the animal organism depends for its maintenance in health; it is, therefore of the greatest importance to afford the necessary conditions for the blood's elaboration and support, in order that, while animals advance in health and perfection adequate to the services required from them, those diseases may be averted which depend upon excess, defect, or perversion of any of the constituents of this fluid. For this purpose, not only must the atmosphere be pure from the deteriorating effects of respiration and ammoniacal exhalations, but such food must be supplied as will afford the greatest quantity of nitrogenized principles, whence pure blood for the composition of the tissues may be elaborated; and the least of those materials, which from their

physical or chemical properties, may deteriorate the quality of the vital fluid; and here is a topic of high importance to the veterinary surgeon, not only as a mitigator of disease, but as a scientific economist in busy towns or agrarian districts.

It is futile to say that the veterinary surgeon does not require a profound knowledge of agricultural botany, of the precise quantity of animal food which various plants supply, and of the properties of the soil whence they are produced; that to him, hygiène, agricultural chemistry, and the fundamental principles of rural economy are superfluous. Should some one assert that the pursuit of these studies would be lowering the grade of the vocation of the veterinarian, I would reply, as his aim and object is that of curing disease, will it not be one great step obtained to prevent it? And as it is the duty of the veterinary surgeon to diagnose and to treat disease, will he not be more likely to succeed in his endeavours if he can strike at the root of the malady by removing its cause, and aid in repairing the losses, not only of the tissues but also of the blood, which is so frequently the original seat of disease? And if it be the veterinary surgeon's desire to fill an honourable station in the scientific world, and to be acknowledged as a useful member of society, will he not enhance the fulfilment of that noble endeavour by adding to his achievements as the fortunate conqueror of maladies, his conscientious claim as the safe adviser of means to avert them?

However much I may have been desirous of demonstrating that the blood, being a living fluid, and consequently subject to death, is likewise liable to disease, yet to complete such a task by a first attempt 'tis in vain to hope. The VITALITY OF THE BLOOD being admitted, its susceptibility to disease cannot for a moment be doubted; and notwithstanding the imperfect manner in which the important truths connected therewith may have been here expounded, still let it be remembered, that this humble tribute to veterinary pathology is dedicated by a veterinary student—by one who is desirous of promoting the establishment of a rational and scientific system of veterinary pathology in accordance with physiological principles; and he sincerely trusts, that in refuting any errors with which these pages—in common with all human productions—may be imbued, and substituting more cor-

rect positions, the older and more distinguished members of the profession will not be unmindful of this, while their acknowledgment of his endeavours will repay the author's most sanguine expectations.

COMMUNICATIONS.

Case of Myo-carditis in the Horse.

By Mr. G. Varnell, *M.R.C.V.S. Demonstrator of Anatomy, Royal Veterinary College.*

In the latter part of the month of April I was requested by Mr. G. Austin, veterinary surgeon, to see a grey horse, the property of one of his employers. Unfortunately, when I arrived at the stables, I was informed that life had been extinct about fifteen minutes. I was, however, induced to make a few inquiries as to the time the horse had been ill, &c. and received the following information. The horse had been in the possession of his present owner about six weeks, and so far as he or those who had the care of him could judge, the animal appeared to be in good health up to the day prior to his death. But on further conversation with Mr. Austin, I was told by him that for some few days he had been treating him for a slight injury, and he (Mr. A.) was particularly struck with the animal's excitability, which seemed gradually to increase; the appetite, also, he said, had been very capricious.

On the following morning Mr. Austin made a post-mortem examination, and kindly sent the morbid parts to the College, I having expressed a wish to see them. He likewise furnished me with the following notes of the symptoms of the case, from the time he was called in to see the animal until its death:—

"I was sent for in great haste about eight o'clock, P.M., on the 22d of April, to attend a horse said to be very ill, and in less than ten minutes I reached my patient's box. He was a valuable grey gelding, rising six years old, nearly thorough-bred, of a nervous

temperament, and rather full of flesh; had not been at work for upwards of a fortnight in consequence of a sore back, the result of an injury from the saddle. The following were the symptoms that presented themselves:—Walking quickly around his box; pawing with the fore feet; frequently lying down and soon rising again; sometimes, when down, he would lie comparatively quiet for a short time, then suddenly rise; frequently curving his tail; breathing excessively quick; extremities rather cold; the visible mucous membranes natural in colour, but mouth and nose dry; the countenance expressive of great pain; the pulse could not, by the most delicate pressure, be felt at the submaxillary artery, nor was the heart's beat distinct on placing the hand over it at the left side. On looking at the course of the jugular vein at the inferior part of the neck, regurgitation of the blood in that vessel was very marked; the retrograde jets were irregular as to time between each pulsation; auscultation of the chest gave no particular evidence of diseased lungs, with the exception, as I thought, of the absence of the vesicular sound; the heart's action was very peculiar; the sound appeared as if that organ was unable to perform its office of propelling the blood through the arteries. I also imagined effusion had taken place, and that to a considerable extent, into the pericardial sac. These symptoms continued with little alteration, except that the animal manifested indications of suffocation occurring, till death took place, at half-past ten the same evening."

Here I would remark, that Mr. Austin informed me that, being in the stable on the morning of the same day, he casually observed the horse, and noticing something very singular in his appearance, he advised the man carefully to watch him.

"*Treatment*.—The necessary medicines were administered, and stimulants applied with friction and also flannel bandages to the legs. I attempted to withdraw blood; and although a very large orifice was made but little flowed, and that was as thick as treacle. No further treatment was adopted, as every indication of a speedy dissolution was present.

"My *diagnosis* was, disease of the heart, with dilatation and hydrops-pericardii. *Prognosis*, death."

The parts sent to the College consisted of the lungs and the pericardial sac, containing the heart. I first carefully examined

the lungs with their pleural coverings. The latter shewed no trace of disease, the former were congested. The pleura reflected over the pericardial sac appeared to be normal; but the sac itself had been laid open previous to my seeing it. I was informed by Mr. Austin that about one pint of fluid of a sero-sanguineous character was found in that cavity. The true reflection of serous membrane, namely, that portion which is reflected over the inner surface of the fibrous coat of the sac, with its continuations over the outer surface of the walls of the heart, was now carefully examined. The first-named reflection was normal, the other dark in colour, particularly at certain parts, as, for instance, where it covers the left ventricle, and also the greater part of the right ventricle. Making a section through it, it could be easily raised from its muscular connexion, but no trace of active disease having existed was observable in its structure: its dark colour seemed to depend upon its being stained by the peculiar condition of the parts with which it was in apposition. Removing the heart from out of its sac, and placing it on the table, I was forcibly struck with its flaccid appearance: the walls of even the left ventricle fell in or became collapsed; but the right retained its convexity: on further investigation, I found this to depend upon a large coagulum of fibrin. The size of the organ being much larger than natural, and very flabby, contrasted strongly with the fresh, plump, elastic state of one in health.

The external surface of the whole organ differed also much in colour from that of one in a healthy condition: the left side approached to a black colour, with a few lighter spots here and there, giving to it a mottled aspect; the right side was in appearance the same, but not so extensively involved. This dark and mottled hue was almost confined to the ventricles, the auricles being of a deep modena red colour, without those grey spots. On making a section through the wall of the left ventricle in a longitudinal direction and examining the cut edges, black or a very dark coloured spots were perceptible, the centres of which were lighter in colour, and a fluid partaking of the character of pus oozed from them. The inferior part of the walls, and, in fact, the whole apex of the organ, was of a lighter colour, being of a greyish cast, and soft and friable. The cut surfaces fell together, not remaining open as we find they do when a section is made through the walls of a healthy heart.

The left ventricle was empty, but its lining membrane, with that of the auricle and bicuspid valves, was of a very dark red colour, which was found to depend partly upon the peculiar condition of the blood and partly on that of the parts over which it was reflected. On cutting through the wall of the right ventricle, similar marks of disease shewed themselves as on the left side, though not to so great an extent, neither was its lining membrane so intensely red. The right ventricle contained a large coagulum of fibrin (which was but slightly tinged in colour) extending from the apex of that cavity into the auriculo-ventricular opening, being somewhat entangled in the *chordæ tendineæ* of the tricuspid valves. Upon further examination of the muscular structure of the heart and its membranes, the most remarkable feature was the ease with which the bundles of fibres could be separated from each other. Although a single fasciculus could not be separated of any length, on account of its softened state, yet, *en masse*, separation was easily accomplished. It furnished a beautiful specimen for tracing the direction of the fibres of the heart. Fluid was also found of a darkish colour exuded into the connecting areolar tissue of the muscle. I have mentioned with what ease the pericardium could be detached from the outer surface of the heart, and the endocardium could with the same ease be separated from its muscular connexion. In stripping off this membrane, I observed that the foramina Thebesii seemed more like inflections of the endocardium extending for a short distance into the muscular walls—kind of cul-de-sacs—than the open mouths of veins, and many proved to be so by slitting them up, they having blind extremities.

Pathologists distinguish three forms of inflammation corresponding to the three structures of which the heart is made up; *Firstly*, inflammation of its outer investing membrane, which presents the same anatomical character as that of all serous membranes, and is attended with effusions of a variable nature, and susceptible of many transformations: this is called *pericarditis*.

Secondly: Endocarditis, or inflammation of the membrane lining the cavities of the heart, and continuous with that of the blood-vessels. The deep red colour of this membrane I noticed in the above case; but we are not to consider this, of itself, as a true sign

of inflammation, this being most likely dependent on the blood staining it. From the lungs being involved, decarbonization of the blood did not take place; and the effects of this diseased fluid exerting its influence on the nervous system, no doubt, produced the symptoms of suffocation or asphyxia mentioned by Mr. Austin. It is sometimes difficult to determine whether those abnormal hues met with in the heart and bloodvessels depend upon inflammation of the membrane or other causes. Even a healthy heart, having its ventricles, auricles, and vessels laid open and exposed for a few hours to the atmosphere, might present the bright scarlet colour which is sometimes mistaken for inflammation.

Thirdly: Inflammation of the muscular structure of the heart. This organ differs from that of muscle generally only as far as its function is concerned, and the small amount of cellular tissue entering into its structure; the arrangement of its fibres is also peculiar: this is called *carditis*, or *myocarditis*.

From the symptoms described in the above case, namely, the evidence of acute pain, shewn by the animal walking round his box, curving his tail, pawing with his fore feet, frequently lying down and as suddenly rising again; the sense of suffocation, and regurgitation of blood in the jugulars (I would ask, May not this last-named depend upon an arrestation of the flow of the blood into the right side of the heart, the veins becoming fuller from below upwards, thereby presenting the appearance of a retrograde current?); coupled with the following morbid changes observed in the structure of the heart, such as the serous infiltration into its cellular tissue, which exudation, particularly in the walls of the left ventricle, was mixed with the colouring matter of the blood; the lighter grey disorganization, with slight purulent infiltration; the loss of the integrity of the muscular fibres, partly through maceration in the infiltrated cellular connexion, and their assuming in some parts a dingy grey colour, more especially at the apex, and in other parts a dirty brown colour; and from the greater part of the heart's structure being very flabby and easily broken down, or compressible into a pulpy mass, I am induced to consider this a marked case of *myocarditis*.

Cases of Poisoning in the Horse with Arsenious Acid.

By Mr. J. Tombs, *M.R.C.V.S.*

My dear Sir, *Stratford-on-Avon. April* 16, 1849.

I have sent per rail the stomach and part of its contents, with the apex of the cœcum, and part of the liver of a mare which died on Friday last; likewise some medicine mixed with bean meal, all of which you will please to lay before the students at the meeting of our Association. It would be advisable for the Professors to examine the parts, and rivet the attention of the pupils to the same, since it may be of some importance to them when they embark in country practice, as the evil is extending amongst carters, viz. that of administering deleterious ingredients to the horses of their employers. The powder sent is a little left of that by which the horse in question was killed. Another horse died the day after this one; but I am analyzing his stomach, &c. in conjunction with an operative chemist; and the result of our labours I will communicate to you. You will perceive that the villous coat of the stomach, with that of the intestine, is extensively diseased, and in some places the suppurative process has taken place. From what is stated by one of the carters, the drugging system was commenced three weeks ago; but the fatal dose must have been given recently, as the animal appeared in good health, and was at work the day previous to her illness. The membranes of the brain were highly injected. I think the black sulphuret of antimony is the principal ingredient, but which most likely is mixed with arsenic.

A brief history of the case is as follows:—

The animal was a roan mare, five years old. She was observed to be ill at 6 A.M.: the bowels were seemingly constipated, and her abdomen slightly swollen; but soon after she purged a little; she then laid down and groaned, quickly got up, and ate and drank very sparingly. These symptoms continued until I saw her, at 7 P.M. I immediately told the owner she was poisoned, and the carter was at once accused of doing so. He stoutly denied it, and said he merely gave her some "black brimstone" three days ago. I was in attendance nearly two hours, during which time the pulse was imperceptible at the jaw; the heart beating 130 in a minute. When down she was in great pain, and after lying a short

time she would get up, eat and neigh, then become calm, hold down her head and sleep a few minutes, then lie down again, but not roll. These symptoms alternated until 10 P.M., when she died in the most excruciating agony. Before she was bled the brain was much affected. The medicines given consisted of opium to alleviate pain, ol. ricini to operate on the bowels, and a diuretic to act upon the kidneys.

On examination after death the stomach was found distended to excess with undigested food, and the alimentary canal inflamed throughout.

I am, dear Sir,
Your's, very truly.

To W. J. T. Morton, Esq.,
Royal Veterinary College, London.

Dear Sir, *Stratford-on-Avon, April* 20, 1849.

We have analyzed the stomach and part of the liver of the horse together; also a portion of the food taken out of the stomach that I sent you, and the remainder of the powder separately, in all of which we have found large quantities of arsenious acid to exist. You will please publish the case and the result of the analyzation in The Record. Doubtless, you will remember cases similar to these which I sent you some few years ago, when I was practising at Pershore, since both yourself and Mr. Bullock, the chemist of London, detected arsenious acid in the stomachs of the animals so maliciously poisoned.

I trust the discontinuance of the meetings of the Veterinary Medical Association is only for a short time, it being undoubtedly a most valuable institution to the profession, particularly the junior branches of it; and were I living in or near the metropolis I should frequently mingle in the debates.

I am, dear Sir,
Your's respectfully,
John Tombs.

To W. J. T. Morton, Esq.,
Royal Veterinary College, London.

Appearances of parts sent.—The coats of the stomach were thin and flabby, and very attenuated, particularly at the greater curvature, near to the pylorus. The anterior half of the internal lining membrane was healthy; a few bots were adhering to it near the margin. The greater part of the villous coat was intensely inflamed, and in some parts were spots of ulceration extending into the muscular tunic. For some distance around an intensely inflamed centre, a deep red blush pervaded the viscus, on which many very dark patches were perceptible, with several ecchymose spots; beyond this, the abnormal redness gradually lessened. The apex of the cœcum also presented a diseased appearance, it being redder than natural, and having several petechiæ on it, but there was no indication of loss of substance. One of the pieces of the liver was soft and pale, and easily broken down with the finger. The other was darker in colour and firmer to the feel, but withal it had an unhealthy appearance.

This is the second time Mr. Tombs has exposed the disgraceful practice of allowing carters and stable-men to administer drugs to horses for the purpose, as they say, of getting them into condition. In the "Proceedings of the Veterinary Medical Association" for 1840-41, page 127, will be found an account recorded by him of seven horses having been poisoned by arsenic. This love of "quackery" cannot be too severely denounced; and those who sanction it, sooner or later, find they have cause to regret it. A short time since the stomach of a horse was sent to us, which presented all the lesions attendant on a long-continued exhibition of the potassio-tartrate of antimony, and it was, on inquiry, ascertained that the groom was in the habit of giving his favourite nostrums to his master's horses. Unfortunately, we failed in demonstrating the existence of the suspected agent; but had the practitioner analyzed some of the contents of the stomach, probably there it would have been found. So many similar instances have fallen under our notice, that we are glad of the opportunity of again recording cases, the publication of which cannot fail to be instrumental in preventing the uneducated from trifling with the life and well-being of an animal so useful to man as the horse; every pretender believing himself proficient as any equine pathologist, and also competent to prescribe for the various ailments of the horse, or by the timely use of medicaments, of the action

of which he knows nothing, to keep him in a state of health, and, as some in their wisdom are pleased to think, even to improve it.—*Editors.*

Case of Scirrhous Uterus in a Mare, with Disease of the Omentum.

By Mr. W. Stanley, *M.R.C.V.S.*

Leamington Veterinary Infirmary,
May 2, 1849.

Dear Sirs,

In the autumn of last year I was called upon to attend a black pony, of the galloway breed, rising four years old, which evinced symptoms of colic, and for which I administered the usual remedies with success. For two or three weeks the animal appeared to go on well, and satisfactorily to perform her work. Afterwards, she was frequently attacked with colic, and which was as speedily relieved, so that in a few hours after she would be as well as usual, till one morning I was summoned in great haste, her owner stating that he did not think she would live till I arrived. I hurried off, but only to find the poor animal in a dying state: her pulse was indistinct at the jaw; and cold sweats, with heaving at the flanks, painful contractions of the abdominal muscles, and violent efforts to evacuate the bowels were present: she died within ten minutes after my arrival. Upon making a post-mortem examination, I found extensive peritoneal inflammation of long standing, extending along both walls of the abdomen and pelvis, accompanied with an effusion of sero-albuminous lymph. The omentum covering the stomach was highly inflamed, and in a state of gangrene. The peritoneum enveloping the whole of the viscera was perfectly healthy, with the exception of that portion covering the rectum within the pelvis; this was considerably thickened from chronic inflammation, which had also extended around both sides of the pelvis and the uterus, and was accompanied with effusion of the same kind of lymph, causing adhesion of the pelvic viscera; but the rectum itself was not diminished in caliber; there was no contraction of the gut, nor disease of its muscular

tunic. The uterus, as you will perceive, is in a cancerous or scirrhous state; and it being one of the first cases I ever met with, I have endeavoured to preserve it. The body of the uterus is completely changed into a scirrhous mass, the ovaria and appendages being free from disease. The animal was in my employer's possession only six weeks, and, with the exception of two or three weeks, she was frequently the subject of colicky pains. But, singular to say, the day before she died she was ridden to Coventry market and back, a distance of twenty miles, and carried the owner with the greatest ease, and without betraying any illness whatever. There was no other disease of any organ except what I have stated, the chylopoïetic viscera being as healthy as possible, and the animal looked well and fresh in condition.

Having detailed, as well as my memory will permit, the post-mortem appearances, I will now, in coming to a conclusion, give you my opinion as to the immediate cause of death. This I attribute to an acute attack of inflammation of the omentum covering the stomach, which I have said was almost mortified; this membrane being rendered very susceptible of inflammation from the diseased state of the uterus and peritoneum. Although the uterus was in a very diseased condition, I am of opinion the animal would have lived a longer time had it not have been for the inflammatory attack of the omentum. I come to this conclusion, as there was no contraction of the rectum, and the animal had freely evacuated the day before, and also the night of her last attack. As it regards the scirrhous state of the uterus, I do not consider it as the result of local or inflammatory action, but of a constitutional character *(sui generis)*, and that the peritoneal membrane was secondarily affected.

I believe this case to be one of rare occurrence; at least I have not seen it mentioned by any veterinary author. I have, therefore, thought its being recorded might prove not uninteresting to the profession. I have preserved the morbid parts in the following solution, 1℔ alum, ½℔ salt, 1 ½ gallon boiling soft water, which I think answers quite as well as spirits of wine.

Have you tried the scraping method of castration at the College? It is a very great improvement upon every other plan that has yet been adopted. I have done several animals of all ages, and can

confidently recommend it to the profession. I would enter more fully into particulars, but fear I have already tired your patience. I must, therefore, conclude, with wishing you every happiness.

Your's, &c.

To the Editors.

[In our short notices to Correspondents in the last number it will be observed that allusion is made to the "scraping method of castration" inquired into by Mr. Stanley, it having been adopted by our professional brethren in India. It has not been tried at the College, and we shall be obliged to Mr. Stanley for his description of the operation, and illustrative cases.

We also thank Mr. Stanley for the interesting morbid specimen. In the mare cancerous affection of the womb is rarely met with, as stated by him, but it is more common in the cow.]

A large Stone found in the Colon of a Horse.

By Mr. W. S. Wallis, *M.R.C.V.S.*

Halstead, Essex, Nov. 25th, 1848.

Early this morning I was called to attend a three year old cart colt, the property of Mr. F. C. Bridge, of Stisted, a few miles distant from this town, said to be in great pain and rolling about as if griped. On my arrival he was somewhat quieter, but soon became restless again, and manifested the ordinary symptoms of common colic. The pulse was full, and a little quickened: still there was at this time nothing in the case to excite alarm. The eye was almost natural, and during frequent intervals of ease he would eat and drink as if nothing were the matter; and the fæces and urine were of a healthy character. In this state he continued, with a trifling aggravation only of the symptoms, throughout the day and following night, and when I saw him the next morning (26th) there was no very material change, save that the fæces were partially coated with mucus, and voided in less quantities,

and the urine was of a bright brown colour. Gradually, however, in the course of this and the succeeding day, the case assumed a more serious and threatening aspect: the intermissions of pain were less frequent and of shorter duration, and although the paroxysms were not very violent, yet the anxious eye, and the almost incessant restlessness, together with a greatly accelerated pulse, a torpid state of the bowels, and the highly darkened colour of the urine, rendered the prognosis decidedly unfavourable. There was also now some tenderness about the body, and the nose, ears, and extremities were cold. All these symptoms continued to increase in intensity until he died the third night after the attack. Immediately after death the body became much swollen and tympanitic. The treatment consisted of venesection, the exhibition of cathartic antispasmodic medicines, fomentations and blisters applied externally to the abdomen, but all proved in vain.

Post-mortem appearances.—On laying open the abdomen it was evident that some of the viscera had been ruptured, as great quantities of ingesta were diffused over its internal surface and among the bowels. The colon no sooner presented itself than it at once explained the immediate cause of death: that part called the double colon was nearly black, and partly decomposed; here, too, was found to be the rupture, an opening three or four inches in diameter; and about eight inches anteriorly to *this,* within the bowel, was a stone (a white flint, clearly off the land, dirt being still in some of its cavities) weighing exactly a pound avoirdupois. Its form was a flattened oval, and its appearance indicated its having been in this situation some time. The colt had suffered from two or three slight attacks of colic within the previous month, but these subsided without any medical assistance except on one occasion, when he had administered to him an antispasmodic draught.

I cannot quite satisfy myself as to the cause of the rupture. Might not the presence of the stone, by keeping up, to a certain extent, constant irritation, and possibly producing an attenuation of the bowel, have induced an elimination of gas from the food, and this inordinate distention (prior to any illness being observed) have brought about the lesion? Or can you suggest a more philosophic and feasible explanation? It is, perhaps, somewhat remarkable, that throughout his sufferings the colt seemed anxious to take food whenever there was a temporary remission of the pain.

Up to the time of his death there was no tension of the body, but he looked thin and tucked up.

There is nothing in this case that would have led me to communicate it, but the extraordinary circumstance of so *large a stone of the kind being found in such a position.* I have never seen or heard of a similar case in the horse. Professor Simonds has reported the case of a pebble found in the ileum of a dog, in the "Transactions of the Association" for December 1842; but this I can scarcely regard as a parallel case. The symptoms, it will also be seen, were in many respects very dissimilar. How the stone could have got there I am utterly at a loss to conceive.

[We had an opportunity of seeing the stone removed by Mr. Wallis. It was precisely such as described by him; but we are equally at a loss with him to account for its finding its way into the intestines.]

Case of Strumous Tumours existing in a Cow.

By Mr. W. C. Sibbald, *M.R.C.V.S.*

My dear Sir, *Biggleswade, Feb.* 23, 1849.

I have this day forwarded to your address the lower part of the trachea, with the lungs, of a cow, which I have been in attendance upon for some time past. She was destroyed on Wednesday last. My opinion was first asked, as to whether she was labouring under pleuro-pneumonia or not, as that disease has lately been committing sad ravages in this neighbourhood. I ventured to assert that she was not; and I have now forwarded the morbid parts to you, that I may obtain your opinion, and whether, during the protracted period of her illness (two months), the abnormal appearances presented would supervene upon an attack of this epizootic. My own ideas are, that it is a case of tuberculous disease, similar to the one forwarded to the College some time since by my friend Mr. Dickins. I must add, that the whole length of the spine, inferiorly, was studded with small tumours, and at the commencement of the pelvic cavity there was an enormous cluster of them, bounded by the two large substances which I have sent with the

other parts (but unattached), and which, I think, are the ovaria. Each pleural cavity contained a considerable quantity of fluid.

If a detailed account of the case will be of any service to you, I will forward it.

The substance contained in the bottle was obtained as follows:—

I was called to see an eighteen-months-old heifer a short time since; and on my visit the day but one following, the owner told me that she had voided a quantity of "strings," as he called them, with her dung, and he produced the fæcal matter for my inspection: from it I took the contents of the bottle, which I send to you. At first sight I fancied they might be the intestines she had swallowed of some smaller animal; but then they would have been digested. I could not secure quite the whole of it. As decomposition had commenced, and the mass broke to pieces, I was obliged to put it into some spirits directly for its preservation. It is worthy of remark, that the contents are identical with the egesta of the heifer.

I have lately met with a case of ruptured stomach in the horse, as also of a longitudinal fracture of the os suffraginis: if the histories of these cases are of any service to you or the Association I will gladly send them; but really, under the stimulus given to observation of late years, cases which used to be considered novelties have become quite common.

I remain,

My dear Sirs,

Your's very truly.

P.S.—I forgot to say that the liver of the cow, although otherwise healthy, contained a number of small cysts filled with fluid (I suppose hydatids), and there was one in the muscular wall of the left ventricle of the heart.

Second Communication, from the same.

My dear Sir,—As it respects your query about the heifer, I have been waiting to hear whether she continued to go on well, and I have not the least doubt but she does, or I should have been consulted before this. She is upwards of five miles from me. When

I was first called upon to attend her, I was informed that the same morning she had had a violent rigor, which was followed by several profuse fluid alvine evacuations; and as I found symptoms of febrile disturbance present, four quarts of blood were abstracted, and a dose of linseed oil and tinct. opii administered. This was the whole of the medical treatment she received.

On the following morning she passed per anum the membranous substance I sent you, mixed with fæces; and on my visiting her the succeeding day I found her convalescent.

What I conceived to be an hydatid in the ventricle of the cow's heart was a sac about the size of a small walnut, with, apparently, a fibrinous lining, and filled with a limpid fluid. It so much resembled the sacs in the liver, that I thought them identical; but, perhaps, I have been wrong.

In the case of ruptured stomach, to which I alluded in my last, I may just remark, that no attempts to vomit were made; but after the patient had taken a diffusible stimulant in solution a spasmodic action of the gullet ensued, simulating hiccough, and which continued till death took place. I remain

Truly your's.

Case of Ruptured Heart of a Pony.

By the same.

My dear Sirs, *Biggleswade, March* 26, 1849.

I have forwarded to you this day the heart of a patient of mine. There appears to me to be a rupture at the upper part of the right auricle, extending into the anterior cava. This, although not a solitary instance, yet, from the rarity of its occurrence, I thought myself warranted in submitting it to your notice. I have passed two sutures through the sides of the opening, to prevent its possible extension during transit.

I was first in attendance upon the animal on the morning of Sunday, the 18th instant. He was an aged bay pony, about twelve hands high, and some time within the last twelve months had been driven so far and fast as to produce excessive exhaustion, and a subsequent illness, from which he had apparently recovered.

On the 15th, there being a deer uncarted before some hounds in this neighbourhood, he was taken to the meet, and, of course, given sundry short gallops, &c. On the 16th he was driven about twenty miles in harness, and on the morning of the 17th he was noticed to become suddenly indisposed, as evidenced by loss of appetite and violent purging. When I saw the animal the pulse was 66, with a steady beat at the heart, but it was not to be felt at the maxillary artery; the respiration was somewhat accelerated; the membrane of the nostrils of a dull leaden hue, with considerable discharge of mucus; the mouth was cool and moist, and the surface of the body and extremities cold. The patient was lying prostrate when I arrived, but I left him standing quietly, after having administered some medicine, and given various directions tending to increase his comfort. I saw him no more alive, for I confess I did not anticipate a fatal termination of the case in so short a space of time. I was informed that he continued standing several hours after my departure, then fell down, and expired in the early part of the night. On opening the carcass the only viscera found diseased were the right kidney, which was so softened as easily to be crushed with the finger, and the heart; indeed, I was puzzled at first to account for the death of my patient, until, as the man who opened the body was laying hold of the heart and lungs to remove them from the chest, I saw a quantity of blood in the right pleural cavity. The right auricle and ventricle were completely filled with a diffluent clot of black blood; the left cavities partially so, and the lining membrane was deeply stained. I will not venture any comments, but subscribe myself

Truly your's.

Professor Morton.

[At page 143 and 229 of the 3d volume of this Journal will be found recorded cases analogous to the first-named disease in a cow to that communicated by Mr. Sibbald. He was, therefore, quite right in his diagnosis: it was not one of pleuro-pneumonia.

The matter voided by the heifer was tubular in form, and about sixty feet in length: it enclosed portions of the contents of the intestines in a semi-fluid state. Analysis proved it to consist principally of fibrin.

The existence of hydatids in the walls of the heart we believe

to be a very unusual occurrence; yet we must infer from the description Mr. Sibbald has given, that it was a parasite of this kind.

In the heart existed a rupture, which extended from the apex of the right auricle, directly upwards, towards the anterior cavæ: it appeared to be about two inches and a half in length. The walls of the auricle were considerably attenuated, and a portion of it seemed to be merely covered with membrane. Those of the right ventricle were also extremely thin and flaccid, while those of the left appeared to be about the ordinary thickness when compared with the size of the heart, which was very small.]

Removal of a large Hæmorrhagic Tumour from the Penis of a Bull.

By Mr. J. J. Hazell, *M.R.C.V.S.*

Dear Sirs, *Great Bromley, April* 10, 1849.

I have thought the following brief cases, since they are not of every day occurrence, might possess some little to interest your readers. I give them without entering into any details, as this would be a useless occupancy of your pages; but having from time to time derived much information from the perusal of your Journal, I have no desire to resemble the sandy desert, which receives the fertilizing shower and gives nothing in return, nor the horse-leech, whose continual cry is "Give, give."

I am, Sirs,

To the Editors, &c. Respectfully yours.

On the 3d of last month I was requested to look at a bull reported to have an enlargement on the end of his penis, and that to so great an extent as to cause complete paraphymosis. On seeing it, I was at once convinced that its extirpation was the only effectual remedy. This I communicated to the owner, but he hesitated to give his consent to the operation being performed till the 7th of the month, when, accompanied by a medical friend, we proceeded to operate as follows. The animal being cast and

properly secured, a whalebone staff was passed up the penis, and the organ grasped firmly with a pair of common castrating clams. With the actual cautery the whole mass of disease was removed; it weighed 5 lbs. 2 oz., was adherent to the glans penis, and in its nature resembled fungus hæmatodes. The bloodvessels which supplied it—and there were several—I secured by ligatures, and, having sprinkled over the exposed surface some pulverized resin, I gently loosened the clams, when I perceived an escape of blood to take place from an artery: this was immediately closed, after which the animal was allowed to get up, and nothing more was done to him.

The owner has since informed me, that before the operation he had in vain tried to fatten the animal: he is now thriving fast.

A Vascular Tumour removed from the Os Uteri of a Cow.

By the same.

On the 17th of last month I was desired by a small farmer to look at a cow of his, he stating that she had calved a short time before and the membranes had been thrown off naturally; but still she continued to strain as much as before parturition had taken place. The animal's general health was apparently good; but, on examination *per vaginam*, I found a tumour of some size attached to the superior part of the os uteri. I withdrew it as far as I could within the vaginal track, when a quantity of blood flowed from it. By the aid of an assistant, I now proceeded to pass a ligature of waxed thread around its base, it being pedunculated, and ordered this to be tightened every day. Afterwards I gave a laxative combined with a nauseant, to lessen the excitement of the system.

On the following day the tumour had assumed a livid hue, and, the bowels not having responded, I repeated the laxative draught.

On the 21st ult. the tumour sloughed off: the parts were subsequently dressed with a weak solution of the sulphate of zinc, and all appears to be going on favourably.

Cases of Pneumonic Influenza.

By Mr. J. Jekyll, *M.R.C.V.S.*

Newland-street, Lincoln.

Dear Sirs,—Having thought that the history of a peculiar form of an enzootic disease which has lately fallen under my professional notice would prove of interest to the profession, I with much pleasure send it you for insertion in your Journal.

I beg to remain,

Very respectfully your's.

To the Editors, &c.

The horses attacked were the property of J. Marshall, Esq., of Riseholm, near Lincoln. I was called to one case on the 19th of January 1848, to two on the 14th of February, and to one on the 22d of the same month; to two on the 8th of March, to one on the 20th, to another on the 23d, and to one on the 24th of that month. The 15th of April supplied the next case, and the 26th of May presented one more, which was followed by another on the 4th of July. The greater portion of the cart-horses of the establishment had now been affected; and the disease not having given any further manifestation of its presence for two months, we thought it had "winged its way to other climes." Having this impression, four cart-horses were purchased, stabled, and worked with others that had not been affected, and also with some that were convalescent. Three of the newly-purchased horses, however, contracted the malady; one on the 25th of September, one on the 2d of October, and one on the following day. One of the horses that had been most severely attacked by the disease in the spring suffered, on the 18th of the latter named month, a slight recurrence of it. I have been thus particular in stating the time at which each horse was attacked, that it might be clearly seen that the action of the malady did not depend upon any particular season of the year or peculiar state of the weather.

In describing the symptoms and treatment I shall not attempt to occupy a lengthened space in your valuable Journal by a routine recital of symptoms and treatment as they occurred in each individual case, but shall rather confine myself as much as possible to

a general description, also making note of any peculiarities as they shewed themselves. In fourteen cases the symptoms were such as are usually met with in pneumonia. In the remaining two the symptoms were very mild, the pulse never exceeding sixty beats in the minute; the membranes were injected; the breathing a little accelerated; the extremities rather cold; the coat rough; the appetite not much impaired; and the fæces and urine natural. These two cases readily yielded to mild treatment; not so, however, those I have next to describe. In some few of them the pulse ranged from eighty to one hundred and thirty beats in the minute, and in the three which died even higher. In about half of them the pulse did not rise higher than ninety. In the early stage it was full and firm, and in the latter small and weak. The mucous membranes were injected; some of them much so; while in one strange exception they were extremely blanched. I could not, in any case, detect any thing like a yellowness of the mucous tissues. The extremities were alternately hot and cold. In four cases each horse had three legs hot and one cold, or three cold and one hot. In these the pulse was hard, shewing the pleura to be involved; yet pressure at the intercostal spaces did not give pain, and there was an absence of the peculiar breathing usually present in pleurisy. The respiration was quick, and in some few cases quick and laboured. In the worst cases only, the digestive canal was implicated. There was either a tendency to constipation or to diarrhœa; each state, however, readily yielded to the usual mild remedies. In one case spasm of the diaphragm preceded the death of the animal. In two cases the brain was evidently affected; as in one, which terminated fatally, the eyes were closed, and the animal would walk against any object that might be in his way, and he would also bite in different directions, may I say, at *imaginary* objects? In another case, the inflammation changed from the lungs to the intestines, and thence to the kidneys. This was the third and last fatal case. This horse was very extensively blistered, and it is possible that some of the cantharidine was taken up and carried to the kidneys. In two cases laminitis supervened.

Treatment.—In the early stage bleeding acted very powerfully and very beneficially. I abstracted as much as fourteen quarts at once, and with the very best effect. Six of the horses were bled twice, and two of the six were bled a third time. Some will think I used the lancet too freely. My answer is, my patients were

always relieved by it, and the very large quantities taken (and that from a large orifice) prove there was a great tolerance for blood-letting; and, again, the three horses that died were bled only once. In the latter stages, however, bleeding was altogether inadmissible. Counter-irritation was resorted to very freely; but sedatives were given with caution: the ext. belladonnæ was the principal agent of this class. Some of the horses would take ʒss doses twice a-day with good effect, while others would only take a ℈j once a-day, or once in two or three days. Small doses of the antim. pot. tart. were also occasionally given with benefit. Some horses derived great relief from the exhibition of a ball composed of pulv. ipecacuanha ʒj, pulv. opii ʒss, and hyd. chlorid. ʒss, given every night, or every other night, according to the urgency of the case. I have seen the "harsh coat" become sleek and moist under the influence of this compound, proving that it had a decided action on the skin. I think no one will deny the value of an agent that will increase the cutaneous transpiration; since it must be self-evident that, if more of the fluids of the body are eliminated by the skin, more must leave the inward parts to supply their place, and, if so, any internal part containing an excess must be relieved. The spirit. æth. nit. proved a valuable adjunct in every stage; and almost as much may be said of the liq. ammon. acet. Aloes in small and frequent doses kept the egesta in a soluble condition.

Other compounds were also used by me; for, while I remembered the nature and tendencies of the disease, I endeavoured as much as possible to attack the symptoms as they presented themselves, rather than to give any particular medicine simply because I had given it with benefit in the preceding case. Perhaps some may think that, in thus acting, I displayed little wisdom; but invariably to prescribe the same medicine for the same disease, however in different cases its indications may vary, evinces, I conceive, a still greater lack of knowledge.

Although I come to stable-management *last*, it is not *least* in importance. As soon as an animal was seen to be affected he was moved to a loose box, as well ventilated as its structure would admit of; his body well clothed and his legs wrapped with bandages, and directions given that when any leg became cold the bandage was to be taken off, the limb rubbed until warm, and the bandage re-applied. If hand-rubbing was insufficient to restore warmth

to the extremities, some stimulant was applied. When the animal would eat, bran and carrots were allowed in small quantities, or green food; the quantity being gradually increased as he improved in health.

During the recovery of the two horses last attacked, the proprietor determined to have the benefit of the opinion of one of the College authorities: accordingly I wrote to Professor Spooner, and he attended with his usual promptitude. The cases were now too far recovered to afford any just idea as to the nature and importance of the disease. The Professor inspected both the horses and stables, and suggested some very important alterations in the ventilation of the latter, which have since been carried out both with benefit to the horses and satisfaction to the owner.

With propriety it may be asked, Is this disease contagious? I think it is, and I will give the facts whence I deduce this inference, and then the reader shall judge for himself. In one stable containing five horses, all were attacked. In one other stable containing seven horses, five were the subjects of the disease. The remainder that suffered under the malady were such as had been in the two stables mentioned, or in the crew adjoining, or in some box, or near to some box, which had been the recipient of an affected animal. Two cases occurred after the Professor had favoured us with his presence; one, a young colt attacked soon after purchase, and one an ass that had been on the grounds a long time, and was unfortunately taken from his pasture and located in the crew, where in a week he presented decided symptoms of the same affection. Both colt and ass recovered.

But whether the disease was contagious or not, I deemed it advisable to act under the impression that it was, until proved otherwise. I had the horses separated as well as the form of the premises would permit; the stables well washed with hot water and soap, and then fumigated with chlorine gas. Some time after this, I tried Sir W. Burnett's disinfecting liquid, then lime-washed every part of the building; all this without in any way retarding the progress of the disease. So much for the boasted disinfectants. They are powerful deodorizers, and by decomposing noxious gases I doubt not but that they lessen the prevalence and diminish the virulence of some forms of disease; but I very much fear that they have no specific power of decomposing infection or

miasm. I think there will be a wide distinction drawn between the terms deodorizer and disinfectant.

With a few remarks on the nature of the malady, I will close. I think it is primarily a disease of the nervous system: First, because, in opening those horses that died, I found inflammation of the lungs, but not nearly to the extent that I usually find when death is caused entirely by that disease. Secondly, the apparent ease with which the disease shifted from place to place. Thirdly, the undoubted affection of the brain in two cases. Fourthly, the very great tolerance for blood-letting, &c. Fifthly, the decided inability to bear the exhibition of the ordinary doses of sedative medicine, and in some cases of any. All which indicate, I believe, primary derangement in function of the nervous tissues.

Case of Open Parotid Duct of a Horse successfully treated with Collodion.

By Mr. T. W. Gowing, *M.R.C.V.S.*

Dear Sirs,

According to promise, I forward to you a case of opened parotid duct of a horse successfully treated by me with collodion. The animal was the property of a gentleman residing at Haverstock Hill. On January 20th, I was requested to examine the horse for lameness in the off fore foot, which had come on suddenly. After a careful inspection, I gave it as my opinion that there was some injury between the articulating surfaces of the os-coronæ and the os-suffraginis, either from concussion or ligamentous strain, and that the cure would be likely to prove both long and tedious. The usual antiphlogistic treatment was resorted to, followed by cold salt-water baths, and afterwards blisters were applied. Under such treatment the patient was making fast progress towards recovery, walking sound, but shewing lameness in the trot; I, therefore, recommended longer rest, with friction to the legs and cold bandages. I did not see the horse again for some time, until, in fact, I was hastily summoned to look at a swelling or enlargement upon the left side of the face near the lower jaw, and which

was stated to have burst, as it was constantly discharging a fluid. Upon my arrival it was pointed out to me by the owner, who said he considered it was a good thing that it discharged so freely, as the swelling would quickly become reduced. As soon, however, as I saw the situation of the injury, I told him that, so far from this being the case, it was an occurrence of a serious nature, and a worse affair, if any thing, than the lameness. I then made him acquainted with the character of the lesion, and told him the difficulty we had to encounter in the treatment of such cases. The proprietor wished to know, as I considered it a serious case, what it was I intended to do. I said I should content myself by sending an astringent wash for present use, and, after having given the subject more thought, determine on the treatment best to be adopted.

Reflecting on the case the same evening, and passing in review the several agents employed and the methods usually resorted to close the opening, and these oftentimes without any very happy result, I was almost in despair of arriving at any definite decision; when the newly-discovered adhesive agent collodion came to my mind, and I at once determined to put it to the test, it being now the third day since I first saw the case, the duct having been open altogether a week. Visiting my patient, I desired the groom to offer him some corn, so that we might be enabled to see the nature and quantity of the secretion. Having caught some of the saliva in my hand as it flowed down the cheek, I found it to be limpid and clear, of a pale straw colour, and considerable in quantity; occasionally it was ejected with much force, especially during the act of mastication. Having thus fully satisfied myself, I requested that all food should be withheld, and on the following morning, finding that a scab existed over the opening in the duct, I allowed it to remain, very carefully clipped off the hair, as close as possible, about the size of a half-crown piece, and then applied the collodion over and around the opening by means of a small brush. I now proceeded to cover the spot with some dry cotton-wool, shredded very fine, and again applied the collodion. Thus layer after layer was put on, until I had placed upon the opening eight or nine layers of the agent. The horse was now ordered to be kept fasting for some time, and to be watched, that the application might not be displaced. I saw him the next day; he was feeding well, the agent firmly adherent, and no discharge what-

ever had taken place. I continued to see my patient for four or five days, in case any thing should occur; but, the dry collodion being still adherent, at the end of the fifth day I told the groom I should not see the horse for one week, and, when I again saw him, the collodion and cotton had been cast off by the growth of the hair; a sound cicatrix had formed, and the saliva was flowing through its natural conduit into the mouth. You may be sure that I was well pleased with this result, and, presuming this to be a case of interest, I beg to lay it before the readers of THE VETERINARY RECORD.

I am, dear Sirs,

Your's very truly.

P.S.—I have sent to you the cast-off cotton with the scab attached.

To the Editors, &c.

[The above case calls for no comment: it speaks for itself. Mr. Gowing manifested much judgment in having recourse to a new, and now without question proved to be an extremely valuable, therapeutic agent; and this instance of closure of an open parotid duct will take its place among the many proofs of the value of surgical skill when applied to the various ills which even horse-flesh is heir to. It is another assurance given of the advance that is taking place among us.]

CASE OF GASTRO-ENTERITIS IN THE HORSE, FOLLOWED BY RUPTURE OF THE STOMACH.

By the same.

I WAS requested on Sunday morning, eleven o'clock, A.M., to visit a roan horse, the property of Mr. Brown, Camden-town. The man stated that he had some exceeding unpleasant symptoms about him, such as restlessness, pawing, and a disposition to lie down. Being engaged at the time, I desired the man to inform his master that I would be with him almost immediately, but shortly afterwards the horse was brought to my infirmary. After standing for a short time, I found the pulse was rather accelerated,

and the visible mucous membranes of a natural colour; but the animal soon shewed the symptoms described by the man, which being indicative of spasm of the bowels, an antispasmodic draught was given, after which the horse was led home. My friend Mr. Varnell being present at the time, I stated to him that it was my opinion the case was one of gastric irritation, and he concurred with me, but, of course, what would be the result neither of us could anticipate. I visited my patient in an hour afterwards, and, finding the symptoms continued unmitigated, I ordered another draught containing an opiate combined with an antispasmodic, adding a full dose of cathartic medicine; this was followed by an enema, and he was seen by me and Mr. Varnell again, when, the symptoms not being more urgent, I deemed it advisable to leave him for a time, without adopting any further treatment.

At three o'clock, however, the unfavourable symptoms had become considerably increased: the pulse was quicker, the membranes injected, and the respiration laboured; profuse perspiration covered the body; the animal pawed, laid down, and suddenly rose again, looked round at his side with an anxious expression of countenance, and there was a peculiar and frequent turning up of the upper lip, which, in my opinion, is a true and characteristic symptom of abdominal disease. He was bled to the amount of four or five quarts, another opiate draught given, and enemata ordered to be still continued, the bowels not having responded. I saw him again in two hours, and, the symptoms being as urgent as ever, the opiate draught was repeated, and hot fomentations directed to be applied to the abdomen. I visited him again three hours after, when I found the pulse considerably quickened, smaller in volume, and wiry; the mucous membranes more heightened in colour; the mouth hot; the pain continuous, and, in fact, all the symptoms much aggravated. I bled again to the amount of five quarts, applied a sinapism containing water of ammonia to the abdominal region, and gave pulv. opii ʒij, calomel ʒj, suspended in a small portion of the ol. lini, and ordered a man to stay with him for the night, directing him to repeat the simple enema every four hours, and left a drachm dose of opium with half a drachm of calomel to be repeated every three hours. I, however, visited my patient again before I retired to rest, when a tobacco-smoke enema was given, which caused the evacuation of two or three

balls of hardened fæces encoated with mucus. I saw him early on Monday morning, when my assistant informed me that there had been no mitigation of his sufferings during the night: the dose of calomel and opium was repeated, and also the counter-irritation to the abdomen.

I now gave it as my opinion that the case was a hopeless one; the pulse being exceedingly quick and thready; the eye partially amaurotic; the whole surface of the body bedewed with profuse perspiration; the animal constantly lying down and suddenly rising again: and as the remedial measures resorted to had not in the least mitigated his sufferings, from this period I did not think it necessary to administer to him any thing more in the shape of medicine, simply directing the man to give him gruel at intervals, and repeat the enemas.

Mr. Varnell being with me on Monday evening, I asked him to see the horse again; which having done, he said that there could be no question but that the case was originally one of gastric irritation, and that it was more than probable we should, upon a post-mortem examination, find the stomach ruptured, but at what time that lesion had taken place was uncertain. I felt satisfied that the viscus was entire during the former part of my treatment. I have sent you the stomach with a portion of the colon.

A bushel basketful of oats, with clover chaff, and meadow hay and beans, was given to the horse for his morning's meal; and half a bushel of carrots afterwards.

I am, faithfully your's.

1, *Stucley-terrace.*

[From so large an amount of food having been given, it is not at all surprising that the stomach should have been much distended; its coats also were very thin. A rupture of the viscus, and that to some extent, had taken place at the inferior part of the large curvature, near the pylorus. Doubtless this had occurred from a sudden fall during the latter part of the attack, when, the stomach being thus gorged, the tunics were unable to resist the pressure made against them, so that Mr. Gowing was right in his diagnosis. The intestine was much inflamed, its mucous lining membrane being nearly black.]

Case of Intussusception of the Colon, and Protrusion of it through the Sphincter Ani, during Parturition.

By Mr. R. Gray, *M.R.C.V.S.*

Dear Sir, *Smeeth, May* 2, 1849.

On the 11th ult., shortly before five o'clock A.M., I was called to see a cart mare which was unable to foal. The information I obtained from the carter was, that, when he got up about three o'clock, the animal was foaling, and she had been straining violently from that time till now, and that the intestines came down, which they had been endeavouring to return, just previous to their sending for me.

I found her in a very unsuitable place, it being a bullock shed, with just sufficient room for her to move round. I observed the intestines hanging down quite to her hocks, and that she had not foaled. Seeing the sad state in which the animal was, I at once advised the owner to have her destroyed, but he would not consent; consequently, I first proceeded to extract the foal, which I found lying upon its back; and, having accomplished this, I had procured for me a bucket of warm water, and well washed the protruding intestine: it was a portion of the single colon, and was lacerated to the extent of about a foot. I also observed the mesocolon was very much torn. As I anticipated, all I could do was of no avail: the poor animal lingered on, struggling violently, until about eight o'clock, when she breathed her last. I had frequently, during the three hours I was with her, administered the ethereal tincture of opium, but it appeared to have but very little effect.

Wishing to see the extent of the injury, I opened her, when I found another rent in the same intestine, close to the double colon, and to nearly the same extent. The whole of the abdominal cavity was filled with blood. I carefully examined the bloodvessels, and discovered the emulgent vein on the near side to be ruptured, in common with those of the mesocolon. The intestines generally presented a very healthy aspect, and I was told that the mare never had any thing the matter with her before.

Believe me to remain,

Your's respectfully.

To W. J. T. Morton, Esq.

Case of Disease in the Heart of a Cow arising from a Pin having become lodged in its Parietes.

By Mr. G. Murray, *V.S.*

Sir, *Penrice, March* 17, 1849.

I have taken the liberty of sending you the following case, which, from its features, I believe to be not of every-day occurrence.

On the 15th of January last I went by the request of Mr. Wm. Taylor, of Cheriton, to see a four-year-old cow belonging to him that was not in thriving condition, and had been refusing her food for a month or six weeks previous. The following are the symptoms that presented themselves when I saw her: She was continually making a moaning noise, as if in considerable pain; the roots of her horns were unnaturally hot; the muzzle rather dry; visible mucous membranes slightly injected; breathing very much oppressed; the jugular and all the superficial veins enormously distended; the pulse imperceptible behind the elbow and at the jaw; the fæces small in quantity, but natural as to consistence. By auscultation, I could not detect the least respiratory murmur in the lungs. She seemed more inclined to lie down than to be in a standing posture, and when down appeared pretty easy, but still she made that grunting noise in breathing.

I at once determined on bleeding her, and so full and hard were the jugular veins, that I bled her with perfect ease without either cording or otherwise stopping them. The instant I struck the fleam the blood spurted out to the distance of seven or eight yards, and continued flowing in a free stream. After abstracting five quarts the animal began to get faint, and even then I was obliged to put two pins in the cut to keep in the blood; so great was the force with which it was expelled.

I could feel the beat of the heart after this, but not distinct enough to take the pulse. I next gave her a draught consisting of mag. sulph. ℔j, sulphur ℔ss, zingib. pulv. ʒiij, and left her for the night, with a request that if she got worse they would let me know. The distance from Penrice to Cheriton is about six miles.

I saw no more of her until the 22d, when Mr. Taylor came to me again. He said the drench never opened her bowels, but that she ate a little better after what had been done to her, but was

now fallen off in her appetite worse than ever. I went back with Mr. Taylor, and found her precisely the same as on my first visit. I bled her again to the amount of four quarts, and gave her another active purgative. I also told the attendant to drench her four or five times a-day with gruel.

Jan. 25th, Mr. Taylor came to me again, and told me the animal's dewlap being very much swollen, he had struck a fleam into it, and a great quantity of water ran out. The physic, he stated, merely relaxed her bowels about as much as fresh grass would, and she would not eat any thing.

On the 26th I went to see her, but she died the night before. Mr. Taylor told me that she appeared to be dying as she stood, for after she fell she never moved. Unfortunately they had buried her before I got there, consequently I saw nothing but the heart, which was kept back for my inspection. And this, to my astonishment, was completely enveloped in a kind of ossific matter, more particularly the ventricles. Some of this ossific matter, if it can be called such (but of which I have not the slightest doubt, the heart presenting the appearance of miniature rock-work), was three-quarters of an inch in thickness, of an earthy-looking colour, and a rough granulated appearance, and so brittle that I could crumble it to pieces with my thumb and finger. In the parietes of the right ventricle there was found a brass pin without a head, three inches in length, of which about half an inch was outside the pericardium, and the remaining portion in the middle and anterior part of the parietes of the ventricle. Its direction was obliquely from above downwards and backwards towards the apex. It had caused an abscess to form about two inches and a half in length, and about an inch wide. The interior of the heart had a more healthy appearance than could have been supposed. The chest, they told me, was quite full of water, and that the lungs looked natural; but there were several spots of mortification on different parts of the thorax. There was also a dark spot on the inferior part of the œsophagus immediately above the pin.

These are all the particulars of this interesting case I have been able to collect. I remain, Sir,

Your's respectfully.

To Professor Simonds.

Royal Veterinary College.

5th April, 1849.

A FULL meeting of the Students of this Institution took place in the Theatre this evening, to present to Professor Spooner a testimonial expressive of their esteem and gratitude. It consisted of a massive and elegantly chased silver snuff-box, on the lid of which was engraved an appropriate inscription. Mr. Gamgee was delegated to present the same, who spoke as follows :—

Gentlemen,

Admitting as an axiom of incontrovertible truth, that man is a social being, and that upon every member of the human race the duty is incumbent of promoting the interests of his fellow man, it follows as a necessary consequence that, where kindness, aid, and protection, have been afforded, each is morally bound to express the feelings which are thereby awakened in his bosom, in order to perfect the social compact by the manifestation of the noblest sentiments that emanate from the human mind—sincerity, reciprocal esteem, and indelible gratitude. In the fulfilment of this object it is my duty, indeed, I may say, honour, to be the interpreter to you, Professor Spooner, of the unanimous feeling of gratitude and respect entertained by my fellow-students for the kindness which you have at all times shewn them, and for the knowledge with which you have ever laboured to endow their minds. Well am I convinced that it is quite sufficient merely to remind you, Gentlemen, that Mr. Spooner is the Lecturer on the Anatomy, Physiology, and Pathology of the Horse in this Institution, to impress you with a conviction of the importance of the duties that devolve upon that gentleman; likewise of the advantage you derive from the manner in which he discharges those duties, and consequently with the moral debt of obligation you owe to him. If, on these topics, I for a few moments attempt to expatiate, I am actuated only by the desire of informing the distinguished teacher of the grateful feelings which we, as the taught, entertain towards him.

If the science of anatomy be regarded as one of the most noble divisions of knowledge which it falls to the lot of man to cultivate, since it discloses the complex, beautiful, and economical arrangement of the thousand parts which unite to form the most sublime

piece of mechanism existing in the Creation, namely, the animal organism, none surely will deny the importance of a perfect acquaintance with that science to the practitioner of veterinary surgery. If proof of this statement be required, look at the general structure of an animal; the bones, the passive organs of locomotion, are so related to each other as to be put in activity by the muscles, whose expended principle, as the generators of force, necessarily demands reparative material, which in the form of blood is propelled by the central organ, the heart, through the wondrous web-work of vascular ramifications; and, lastly, those various systems are reciprocally connected through the medium of numberless nerves, which unite the most distant parts under the influence of the nervous centres, and act as conductors of the mandates of the will, and of the centripetal and centrifugal impressions of reflex actions; by all of which the animal organism is maintained in active life, and placed in relation with the external world.

As the common destiny of our fallen nature, those complicated structures are liable to injury and disease. Whether the seat of the injuries be the hard or the soft textures—whether, during the process of repair, they require the watchfulness of the surgeon on Nature's efforts, or his interference as a reliever of disaster or a compensator of defect—it must be apparent to all that an intimate familiarity with anatomy is indispensable to the veterinary surgeon.

Referring to physiology, it is impossible fully to express the advantages to be derived from the study thereof. To the philosophic mind, whose aim it is to investigate the all-wise and never erring laws of Nature, this science displays the perfect harmony in which the numerous organs and structures of the animal frame act together in concert for the attainment of one final object, the maintenance of life. To the scientific rural economist the principles of physiology are of indubitable value, in illustrating the circumstances requisite for the proper performance of those functions on which the development of the animal organism, and the success in the improvement of the breed of animals, chiefly depends.

But, above all, to the veterinary pathologist physiology is of paramount importance. Only by a perfect knowledge of its principles can he take cognizance of deviations from a state of health, prognosticate as to their final issue, and interfere so as to restore

to their normal state any deviation that has taken place. After these remarks, it would be futile to attempt to argue the value of a rational system of veterinary pathology, to the cultivation of which Professor Spooner has so long and so successfully devoted himself; gleaning in the wide field of scientific research that experience which daily enables him to support by facts his ingenious views both for the elucidation and treatment of disease.

Casting a backward glance on these important topics, the thought must flash vividly across the minds of all present, that it is almost impossible within the brief period of a sessional course to do common justice to so vast an amount of matter of such immense importance. While, therefore, the difficulty of the task which Professor Spooner has undertaken is obvious to all, it is equally as clear that from the laborious duty devolving upon him he does not shrink, but devotes his time, his talents, nay his very life, to your instruction; and this should constitute the most forcible of all appeals to your continued gratitude.

But, Gentlemen, we are not assembled here simply to express in words our thankfulness for benefits already received, but also to add a link to that chain which, in future years, may bind us as grateful pupils to the Professor who instructed us in our youth. It is an unpleasant reflection, but one of which the mind cannot divest itself, that many of us are about entering into a profession whose members are manifestly divided by a party spirit, if not by a love of contest. Let us not tread the path of those who, forgetful that within these walls they imbibed the principles that have guided them in their professional career, pretend to make improvements by demolishing all that is sacred, because memorable, of the past; but, imbued with the maxim "Vis unita fortior," let us follow in the track of our worthy Professor and his colleagues, who, while holding out the olive branch of peace, have ever preserved within this institution, and that inviolate, the real interests of the profession, namely, a sound system of scientific instruction. Whilst, however, we follow in the path of peace, let us, grateful for the past and hopeful for the future, not forget that "time is on the wing;" that inactivity is equivalent to defeat; and that in the advancement of knowledge, by extending the plan of education, the veterinary profession can alone be rendered a body well deserving of their country, because it is composed of men,

whose only object is, by arduous study and untiring endeavours, to promote man's welfare by alleviating the sufferings of his domesticated servants taken by him from the brute creation.

In conclusion, Sir, permit me to reiterate our expressions of gratitude for the earnestness you have so long displayed on behalf of the Students of this College; and, admitting that words given utterance to by a mortal tongue are but a feeble proof of the sincerity of the mind, yet asserting, in the name of all my fellow students, the determination of not flinching from the performance of those duties which alone can render us useful members of a scientific body, I sincerely trust that for a long time to come the barque in which our common interests are launched may be steered through the ocean of time by you, our distinguished Professor, who for many years have been placed at its helm: finally, that, as the reward of a life devoted to the communication of knowledge to a numerous class, it may long fall to your lot to enjoy health, happiness, and distinguished honour.

With this token of respect in the form of a silver box, which I have now the gratification to beg your acceptance of, I have the pleasure to add a scroll, to which all the Students present, and several others, have with avidity affixed their names.

"Royal Veterinary College,

London, April 1848.

To Charles Spooner, *Esq.*,

Professor of Anatomy, Physiology, and Pathology of the Horse.

Sir,—Actuated by feelings of respect and gratitude, we, the Pupils of the Royal Veterinary College, cherish a hope that this testimonial of our esteem may be accepted by you, not as a recompense for the benefits which, as a talented teacher you have conferred upon us, but as a token of the deep sense of obligation with which we are impressed by your endeavours on our behalf.

That you may long live in the full enjoyment of vigour of mind and of body, and with renewed energy devote your talents to the advancement of veterinary science, and favour by your protection the development of those branches of knowledge which are indis-

pensable to the completion of a veterinary education of which you have so long been a strenuous supporter, is the ardent wish of

Your grateful Pupils and
Obliged servants.

COMMITTEE.

Joseph Sampson Gamgee, *Chairman.*

James Wright	J. V. D. Brennan
William East	John Yates
John D. Barford	Richard Barker.

Alfred J. Shorten, *Treasurer.* Richd. S. Blake, *Secretary.*"

(The signatures of the Pupils followed.)

After the applause had subsided, Professor Spooner rose and said,

Mr. Gamgee and Gentlemen, in accepting this kind and munificent token of your esteem, believe me when I tell you that my mind is fully imbued with those sentiments of gratitude which you have a right to expect from me on such an occasion as this; and if there ever was a time when I could justly say that the feelings of my heart were such as to deny me the power of utterance, I may employ such language to express my position on this occasion. But, Gentlemen, I will say plainly that I thank you, I thank you most sincerely; and this, I apprehend, you will accept as an acknowledgment of the high honour which you have been pleased to confer upon me.

Gentlemen, I have had the honour of being a teacher in this Institution now for a period of more than ten years, and I have been a teacher in veterinary science for a period extending over nearly twenty years. During this time, of course, I have had many hundred pupils, and I may confidently state that I can now class by far the majority of them among my esteemed and confiding friends.

If my exertions have given you satisfaction, be assured that I am delighted that such has been the case. I have at all times endeavoured to perform my duty, but I nevertheless fear that, on many occasions, I have failed to do so to the extent which you, as pupils, have a right to expect from me. Yet, where I have failed, you must consider that it has been in consequence of incapability rather than of a lack of zeal. I shall continue to exert myself to the utmost for the advancement of the veterinary science, in the

pursuit of which I have at all times felt a pleasure; and I think, that, in order to attain an object so much to be desired, it is most important that the efforts of the Teachers should be aided by the members of the profession as a body. We should be united, and should endeavour, combinedly, to exalt ourselves in the estimation of the public; and thereby to obtain that station in society which, taking into consideration the nature of our pursuits, we have a right to expect.

Again allow me to express to you my most sincere and heartfelt thanks for the honour you have conferred upon me by this munificent token of your esteem. To Mr. Gamgee, for the very eloquent manner in which he has been pleased to address himself to me as the organ of the donors of this gift, I have to return my special thanks; and to express my conviction that from the general tenour of his conduct, he will be one of those who will tend to the future exaltation of the veterinary art. I also sincerely hope and confidently think that all of you will do your utmost to endeavour to uphold and enhance the respectability of the profession in which you are embarked. Again and again allow me to express to you my sincere and heartfelt thanks.

On the Therapeutic Properties of Atropia.

This alkaloid represents perfectly the active properties of belladonna, for which it may be advantageously substituted for external, and perhaps also for internal, use. Atropia crystallizes in white silky prisms: it is odourless, very soluble in alcohol and ether, but requires five hundred times its weight of water for solution. The solution is bitter, and has an alkaline reaction. The alkaloid dissolves readily in acids, as the nitric and muriatic, forming crystallizable salts.

Atropia is an energetic poison; one-sixth of a grain has occasioned in man all the serious effects characteristic of the poisonous solanaceæ—dilatation of the pupil, dimness of vision, nausea, dryness and sense of constriction in the pharynx, feeble pulse and tendency to syncope, coldness of the surface, aphonia, and delirium. Bouchardat and Donovan prefer it to the extract or tincture of belladonna for internal exhibition, on account of the greater accuracy with which it may be dosed.

Pharmaceutical Times.

DIPLOMAS.

NAMES OF THOSE WHO HAVE OBTAINED THEIR DIPLOMAS FROM THE ROYAL COLLEGE OF VETERINARY SURGEONS, LATE STUDENTS OF THE ROYAL VETERINARY COLLEGE.

Certificates of Membership of the VETERINARY MEDICAL ASSOCIATION have been granted to those before whose names a single asterisk appears; and those having two asterisks have received *Certificates of Fellowship* for Essays introduced and defended by them at the hebdomadal meetings of the Association.

May 4, 1849.

**Mr. Whitfield Smith, Liverpool
*Mr. Wm. Clarke, Islington
*Mr. Edward Garton, Cotes
**Mr. Richard S. Blake, Ansford
*Mr. Wm. East, Bishopstone
*Mr. Richard Barker, Middlewich
Mr. Stephen Evershed, Billinghurst
**Mr. John R. Cox, London
*Mr. T. J. Williamson, London.

May 11, 1849.

**Mr. John Yates, Prescot
**Mr. Alfred J. Shorten, Ipswich
Mr. Thomas Johns, London
Mr. James Wright, Burnham
Mr. Jeffrey Dawtrey, Petworth
*Mr. Matthew Stone, Wentworth
*Mr. Edward S. Shave, Sudbury.

May 18, 1849.

*Mr. Robert Gibton, Dublin
**Mr. Thomas Cunliffe, Blackburn
*Mr. J. H. Lane, Poulton
*Mr. R. G. Kelly, Birmingham
**Mr. J. D. Barford, Gayhurst
*Mr. Charles Turner, Carshalton
*Mr. John Magrath, Castle Billingham
Mr. Alexander Mavor, London.

May 25, 1849.

*Mr. H. M. Hancock, Ealing
**Mr. Joseph S. Gamgee, London
*Mr. J. Lawrence, London
*Mr. W. T. O'Donnell, Cork.

On Phlebitis.

By Professor M. A. Rey, *Veterinary School, Lyons.*

The word phlebitis is derived from the Greek word φλεβος, *vein*, with the ending *ite*, which indicates inflammation. By this term is understood inflammation of one or more veins.

Among medical writers, Hunter is the first who has left any important work on this disease; his early researches having been made upon horses. At the present time, MM. Breschet, Bouillard, Velpeau, Cruveilhier, and Lane, have also investigated it.

Among veterinary authors who have written on phlebitis, it is to MM. Renault and H. Bouley that we are indebted for the most interesting publications. Nevertheless, there still remain some obscure points with respect to this disease to be elucidated.

Phlebitis occurs frequently in animals; it may appear after a wound, or, indeed, follow the most simple operation. It is chiefly in the horse that we observe it after opening the jugular. Sometimes slight adhesive inflammation is produced, or, at others, suppuration takes place, which may prove very troublesome.

Suppurative phlebitis often accompanies the absorption of pus into the system; and this is a reason why some practitioners have confounded these two diseases.

Causes.—The causes that may produce phlebitis are predisposing and exciting.

There are some conditions of the organism which predispose it to phlebitis, and these have an analogy to typhoid affections.

Repeated irritation on an inflamed part, from the attempts made to arrest hæmorrhage, are among the local predispositions.

Phlebitis is most frequently traumatic in animals, and is commonly caused by the operation of bleeding, when the fleam employed has been either awkwardly used, or is rusty, or covered with irritating matter: thus it may be viewed as a termination of thrombus.

Among the incidental causes, we may cite lesions of all kinds; such as large contused wounds, comminuted fractures, tearing of the veins when the body is wounded immediately above them; ligatures around and also compression of these vessels.

Inflammation is observed to follow the introduction of a virulent agent into the circulatory system, whether it be injected into some of the vessels, or introduced by the various tissues. The same result is produced when the pus from an abscess or any excrementitial fluid has passed into the veins. Lastly, the causes are sometimes occult, which induces us to acknowledge the existence of spontaneous phlebitis.

The *symptoms* are both local and general.

Local symptoms belonging to the first period:—Acute pain is evinced in the wound produced by bleeding; the incision opens, its edges become thickened, and the blood that issues from it is of an altered character. The adjacent cellular tissue does not swell, as in thrombus.

The termination may possibly be favourable, and the cure be by resolution. This is shewn by the swelling of the parts becoming less, and the circulation being re-established in the vessel. But it is not always thus. Instead of being confined, the pain follows the track of the vein, and the swelling extends the length of the neck, if it be the jugular that is implicated; the swelling is also œdematous. In man the inflammation extends in the direction of the heart; in the horse it is the reverse.

When the enlargement diminishes, the inflamed vein remains like a continuous column; this is caused by the adherence of a clot of blood within the vessel which has thus become impervious: at other times it is broken or interrupted, and imparts a knotty cord-like feel; abscesses form in the cellular tissue, and open on the exterior. There is also found mingled with the suppuration some fragments of the diseased vessel. Lastly, an accident of the most serious nature is the absorption of the pus into the blood, when the most urgent symptoms are developed.

While the symptoms are merely local, the animal's general health remains unaffected. The symptoms of purulent absorption do not make their appearance until the end of some days. The horse becomes dull, and does not neigh at the approach of others. Among the precursory symptoms shivering is not observed, as in man. Perspiration shews itself in different parts of the body. The tissues assume a yellow colour: as is also the case with the buccal and Schneiderian membranes; the tongue remains moist, some fever spots appearing on its surface; the pulse becomes quick and

hard, but afterwards small; the arterial throbbing is so rapid, that more than a hundred beats may be counted in the minute; and the movements of the heart are irregular; there is likewise a derangement of the pulmonary functions, the respiration being hurried, accompanied with a beating of the flanks, which is characteristic of infection of the blood; loss of appetite is also manifested, and the digestive organs become so much affected as sometimes to occasion diarrhœa.

Hot and painful tumours now appear on different parts of the body, which are sometimes the size of a walnut; at others they simply present the appearance of a thick farcy cord. Upon the back and withers they are less developed than about the chest and region of the heart (similar to the eruption of farcy). They soften in the space of a few hours, and contain pus of a whitish-yellow colour. The testicles are infiltered, and the epidermis of the sheath becomes distended by small vesicles containing serum of a yellow colour. Some of the articulations are engorged; and the sheaths of the tendons of the knees and hams are inflamed. The animal experiences in these different stages the most acute suffering, and often limps when moved, without any visible cause existing in any of the limbs.

The formation of a cicatrix is suspended in these wounds; their edges disunite; the pus has not the appearance of being well elaborated or laudable, but is clotty, or mixed with serum, and sometimes its secretion is altogether arrested. The animal is weak, and lies down frequently, but soon rises again, because the recumbent position interferes with the action of the respiratory muscles. Sometimes the air penetrates within the pulmonary parenchyma, and gives rise to symptoms of pneumonia. The strength gradually decreases; the hair comes off by the slightest friction or pull; the animal falls into a state of insensibility, and death follows soon afterwards.

The blood being studied during these phases of the disease, it presents some marked characters. It coagulates less and less firmly, becoming, at last, of a thin consistence. When first collected, it coagulates in the space of twelve or fifteen minutes: towards the time of death the formation of the clot does not take place under half an hour. A white coagulum occupies half the

height of the mass collected in the measure, resembling a strong solution of gum. At its line of junction with the dark-coloured clot is seen a band interspersed with globules of a yellow colour, and these, twenty-four hours later, resemble the pus of a phlegmonous abscess badly elaborated.

Varieties of Phlebitis.—It is divided into adhesive phlebitis, when there is the formation of coagula adhering to the inflamed vein; and suppurative phlebitis, when there is a secretion of pus which remains localized or enters the circulatory system, producing the effects we have described.

Pathological Anatomy.

1. *Local Lesions added to the State of the Vein.*—Complete or partial inflammation of the vessel; the vein is voluminous, forming a red cord; the collateral branches are dilated, and the cellular tissue is infiltered with a sero-purulent fluid. Blood or pus is found in the diseased vessel, if the conduit be not obliterated by a clot which is organized: the vascular membranes are likewise thickened.

Phlebitis produces obliteration or suppuration of the vein. Obliteration is the result of the coagulation of the blood, and adherence of the clot to the parietes of the vessel. The colouring matter disappears; the fibrin remains, and adheres strongly; the vein then contracts, and ultimately absorbtion of the fibrin takes place, so as to form a hard cord.

When suppuration is set up, pus is enclosed in a space limited by the neighbouring cellular tissue: it disappears in the same manner as a common abscess.

In certain cases, by the pus mingling with the blood, a thick pulpy mass is formed and retained in the clot attached to the vein; or, rather, this product is enclosed in the vessel between two clots, which bound the inflamed part; the purulent collection produces ulceration and perforation of the vein, which is drawn into the form of shreds, long and straight, similar to a kind of case or sheath.

In the phlebitis of young colts M. Loiset has well described the lesions of the umbilical vein. This vessel presents upon its internal part traces of violent inflammation, with fever spots of a red or

blackish colour, and the membranous tissue rubbed between the fingers forms a thick pulp. A clot of a greyish yellow colour fills the interior of the vein, presenting varied appearances, and accompanied with the disengagement of a fetid odour.

2. *Consecutive Lesions.*—Numerous abscesses exist in the interior of the organs; the viscera abound with sanguineous vessels, also in the cellular tissue around the articulations, and in the skin. These abscesses have a certain analogy with tubercles, presenting the form of a small kernel. The substance of the viscera is not altered round them: that which has been considered the result of metastasis is nothing more than the consequence of purulent globules circulating in the blood.

In the nasal cavities of the horse the mucous membrane is thickened; the frontal sinuses contain a collection of thick pus of a greyish colour and unpleasant smell; and the lungs are interspersed with fibro-albuminous deposits the size of a hazel-nut, and of a creamy consistence, as in glanders. The parenchymatous mass is softened, in some parts resembling a purulent collection; the spleen and liver, being cut into, present white granulations, analogous to those of the lungs; the cavities of the heart and great vessels are filled with blood of a blackish colour; the internal surface of the right ventricle is of a reddish colour, and there are ecchymose spots spread about on the left ventricle. Around some of the articulations the cellular tissue is infiltrated; the synovial membrane is often inflamed, and the cavities of the joints contain pus and false membranes. Upon different parts of the body the cellular tissue presents tumours softened in the centre; the corresponding lymphatic vessels are also tumefied.

M. Reynel has observed remarkable lesions in the brain: the ventricles are distended by a sero-purulent fluid, and the body of the organ striated and softened. Lastly, those general lesions are met with which we frequently observe after death produced by farcy and glanders.

Diagnosis.—Local phlebitis may be confounded with phlegmon and farcy, but these diseases differ from each other and it in their commencement and termination. By the absorption of pus, which sometimes takes place, general phlebitis may result in glanders or farcy, the infection being produced by putrid matter taken into the system.

Prognosis.—It is not of much importance when it is of an adhesive character; not so, however, when suppuration has taken place, unless nature sets limits to the ravages of the pus. If the pus circulates with the blood, the danger is imminent, and leads us to anticipate an unfortunate termination.

Umbilical phlebitis observed in mare colts is almost always fatal.

1. *Treatment of Local Phlebitis.*—In the early stages of the disease we endeavour to combat local phlebitis by having recourse to bleeding, and the use of emollient fomentations, with cataplasms of the same nature.

Some practitioners prefer lotions of cold water only, or with the addition of the acetas plumbi, thus combining a refrigerant and an astringent.

Whatever may be the period at which phlebitis has arrived, we prescribe the application of some blistering ointment upon a large surface in the course of the affected vessel. This method often succeeds in localizing the affection and producing a rapid cure, as in the case of thrombus. MM. Renault and Bouley, also advise the application of blistering ointment, or of a bandage charged with pitch and cantharides, so as to prevent the escape of blood, and to keep the wound from the contact of the air, which renders the clot diffusible and opposed to adhesion.

There are some veterinary surgeons who pass a ligature around the vein, first on the side nearest the heart, and afterwards towards the head; they then remove the vessel between the two ligatures. This operation is attended with difficulty and rarely followed by success. MM. Renault and Bouley have been able to assign the cause why so little efficacy is obtained by this method. In inflammation, which renders so brittle the parietes of the vessel, a ligature is no longer restrained, and thus the disorganizing influence of the air upon the clot is permitted to take place. Both of these Professors advise the injection of irritating liquids into the fistulæ which exist on the track of the vein, or to destroy the vessel.

Cauterization with the hot iron, made upon the wound of the inflamed vein and on the adjacent parts, may, perhaps, be employed with advantage, in order to prevent development of general phlebitis. Dr. Bonnet, of Lyons, has proposed the application of this

energetic method to the human subject, which has been resorted to for a long time in veterinary surgery in cases of this nature.

2. *Treatment of General Phlebitis.*—In the second stage we must endeavour to prevent the absorption of the pus. This result is difficult to be obtained, and, when pus exists in the blood, nothing will be of any service, whether we use sudorifics, antiseptics, emetics, purgatives, or tonics. Much has been expected from the acetate of ammonia, calomel, and antim. potass. tart.; but the result has not confirmed the anticipation. Disinfectants, such as the chlorides, as well as evacuants, have not afforded satisfactory results; and tonics administered in large doses, in the hope of relieving the prostration under which we find the animal labouring, have not proved more advantageous, so that all hope of cure is precluded.

From the Journal de Médecine Vétérinaire à l'Ecole de Lyon.

Theoretical and Practical Researches on Purgatives.

By M. Mialhe.

[Continued from page 342, vol. iv.]

INSOLUBLE PURGATIVES BECOMING ABSORBABLE BY THEIR COMBINATION WITH THE ALKALINE CHLORIDES OF THE ECONOMY.

Calomel.

Beyond their alterative and specific effects, the mercurials exercise a manifest purgative action on the economy. Of all the preparations of mercury, that most frequently employed as a purgative is the protochloride or calomel.

But calomel is insoluble, and as such is incapable of producing the least purgative effect by irritation or contact, on account of the smallness of the dose in which it is administered. To what special phenomenon, then, should its evacuant action be referred?

As long ago as 1831, I solved this question in my work on the mercurials; a work which has obtained the approbation of M. Dumas, and also that, not less valuable, of M. Berzelius: of this work the following are the principal conclusions:—

1. All the mercurial preparations employed in medicine produce, during their ingestion in the animal economy, a certain quantity of corrosive sublimate, in which their therapeutic and toxical properties reside.

2. This chemical action is due to the presence of the alkaline chlorides which the fluids contain.

3. The proportion of bichloride of mercury formed is in relation with the quantity of alkaline chlorides in the organs, and still more in relation with the chemical nature of the mercurial compound ingested; experience shewing that the deutosalts are immediately transformed into corrosive sublimate, while the protosalts begin to pass into the state of protochlorides, and that it is only by a secondary reaction that a certain amount of bichloride is produced.

Section I.

Applying the preceding laws to calomel, I say, calomel exerts no action on the economy except by its partial transformation into corrosive sublimate: it is to that slow transformation which is effected in the interior of our organs that this medicine owes all its medicinal properties*.

The transformation of calomel into sublimate is due to the action of the chlorides of soda and ammonia which are scattered throughout the economy. Since these chlorides are not concentrated in any part, and only flow in very small proportions into each part of the digestive arrangement, the ingested calomel cannot be immediately and totally transformed into corrosive sublimate. This transformation is partial and successive, and the quantity of bichloride of mercury formed is not in proportion to that of the calomel ingested, but rather with the quantity of reacting alkaline chlorides. The more the chloride exists in a given instance, the more sublimate will there be formed; and careful experiments have shewn that the quantity of mercurial chloride there produced is always in direct ratio with the concentration of the chloruretted liquor. It follows necessarily from this that the administration of calomel should not be succeeded by the

* Whether corrosive sublimate be viewed as the bichloride of mercury, as once taught, or as the chloride, as now taught, it will not alter the position here laid down.—Ed.

ingestion in large quantities of any aqueous aliment, since the abundance of liquid opposes the transformation of this body, and consequently frustrates its effect.

In contact with calomel and the atmospheric air, the alkaline chlorides produce three times as much sublimate as when they act out of contact with the elastic fluid; because for each equivalent of oxygen absorbed an equivalent of chloride of mercury is produced; and because each equivalent of chloride of mercury formed gives one equivalent of sublimate and one of alkaline oxide.

Thus in the economy calomel is found in presence of the air, of alkalines, chlorides, and even of acids, all which favour its reaction: every thing thus concurs to accomplish the transformation into sublimate.

Section II.

THE MEDICAL ACTION OF CALOMEL IS ENTIRELY SUBORDINATED TO THE GREATER OR LESS PROPORTION OF SUBLIMATE TO WHICH ITS TRANSFORMATION GIVES RISE.

This fact once understood, it will be easy to explain a crowd of anomalies which the action of this medicine presents; and, since the intensity of its action depends on the quantity of alkaline chlorides existing in the economy, we may determine beforehand the influence exerted by regimen, diet, &c., in individual cases.

Thus infants, before weaning, bear a strong dose of calomel very well, without experiencing any more marked purgation than follows a small dose; because a milky alimentation furnishes but a very small proportion of chloride of soda, so essential to the transformation of the calomel.

The sick who have been long placed upon a low diet, having the fluids of the body exhausted of the chlorides, through the quantity of aqueous aliments which have been ingested, like patients of the former class, bear a large quantity of calomel equally well.

But the great eaters of salt, the inhabitants of our maritime coasts, and sailors, cannot take calomel, even in small proportions, without immediately experiencing in the most violent degree, the phenomena peculiar to the action of calomel; because their economy, supersaturated with chlorides, facilitates the transmutation of calomel in considerable quantities into sublimate.

Besides the clinical experiments of M. Louis and others, who confirm these results, I may refer to those of M. Godefroi, of Caen. This able practitioner has remarked, that the sick deprived of salted provisions, or kept on low diet, can take without inconvenience a dose of calomel as high as six grammes; and that, on the contrary, the patients kept on a salted diet have frequent and painful recourse to the *garderobe* after the ingestion of forty centigrammes of calomel.

As a counterpart to these observations, in which we see that a mass of calomel remains without any physiological action, we may say a word on the employment of calomel in fractionary and repeated doses. If from hour to hour one-twelfth of a grain of calomel be given, after from twelve to twenty doses, a considerable ptyalism and marked superpurgation is almost infallibly determined in the patient. It is easy to see how much this method of exhibiting calomel is calculated to facilitate its passage to a state of sublimate. It arrives in small quantity in presence of the air and the alkaline chlorides of the economy, which constantly renew themselves, and are sufficiently abundant to transform all the chloride into the state of bichloride. Thence arise those energetic phenomena which have no limit but that which is placed on the administration of calomel.

Section III.

Considering this transformation of calomel, in greater or less proportion, into the state of corrosive sublimate as alone acting on the economy, it appears reasonable to substitute an equivalent quantity of the bichloride for the protochloride of mercury: this substitution is, however, impracticable; first, because, internally administered, it is a very strong irritant; secondly, because, besides this irritating effect, it is, immediately after it is taken, absorbed in the place of contact with the mucous membrane, which it coagulates and disorganizes, and, consequently, it can never reach the intestines so as to determine purgative action; and, thirdly, because when administered in sufficient quantity to provoke purgation it becomes a mortal poison.

The administration of calomel leads to none of the dangers of sublimate, and determines the result proposed without danger.

The gradual transformation which takes place in the internal economy has no disorganizing local action, because from its formation the sublimate is united with the alkaline chlorides of the stomach and to the albuminous elements of the blood, to constitute a double chloride very different in its effects to the free sublimate.

But, although it can no longer act as a coagulant, it possesses an irritative faculty sufficiently marked to warrant its proscription in local inflammation of the intestines.

Section IV.

After having proved the mode of action of calomel within the economy, we should state the effects which follow its employment. From the remotest periods it has been remarked that the ingestion of calomel gives a characteristic dark colour to the egesta. The fact is thus stated by MM. Trousseau and Pidoux, in reference to the human subject:—"The fecal matters take a green tint analogous to that of boiled vegetables. This tint constantly follows the ingestion of calomel." Further on they say, "The colour of the stools after the ingestion of calomel is very remarkable. The first evacuations differ in no respect in colour from those produced by other purgative agents; but, when calomel has traversed the whole alimentary canal, the fæces take a colour analogous to that of spinach. When the effect of this purgative has been very feeble, this colour may not be noticeable on the first day; but on the next day, and even on the day after, evacuations will take place which preserve a green colour for two or three days."

This colouration is not peculiar to calomel: it extends to sublimate, and, without doubt, to all the other mercurials. Thus in all cases of poisoning by sublimate recorded by Orfila, in his "Traité de Toxicologie," it is constantly a question of alvine dejections of a marked green colour and of abundant bilious vomitings. This colouration and these vomitings are the result of the special action of calomel and the other mercurials upon the apparatus secreting bile; an action so well known, that, as MM. Trousseau and Pidoux observe, "the efficacy of mercury in diseases of the liver has become a trite remark." We may to the authority

of such judges add that of Dr. Higgins—" Calomel exercises on the biliary secretion an influence which no other medicine is able to produce."

This specificality of action may be thus explained :—The mercurials excite not only secretions of the mucous membranes of the mouth and of the intestines, but also the secretions of the glandular apparatus. This is why we see a supersecretion of bile from the liver, the first gland which is submitted to their action ; and afterwards a supersecretion of the salivary glands, the result of the general saturation of the system.

Section V.

To complete the history of calomel, it remains to fix the doses in which it should be administered. Not forgetting the small doses reserved for particular cases, and also the enormous doses given under special circumstances without danger, we maintain that calomel should be administered in very limited doses ; because on the one hand small doses fulfil every requirement, and on the other hand too great a quantity may become injurious in a case where even it is tolerated in the digestive tube, because its incessant conversion into sublimate would lead to grave accidents. And it is well to associate it with a resinous purgative, so as to determine purgation, and procure the expulsion of the excess of calomel which remains.

We contend for the association of calomel with a resinous purgative, such as aloes, because it adds to the effect of the mercurial preparation in leading the calomel with it, which otherwise might remain in the economy, at first as an inert and afterwards as a dangerous body.

Insoluble Purgatives.

With this division, M. Mialhe closes his paper on purgatives.

Under this head we can place only the hairs of the *dolichos pruriens*, pulverized glass, and powdered or granulated tin ; all of which have been resorted to as anthelmintics, and are conjectured to act merely mechanically. Their beneficial operation is, however, at best doubtful ; and their employment always calls for the

aid of some brisk purgative agent, so as effectually to dislodge the parasites and cause their evacuation.

The common mode of exhibition is to render treacle or syrup of the consistence of honey by the admixture of either of the above agents, and then to administer the electuary thus made in the required quantities. Should the first named agent be given, the legume covered with its setæ is to be immersed in the syrup or treacle, and then scraped with a knife, and this repeated till the required consistence is attained.—These compounds are most commonly resorted to as vermifuges for the dog.]

EFFECTS OF PURGATION.

Purgation has two very distinct actions, the first local and immediate, and the second dynamic and remote.

The first is not felt beyond the place of contact, nor after the time necessary for the absorption of the medicine. It has for its object to expel from the intestines alvine matters, the residue of all which resists digestion, and strongly to excite the secretion of glands and mucous membranes by the active irritation which it produces. In consequence of this irritation a flow of blood takes place to the intestinal walls; it attempts to rise through the tissue of the membranes, but does not pass entire : a kind of selection *(triage)* of its elements takes place, in which only water, saline matters, and albuminose, percolate through the tissue; fibrin, albumen, and globules being retained.

It has been said that, under the influence of purgatives, a part of the albumen of the blood passes into the intestinal canal. This is not correct ; what has been taken for albumen was only albuminose, the ultimate product of the digestion of albuminous matters.

The second, the dynamic and remote, action of purgatives exerts itself on the whole constitution, and varies according to the medicine used.

The saline medicines which are not soluble, and leave no disagreeable effect, have no other dynamic action than that by which they relieve the economy, excite secretions, and quicken the digestive functions.

Certain purgatives do, however, determine very marked secondary dynamic effects ; thus, calomel causes distress, languor, feeble-

ness of limbs, and reduction of vital energy; veratrine acts strongly on the organism, accelerates respiration and circulation, and gives rise to tetanic rigidity; sulphate of quinine, which in high doses acts as an evacuant, exerts its own dynamic action on all the economy, producing a slackening of the circulation and of respiration, reduction of temperature, stupor, and general prostration; oil of croton tiglium gives rise to pustules and ulcerations when its administration is too much prolonged. It is thus very important to distinguish the different effect of these evacuants, so as not to administer the one for the other indifferently, but to make a rational choice according to the modification desired to be effected in the organism.

RESUME AND COROLLARIES.

In this manner we have shewn that the purgatives act by their solubility, their properties as coagulant or non-coagulant, by endosmose, by sapidity, by secondary chemical reactions which take place in the economy in presence of acids, alkalies, and alkaline chlorides; and, lastly, by reason of local and mechanical irritation on the part of the insoluble substances. We have also studied with care the consecutive effects following the administration of medicines. This classification permits us to explain the preference accorded by experience to such or such medicines for certain maladies, and even to fix precisely the extent to which they should be employed according as it is desired to act on the stomach, or on the intestines, or on both at once, or on the economy as a whole.

I.—CHOICE OF PURGATIVES.

I. After these considerations purgatives should be divided into three classes, according as they have,—

1. A general action on the whole length of the digestive tube, as calomel, oil of croton, saline matters;

2. An action localized on certain organs, such as magnesia on the stomach, resins and oil on the intestines;

3. Beyond their evacuant effect, a special action tending to produce certain modifications in the economy, as calomel, veratrine, &c.

Further, when the indication of a purgative is presented, a choice should be made based on the more or less prompt effect

which it is able to produce; on the general or localized action which it should exert on the intestinal tube; and on the secondary modification which it will impress on the economy.

If it be required principally to relieve the intestinal tube of the matters remaining after digestion, such active medicines should be employed by themselves as have no need of any chemical intervention to produce this action, such as the sulphates of soda, magnesia, croton oil; in a word, all the saline purgatives. In this case their employment is so much the more indicated, as in many cases the fulness of the intestines retards the effect of resinous matters. If, on the contrary, a slow continuous action is desired, as in cerebral congestion, meningitis, or other disorders which affect the nervous centres more particularly, calomel, the resins, and oils, will perfectly fulfil the requirement; as they are slowly and gradually converted within the economy into purgative substances.

In particular cases, where the stomach suffers from excess of acid, as in pyrosis, &c., magnesia agrees in two respects, first by saturating the acid of the stomach, and next in acting as a mild purgative. On the contrary, where the stomach is inflamed, all irritating substances must be kept from it, and those medicines employed which act on the intestines alone. If the intestines themselves are affected, as in typhoid fever, some very mild purgative, acting by itself, not prone to produce colic, should be employed, as sulphate or citrate of magnesia, and not irritating substances, the effect of which is felt all through the digestive passages, and especially in the intestines.

In diseases of the liver, reason and practice have recognised the special action of calomel on that organ: its use will then be imperatively required.

When it is required to produce general modifications in the economy, it will be found that calomel, which only acts by the sublimate to which it gives rise, is the most fitting purgative during the treatment of syphilitic maladies and diseases of the skin.

II.—INFLUENCE OF VITAL HUMOURS, OF ALIMENTATION, AND OF LOW DIET.

When the humours are acid nearly throughout the economy, as in uric gravel, diabetes, &c., the saline matters acquire their maxi-

mum intensity, and have the double advantage of purging, and also in part destroying the excess of acid, while resinous purgatives have little or no action. Those resinous matters in oils which require the presence of alkalies, acquire, on the other hand, the maximum intensity when the alkaline humours predominate in the economy.

For reasons of a similar kind attention should be paid to the character of the food: an animal diet acidifies the vital humours, a vegetable diet tends to render them alkaline. Low diet obliges the body to support itself at its own expense, and to exhaust its own nourishment in order to maintain itself. It thus gives place to a very lively combustion, which determines a general acidification. During and after this state the resins will therefore have very little effect, while saline purgatives will have the best results. During this reduction the continued ingestion of aqueous aliments tends to diminish and dilute the proportion of alkaline chlorides in the economy. In these circumstances, therefore, calomel, in larger or smaller quantities, is well supported, that is to say, it gives rise to no excessive purgation, or to injurious consequences; while in the organism saturated with common salt the least proportion of calomel becomes hurtful or even dangerous.

III.—INFLUENCE OF THE QUANTITY OF WATER INGESTED.

The proportion of water ingested before, during, and after, the ingestion of medicines exerts a very great influence on their result. Thus the non-coagulant saline compounds, in concentrated solutions, purge by endosmose and by their great sapidity. On the contrary, when administered in the same quantity, but in a weaker solution, they are not purgative, but become diuretic. Here the abundance of liquid, in diminishing the density and flavour of these compounds, removes the greater part of their purgative effect.

It is the same with calomel, the transformation of which into the state of sublimate, by contact with the alkaline chlorides, decreases remarkably under the influence of excess of water. On the contrary, the resins and oils, which require for their dissolution and absorption the intervention of the alkalies of the intestines, demand the injection of a certain amount of water, which,

far from weakening their action, is useful to chase them from the stomach, and to assist them in passing the pylorus.

These facts shew that the quantity of water ingested during the action of purgatives is not immaterial, and that it should be taken into account when considering the chemical reactions which take place in the system.

We do not admit that aqueous ingestions add to the evacuant action of medicines. They render the evacuations more abundant only because they are rejected by the system, and cannot be absorbed on account of the state of temporary erethism of the intestine.

IV.—ASSOCIATION OF PURGATIVE MEDICINES.

The ancient physicians were the first to associate these medicines, which they did according to their fanciful notions on the cause of disease, and the curative effects which they sometimes discovered. As they attributed to each medicinal agent some special property, and were persuaded that each addressed itself to some particular part of the body, they distinguished purgatives according as they produced this or that effect. Those which rendered the evacuations purely stercoral they named *eccoprotics;* those which caused serous evacuations they called *hydragogues.* Glairous evacuations were due to *phlemagogues;* bilious evacuations to *cholagogues;* green or black evacuations to *melanagogues;* and, lastly, those of any humour were called *panchymagogues.* This last-named division comprehends all those purgatives which we have called general, because their action is extended the whole length of the digestive tube. When they would unite many effects, they mixed those substances which, according to them, possessed the properties necessary to the multiplied results which they desired; and often they derived from these—sometimes *bizarre*—associations precious advantages, of which we at the present day acknowledge the value. Thus the association of calomel with resinous matters remains in use both in France and England: a most rational association, since the first of these agents requires the intervention of alkaline chlorides to enable it to act, and the second requires the intervention of alkaline bases.

In these associations we should much rather take account of the effect produced on such or such part of the economy, than of the abundance of the purgation itself. These mixtures are not

always most useful because they purge more violently than a single purgative, but because, when they are well chosen, we may by their aid act on many organs at once. If we examine the effect of calomel and resinous matters, we shall see the calomel at first acting along the greater part of the digestive tube, taking the alkaline chlorides necessary to its chemical modification, then acting on the liver, stimulating the secretion of that gland. The resin only acts on that part of the intestine in which it finds alkalies, and it assists at the same time for the expulsion of the calomel in excess.

Since each purgative exerts its action particularly on such or such organ, it will be injurious to employ the same substance for a very long time when the condition of the patient may require a continued purgative. Thus the immediate local effect, as well as the general or dynamic effect, should be considered. Thus those agents which have very marked dynamic effects cannot be used for a long period, while others acting locally can no more be permitted for continued use. We must, then, seek some general, feebly irritating purgative, or vary the medicinal substance, which is, perhaps, the better plan to avoid accidents. Croton oil, by this excessive use, has led to dangerous eruptions of the intestines, and to death; calomel administered in large doses, and borne by the system for a time, has afterwards produced the poisonous effects of corrosive sublimate.

GENERAL CONSIDERATIONS.

Prior to the study of the chemical transformations of compounds introduced into the living economy, recourse was had to a host of strange opinions to explain the facts which presented themselves. Without speaking of the humourists, who maintain that purgatives bring away all the injurious humours causing maladies, we have to-day the therapeutists, who explain purgative effects by topical irritations, of which they can render no account, or by sympathetic modifications of the nervous system, the action of which is transmitted in some manner to the intestinal mucus. Some hold that purgation results from an endosmotic effect which extends to all the purgatives. Others say that this endosmotic action has no existence except when there is no absorption of the active principle.

After what has been stated, every one will be convinced of the necessity of knowing the intimate action of medicines upon the organism, instead of abandoning ourselves to erroneous hypotheses or an empirical routine.

The efficacy of purgation was so evident, that for a long time it was subject to great abuses; but at the commencement of the last century it was abandoned, and even proscribed, by Broussais and his disciples, who, depriving themselves of a powerful corrective means, often served the purposes of a body of charlatans, whose science was confined to a happy employment of purgatives. To-day the use of these medicines seems to have revived with new force, and experience has shewn them to be in a vast number of cases useful, and very seldom injurious; for purgation, besides its immediate effect, produces also a depletion of the bloodvessels. From the filtration of the blood through the membrane it becomes concentrated; it loses its water, salts, albuminose, and ferments, and retains its organized or constitutive elements, as fibrin, albumen, and globules. Thence an augmentation of vitality and excitation of the digestive functions called to repair the loss which the economy experiences. We are, with M. Regnier, convinced that, "if medicine were to be reduced to a blind employment of a single mean for all diseases, and we had to choose between purgation and bleeding, the evil of indistinct employment would be much in favour of purgation." And to reinforce this proposition we will add, in the words of Hufeland, "The gastric method, that which consists in purifying the intestinal canal and the abdominal system, has been, from the time of the ancients, one of the fundamental methods of practice. It has survived the vicissitudes of times and of theories; and it may be said with reason, that in the greater number of cases the intestinal canal is the field of battle where the most serious maladies are to be withstood."

From the Pharmaceutical Times.

[It will be obvious to our readers that this Essay on Purgatives, by M. Mialhe, was written for the practitioner of human medicine; yet it has appeared to us to embody so many principles connected with the employment of these valuable therapeutic agents which are applicable to our patients, that we have endeavoured by slight alterations here and there, with occasional omissions, to render it transferable to our pages.—Editors.]

TRANSACTIONS OF THE VETERINARY MEDICAL ASSOCIATION.

TUESDAY, MARCH 9, 1847.

Mr. T. J. MERRICK, V.P., in the Chair.

Mr. W. Brown laid on the table a fractured os coronæ of the hind leg of a mare. The history of the case is briefly as follows:—It was taken from a grey mare above twenty years old. For the last twelve years she had worked in a street cab, and about six months since she suddenly became excessively lame of the near hind leg. The owner blistered the stifle, the hock, the fetlock, and the coronet, at different times, without any relief being afforded, and then applied for professional advice. On examination much heat was found to exist in the foot and about the coronet, and the pain evinced was very acute. A fracture was suspected, but it could not be decidedly proved to be present; rest, therefore, was enjoined, and subsequently the animal was turned out into a straw-yard for a month. She came up much improved; but, on being put to work, in about eight or nine weeks she became as lame as at the first. Being, on further examination of the parts, fully convinced that a fracture was present, and the mare being old, and in her present state altogether valueless, she was destroyed.

On inspection of the foot, considerable thickening was found to exist around the os coronæ, and this bone had been fractured in an oblique and longitudinal direction; and union, by only a few points of ossific matter, thrown out on the surface of the bone near to its divided edges, had taken place.

The Chairman observed, that the case related by Mr. Brown afforded proof of the little disposition to union that exists in the fractured bones of old animals. Granules of osseous matter had been thrown out, but these appeared to have been very weak, and subsequent attrition had prevented the union becoming perfect.

Mr. J. Wilkinson related a case of fractured large pastern bone, which had occurred suddenly to an aged thorough-bred horse he was at the time riding. He was out with Lord Howard's hounds, and during the run had to pass through a lane half-knee deep in

soft sand. His horse being of an irritable temperament, became excited by others in the hunt galloping past him, and, becoming very restive, plunged violently. All at once Mr. Wilkinson heard a sound resembling a piece of slate being broken by the animal's treading on it. The fore leg, however, was immediately thrust out nearly horizontal to the body, and the foot violently shaken. He alighted to ascertain what had occurred, expecting to find the foot wounded by some sharp body having entered it, perhaps a piece of slate; but, on passing the hand down the leg so as to lift up the foot, he grasped the large pastern bone, and found it to be splintered into very many pieces; in fact, this part of the leg much resembled a bag containing numerous hard bodies. The animal was immediately shot, and the pastern bone was afterwards found to have been broken into no less than thirty-seven pieces.

A case very analogous to this was related by Mr. C. Turner, in which the bone was also extensively fractured.

A paper was then read

On Diseases incidental to the Cow after Parturition.

By Mr. F. Chamberlain.

[The length of this thesis, coupled with our arrears of Association matter, precludes us from giving more than a synopsis of the debate that followed the reading of the Essay: its consideration occupied two evenings' meeting.]

Hysteritis.

Mr. Twist believed that, in this disease, there would be found but little tolerance of blood-letting; hence it must always be had recourse to with extreme caution, and never unless the urgency of the symptoms imperatively demand it. The system was doubtlessly in a highly depressed state from the act of parturition having so recently taken place; and the abstraction of blood in any considerable quantities at such a period would, in all probability, be productive of further exhaustion of the vital powers: occurring, too, as this disease often does, in plethoric animals, such will not allow of blood being withdrawn to any amount. Moreover, as injuries to

the viscus constitute the most general cause of this affection, and sphacelus is to be apprehended, he should consider blood-letting very likely to accelerate this dreaded termination. To control the heart's action, he would rather have recourse to sedative agents; and, as such, he advocated the use of the hydrocyanic acid.

Mr. Chamberlain contended that, at the onset of the attack, it would be often found indispensable to withdraw blood, so as to prevent inflammatory action continuing its well-known course. As a sedative, he had successfully employed opium in this disease, giving it in doses of from one to two drachms.

Mr. Carter stated injuries to the uterus to be the almost invariable cause of inflammation of this viscus, and oftentimes sloughing of parts to a very considerable extent, he said, takes place. Moreover, we have commonly a quick and an irritable pulse present, and therefore he should, as a general principle, object to blood-letting; yet the character of the pulse would be his principal guide. As a sedative, he had advantageously made use of the extract of the deadly nightshade. The remedies resorted to, he considered, should always be of an active kind and promptly administered, since the disease too frequently proved fatal. As his purgative, he combined croton seeds with the sulphate of magnesia; and, as a diffusible stimulant, he gave the spirit of nitric ether, occasionally adding the tincture of opium, when the irritative fever ran high.

Inversion of the Uterus.

Mr. Chamberlain had externally applied the extract of belladonna with decidedly beneficial influence in cases of inversion of the uterus; and when he was apprehensive of mortification taking place, he would immediately have recourse to the internal exhibition of stimulants, such as ammonia combined with the barks; but, as he had already said in his Essay, to prevent this taking place, he would, in the first instance, resort to blood-letting and the administration of purgatives.

Mr. Carter, in returning the uterus, had found the best method to be to commence with the fundus of the organ, which, when introduced within the vagina, was quickly followed by its body, and the violent spasmodic throes that presented themselves

were thus at once checked. To assist in this operation, it was judicious to have the fore legs of the animal placed low, and the hind legs raised, while an assistant gave pressure over the loins. The great difficulty presented consists in first getting the lower part of the uterus within the vaginal opening, and oftentimes the force then required is great; but this once effected, the return of the viscus becomes comparatively easy. He had tried the plan usually advocated, but had not been so successful as in this way.

Mr. Twist had also successfully adopted the method recommended by Mr. Carter.

Mr. Weston considered it better to commence with that portion of the inverted uterus nearest the vagina; for by acting otherwise the base of the organ would be so much enlarged, that it became next to a physical impossibility to return it, and especially if much force were resorted to. It was certainly a good plan to raise the hinder parts of the animal, as stated by Mr. Carter; and a sedative agent may also be advantageously given before manipulation is resorted to, to effect the return of the organ.

Mr. Carter had frequently witnessed laceration and rupture of the uterus following its inversion, from the animal treading on it; but only in one solitary instance could he remember recovery having taken place afterwards.

Amputation of the Uterus.

Mr. Foulding stated that his preceptor, Mr. Greswell, of Louth, had been very successful in cases of amputation of the uterus when the return of this viscus was found to be impracticable. In six or eight instances he had thus operated, and all the animals had done well. His general plan consisted in first passing a ligature around the everted organ as high up as he was able, and then to amputate it with the scalpel. Subsequently the parts were treated as a common wound.

Inversion of the Bladder.

Mr. Carter related two cases of inversion of the bladder produced by extreme excitability during parturition. In the first case, where the bladder appeared to be completely inverted, the parts were freely fomented with milk and water applied as hot as the animal could bear it. The neck of the bladder was next dilated,

so as to overcome the muscular contraction, and the viscus re-inverted by degrees, beginning at the cervix and passing onwards to the body of the organ, when it returned to its natural situation. A little tepid water was then injected into the bladder, and a dose of sulphate of magnesia combined with tincture of opium and spirit of nitric ether administered, and perfect quietude enjoined. On the following day the animal appeared to be doing well, although when she urinated some pain was evinced. The tincture of opium with nitric ether was repeated, and a free use of demulcents ordered. Within a week the animal was restored to health.

The second case occurred after parturition had taken place, and the treatment adopted was similar to that had recourse to in the first case, but, as the parts exposed were more highly inflamed, blood-letting was resorted to. The inflammatory action, however, could not be checked, and the animal sunk on the fourth day. After death, the bladder was found to be considerably thickened, and in places sphacelus appeared to have commenced.

Mr. Chamberlain had witnessed one instance of inversion of the bladder, in which, from its being impossible to return the viscus, the animal died. He thought rupture of the bladder to be less frequently met with than hernia of that viscus by its protrusion into the vagina through a laceration, which would, of course, prove very formidable to contend with. Rupture of the bladder can only take place from over-distention of that organ, while lacerations in the vagina may be effected by many causes, as false presentations, &c. Only as a *dernier resort* would he have recourse to extirpation of the bladder by ligature.

Inversion of the Rectum.

Mr. Varnell remarked that, in cases of inversion of the rectum following parturition, there was a muscle undescribed by authors, the division of which he thought would be followed with beneficial results in cases where the usual means had been ineffectually tried. This muscle arises from the second coccygeal bone, being made up of strong white muscular fibres, and, reaching the rectum, it expands over the whole pelvic portion of that intestine, thus proving its influence over the gut; besides which, the power of

white muscular fibre is not so soon exhausted as that of red muscular fibre.

Mr. Twist concurred with the view thus taken by Mr. Varnell, since, when this muscle contracts, the rectum is necessarily protruded.

Mr. Chamberlain had observed inversion of the rectum to occur most commonly in young and ill-fed animals; the state of the digestive organs being most commonly the immediate cause thereof, when, from debility supervening, the sphincter ani loses its power of contraction.

Mr. Varnell, in cases of protruded rectum, had frequently found this intestine to be strangulated by the powerful contraction of the sphincter on it; and

Mr. Carter related an instance in which this muscle remained inordinately contracted for more than a fortnight.

Mr. Weston contended that the muscle was generally in a relaxed state, and hence, he said, the tendency to a recurrence of the inversion of the gut. He recommended the employment of a truss after the intestine had been returned, and considered that the apparatus invented by Mr. Gowing would prove very efficient for this purpose.

Mr. Worm related several instances of inversion of the rectum occurring in a peculiar breed of pigs about a month old, and from the relaxed state of the parts it was found necessary to remove a portion of the intestine by ligature, a tube being previously passed up the gut. They all ultimately did well.

Retention of the Placental Membranes.

Mr. Carter believed that he had witnessed beneficial effects to follow the use of the ergot of rye in cases of long retention of the placenta in cows. He had given it in doses of from one to two drachms, combined with tonics. He referred to cases in which there was much inflammation of the vagina, with irritation, so that the hand could not be introduced, and which continued until the membranes came away. He had also given this agent in somewhat larger doses during protracted parturition, with decided advantage, and also in spasm of the os uteri. When powerful constriction of the mouth of the womb was present, he administered a bold dose of opium, applied an emollient to the parts, and then

left Nature to her own resources; nor had he ever had any reason to regret his having thus acted.

Mr. Weston had seen the ergot of rye successfully given to the mare in two-drachm doses. Its action he considered as that of a powerful stimulant to the uterus, which, by producing contraction in that organ, caused the membranes to be thrown off.

Mr. Brown considered the detachment of the membranes purely a vital act.

Mr. Connacher viewed it as partly vital and partly mechanical.

Mr. Twist agreed with Mr. Brown, believing absorption of the living from the dead parts to be the immediate cause of detachment.

Mr. Carter was of opinion that their removal was more mechanical than vital, and instanced their violent removal by the hand, and even by the appending of weights to them being unattended with any ill consequences. Three or four hours often suffice to throw off the membranes in cattle, and in mares a still shorter period is required, so that sufficient time for absorption to take place is not allowed. Besides which, active stimulants frequently effect their expulsion.

Mr. Brown referred the action of ergot to the tonicity given by it to the system generally. Thus the stimulant administered promoted the natural action of the vessels of the uterus, by which the detachment of the placental membranes was brought about. He considered the mucous lining membrane of the uterus to be as passive as the fœtal membranes, and asked, if the latter were dislodged by mechanical means, why not the former also?

Mr. Merrick said, that the attachment between the muscular and mucous coat of the uterus was much greater than that between the chorion and the tunica decidua uteri; and the internal or lining membrane, being thrown into folds by an excitant given to the animal, would necessarily dislodge the last named tunic.

Mr. Fahey considered the placental membranes after parturition to be foreign bodies, which Nature makes an effort to dislodge; but being unable to do so, she often receives assistance from stimulants given to the animal, and thus the purpose is effected, so that both vital and mechanical forces may be said to be in operation.

TUESDAY, MARCH 30, 1847.

The TREASURER in the Chair.

Portions of ossific matter taken from the spleen of a horse were transmitted by Mr. E. Taylor, with the following brief history of the case in which they occurred :—

Dear Sir, *Bury St. Edmunds, March* 27, 1847.

Last week I was summoned to attend the kennel of the Suffolk hounds to set a dog's leg, and, while thus engaged, the knacker informed me that he had what he considered an unusual specimen in his possession. I naturally asked to be allowed to see it, and he at once presented it to me, stating that he removed it from the spleen of a horse which, a short time since, was sent to the kennel to be killed. Believing ossification of the spleen to be very uncommonly met with, I have forwarded it to you, to place it before the members of the Association. I regret I cannot furnish you with a more detailed account of the case. I have only to add, that the two pieces sent were originally united, and it seems to me they once constituted the walls of an abscess.

I am, dear Sir,

To Mr. Morton. Your's truly.

Mr. Fitter stated that he had received information from the country that a peculiar disease was now attacking ewes with lamb. He had been favoured with the following communication on the subject by Mr. J. Carless, V.S., Stafford :—

Dear Sir, *Stafford, March* 23, 1847.

The sheep in this county, and several of the adjoining counties, have been of late affected with various diseases, but that which has proved so fatal is one that I never remember seeing before. It commences with slight inflammation of the membrane lining the nostrils, accompanied with a discharge of mucus and loss of appetite ; and shortly afterwards the membranes covering the brain become affected, producing stupor and blindness, and after lingering in that state for a few days the animal dies, or, being slaughtered, is sold to the butcher. I saw two killed that had the disease a short time ago, and I found the bloodvessels of the brain

in a very turgid state, and the structures of the liver easily broken down, and of a pale colour. All the other viscera were apparently in a healthy state. There was no food in the stomachs or bowels. And all that I have seen with that disease have been ewes heavy in lamb.

To Mr. Fitter. I am, truly your's.

Case of Concussion of the Brain in a Dog.

Mr. J. B. Simonds directed the attention of the members to a case of concussion of the brain of a spaniel dog, lately in the College infirmary, and which had terminated favourably. The animal had fallen from the upper floor of a house, down a well-staircase, into the hall, and when picked up was at first supposed to be dead, as all power of motion was destroyed, and blood was escaping both from the eyes and nostrils. In this condition he was brought to the College, and a further examination shewed the head to be much enlarged by an extravasation of blood beneath the scalp; the pupils were dilated, the vision lost, and a total unconsciousness was manifested, although occasionally he made a painful whining noise. No pain was evidenced on pricking the skin, nor any motion of the voluntary muscles took place, save now and then a few spasmodic contractions of the limbs. The heart's action was slow and indistinct; the respiration stertorous. Judging from these symptoms that a fracture with depression of the cranial bones existed, although such could not be detected by external manipulation, it was determined to lay bare the skull, and ascertain the precise condition of the parts. An incision was made through the common integument in a line with the union of the parietal bones, commencing above and carried downwards to about opposite to the orbital projection of the frontals. A large coagulum was thus exposed, which was carefully removed. No depression of the bones being detected, nor any fracture, the edges of the incision were brought together and confined by a simple suture. Directions were now given to keep the head constantly wet with vinegar and water, for which purpose the animal was put under the especial charge of one of the grooms; an aperient draught was also administered, although with some difficulty, and the patient placed in a comfortable bed. Very little alteration was observable in his

condition for upwards of twelve hours after, when there were some indications of returning consciousness manifested. By the close of the second day the improvement was confirmed, and the bowels responded to the action of the medicine on the following morning. Voluntary movements of the limbs were now observed to take place, but the animal was not capable of maintaining the standing position until the fifth day, and then only for a short time. When lying on his side he would invariably move towards the right, and this tendency in his action was noticed for a few days after convalescence. He gradually recovered, and was restored, in apparent good health, to his owner in about three weeks: little medical treatment was subsequently had recourse to, but good nursing was found indispensable, the animal being unable to collect his food, although perfectly conscious; he was consequently fed by the hand for nearly a fortnight.

On the Reproduction of the Tissues.

By Mr. G. T. Brown.

To the Members of the Veterinary Medical Association.

Gentlemen,

The following pages, which I have the honour to submit to your consideration, had their origin in the reflections of a leisure hour or two. My thoughts being occupied with the functions of an animal body, I was forcibly struck with the wisdom and design manifested in the waste and reproduction of its various tissues; and feeling convinced that such a subject was full of interest, and merited the best and highest consideration the mind of man is capable of giving to it, I determined to lay it before the Veterinary Medical Association, to make, if possible, some slight return for the numerous valuable essays I have had the gratification of hearing read by its various members. At the onset I beg to acknowledge myself indebted to Dr. Carpenter for many of the facts here advanced.

It may be, that I am addressing many who now appear for the last time at the meetings of the Veterinary Medical Association.

In a few short weeks, many miles may separate most of us; and when we obtain some little cessation from our more active employments, we may possibly look back with pleasure, and perhaps with some degree of profit, on our by-gone days, when we reflect on the incidents and the difficulties that are met with in the life of a veterinary student.

To those who have but just entered, as it were, on the threshold of their studies, I would venture, though it is, perhaps, somewhat uncalled for, to offer a word of advice and caution. I would exhort them to persevere in the pursuit of science while now they have the opportunity; and to remember that "time once passed, can never be recalled." "Lost wealth may be regained by industry; the wreck of health, by temperance; ruined reputation, restored by penitence and virtue; and even alienated friendship soothed into forgetfulness: but who ever looked back upon his slighted years, recalled his misspent hours, and stamped them with judgment, or effaced from Heaven's record the fearful, everlasting blot of misspent time?"

I would have you look on fate as a phantasy—an idle dream. Man's destiny is in his own hands: he himself holds the rudder which shall direct the bark down the stream of this life; and when he chooses the path that leads him to destruction, because forsooth, 'tis somewhat broader, he looks back with bitterness, questions the justness of his very existence, and excuses his own headstrong folly on the plea that fate ordained it should be so.

Apologizing for thus overstepping the bounds of my position as a pupil in assuming the character of a teacher, I can only urge in extenuation the sincerity of my intentions, and throw myself on your indulgence. It only remains for me to add my most ardent wish that you may all journey calmly onward in your respective vocations, solaced and directed by the "still small voice" of an approving conscience.

Believe me,

Your's most respectfully.

In reviewing the various functions of which an animal body furnishes so many and such beautiful illustrations, there is not one among them, I think, more calculated to call forth our unreserved

admiration than that of the reproduction of the tissues; that mysterious, complicated process, by which matters totally dissimilar, and to the unreflecting mind totally inappropriate, are converted into "part and parcel" of the animal frame itself. But, previous to this metamorphosis taking place, it is indispensably necessary that the material on which an animal feeds shall, in itself, possess that undefinable principle which we term life; for, notwithstanding the complicated transformations continually taking place, the animal organism is incapable of appropriating a single inorganic principle. Oxygen, hydrogen, carbon, and nitrogen, are the essential constituents of the animal frame; but feed an animal on charcoal, water, and ammonia, in which we have the elements necessary for nutrition, and I need not say that that function would soon entirely cease; but let us arrange these elements in another form, bind them together by the aid of vitality, and the purpose will be answered. The processes of absorption and deposition are constantly going on during life, their ratio depending on the age of the animal and the peculiar circumstances under which he may be placed. In the youthful periods, as aptly remarked by the late Professor Coleman, the process of absorption is acting as equal only to one, while that of deposition is equal to two; and thus we have a gradual increase in development until that period arrives when it may be said every organ has attained its full development, these functions then acting equally, or as one and one. As life farther advances towards its termination, the process of absorption is acting as equal to two, while that of deposition is proceeding as equal only to one; and of this the gradual decay of the frame will afford us ample proof.

An animal body is constituted of solids and of fluids; of the latter the blood is the most important, being the source whence all the tissues are derived. And when we reflect on the continual waste of these tissues in every movement that takes place; when we consider that only the passing of one hand over the other is attended with some loss of substance; that the mere contractility of muscular fibre, although we are unconscious of the movement, destroys some portion of its structure, nay, that even a thought cannot pass through the mind without the waste of some portion of the frame, we cannot fail to be struck with the wonderful provisions which Nature has made to remedy and sup-

ply this continual removal; nor is the manner in which this process is conducted less deserving of our wonder and admiration.

It is a reflection sufficiently humiliating to man, in the midst of all his boasted pride and grandeur, to know that his very existence depends on merely the deposition, growth, and reproductive powers of a mass of simple cells, by means of which every function in his body is carried on; thus bringing down to one common level all animated nature. Men may prate about the wide chasm that separates one class of human beings from their fellows—may look upon the accident of a noble birth as an inseparable bar; but to the physiologist these distinctions are only the emanations of a distempered imagination. Full well he knows that the same mass of primitive cells, by whose aid the functions of vitality are carried on in one, are precisely the same in all—alike in the highest monarch and the lowest beggar; in the complicated human organism, and in the simplest order of plants.

I have before remarked that all the tissues are formed from a most important fluid, the blood: the manner in which this process is carried on we will now proceed to inquire into. Let us first take as illustrative the simplest cell; let us view it as a minute granule originating from the fluid on which it is destined to feed: thus we may consider its life to commence by attracting to itself the nutrient matters by which it is surrounded, converting some into materials composing its walls, and drawing others to its interior: and thus as it gradually increases in size, we may liken it to the growth of the animal itself. Like that animal, too, its term of life is short; but, previous to that term of life expiring, it makes preparations for its departure: granules of extreme minuteness are observed to exist in its interior which gradually enlarge; it is then that the parent cell bursts, and these granules are thrown forth, each one being destined to play the part we have just been considering—to grow and die, leaving behind materials to supply its place.

Thus the history of the simplest form of cell would seem to bear a striking semblance to the life of the being in whose organism it plays its important function; in its birth, its growth, its power of reproduction, and its death.

The colourless corpuscles of the blood afford us an illustration of the most independent form of cell, these being floating and removed from each other. To them is ascribed the office of con-

verting albumen into fibrin, as they are more particularly observed in those parts which require a large supply of this principle.

In the various solid tissues we have cells connected together, the formation of which is somewhat different. Instead of being thrown out in the form of granules by the bursting of the parent cell, they are developed in its interior, the parent cell remaining for a time as a thin membrane around them. In those tissues which are required to be rapidly reproduced, these cells, while yet within the parent cell, may be developing another set within themselves, making a third generation. Although the tissues at their first formation are cellular, it does not necessarily follow that they must continue so; indeed, it is well known that they undergo various metamorphoses in form: thus, in the first development of the cuticle, it commences by the deposition of granules which, by the process before described, become converted into cells; as they approach the surface, these take the character of ellipses; and a stage further they appear as flattened scales. So in the production of a hair; its centre is observed to be cellular, the next layer has a fibrous character, while the surface assumes the form of scales.

It is agreed among physiologists that the tissues are formed only from the transformation of some compound of proteine, and that the other matters on which an animal feeds are for the purposes of respiration; but we have gelatinous tissues in various parts of the body, and gelatine is not received as a proteine compound; nevertheless, it is presumed to be formed by the transformation of a proteine compound.

When proteine is decomposed by a solution of potassa, there are produced three new organic compounds, leucine, protide, and ethro-protide, each of which approaches very near to gelatine in composition, more particularly ethro-protide, which by the removal of one atom of hydrogen becomes identical in composition with it. This change is also supposed to take place in respiration.

It may seem most presumptuous on my part to attempt to argue against such opinions as these; but it certainly does appear to me that it would be more economical on the part of Nature to appropriate the gelatine taken in by the animal to the building up of those tissues, rather than to decompose proteine for that purpose.

The proof, however, advanced is, that animals will not subsist for

any length of time on matters which do not contain some proteine compound. These experiments, in my opinion, go a very little way to prove the position for which they were instituted. It is very questionable whether any animal would live for a long time on one kind of diet, whether it contained the compounds of proteine or otherwise, and it is a well known fact that persons will subsist for a considerable period on the varieties of starch and sugar without any ill consequences. It is on record that travellers have lived for months on principles which contain but little nitrogen, and certainly nothing bearing the least semblance to proteine compounds. If these positions be correct, they would go far to disprove the validity of the present opinions respecting the fitness of certain compounds, as those above considered, for the reproduction of the various tissues of which the complicated animal organism is constituted.

The rapidity with which the structures are reproduced will depend on the amount of exertion to which they are subjected, and the quantity of matter with which they are supplied. Place an animal in a position where the least possible amount of motion is given, and supply him liberally with food, the process of nutrition is then carried on with extreme rapidity, and a call is made upon the various excreting organs to remove this large amount of matter from the system. From inordinate exertion these become deranged and are unable to perform their office; the animal has then another source by which Nature endeavours to relieve herself, namely, by depositing large quantities of those matters, which, in the normal condition of the animal would have been appropriated to the building up of his tissues in various parts of his body, in the form of fat. This diseased action, when once set up, has a tendency to progress with extreme rapidity, and in proportion as this increases the other tissues decrease: the muscles become atrophied; the amount of fibrin in the blood is lessened; and an animal in this condition, although he may appear to be in the highest possible state of health, is in reality in a state of extreme debility.

Remove an animal from this position, and subject him to exertion, gradually increasing it as you find it can be borne; and what do you observe? This abnormal product is rapidly removed—burnt up in a great measure—and excreted from the system by

the process of respiration. By keeping him in this position, nicely apportioning the quantity of food to the amount and severity of the exertion he undergoes, we may bring him into a state of perfect health. The various organs duly performing their proper functions are wasted and reproduced with proportionate rapidity, and we might almost observe that the animal body is being completely renewed, at certain intervals, by the new materials continually received being deposited in place of the old ones, which then constitute matters no longer available for the purposes of nutrition. And here again we see the wonderful provisions of Nature in removing such from the system when they are no longer required. The various carbonaceous matters are burnt up by the oxygen taken in by the arterial blood, and are carried in the form of carbonic acid to the lungs, and excreted by those organs; while other portions of the *éffété* materials are taken to the liver to form the various constituents of bile, thus playing a second part in the economy of the animal frame; and, lastly, the kidneys have for their office the removal of a large proportion of them in the form of urea, the quantities, of course, being dependent on the amount of waste; and here we observe a striking instance of the destruction of the various tissues.

If a person undergo much bodily exertion, the amount of urea is considerably increased; if, on the other hand, his employment has been that in which the assistance of the mind has been most required, the preponderance of the phosphates in the urine will be evident, thus proving that even a thought is sufficient to make a call upon the sources of nutrition, so as to cause a partial destruction of the brain itself. Nevertheless, we do not observe that the mind decreases in power the more it is employed; on the contrary, it becomes more powerful the more it is exercised. Difficulties which at first sight would appear insurmountable, by being reasoned upon and carefully investigated, are proved to be most simple. Thus, step by step, the mind proceeds, acquiring new strength and new capacity with every exertion to which it is subjected; grasping Nature's deepest mysteries, and seeking for the laws that govern them; uncoiling their most intricate windings with indefatigable perseverance, clearing them from the mass of ignorance and superstition which surrounds them, and making those

facts which were hidden in depths almost unfathomable to appear clear and evident as the mid-day sun. Thus does education change the face of Nature, rendering that a fair plantation which, without it, would appear a desert wild. Well may we say with Pope,

> "A little learning is a dangerous thing ;
> Drink deep, or taste not the Pierian spring:
> Its shallow draughts intoxicate the brain,
> But drinking deeply sobers us again."

Thus we have seen that the functions of vitality are carried on to a certain duration, and then comes the cessation of nutrition, or death. The once moving body is now a motionless mass on which the laws of chemistry will soon exert their potent influence, converting the complicated animal organism into a number of deadly and noxious compounds; and these, so far from simulating those beautiful structures of which they once formed a part, will not even support the presence of life. But even these compounds, poisonous and noxious as they are, by the wise provisions of a bountiful Providence are rendered again available to the animal economy. It is here that we see the admirable coaptation of the vegetable world, and that in its most striking form. During what has been aptly likened to the process of digestion, plants feed on those matters that are poisonous to the animal body, and give forth those constituents which are destined to play again their important part in the complicated functions of the animal machine ; and thus the reciprocity existing between these two divisions of the organic world is made manifest.

Thus have we taken an imperfect view only of the formation, reproduction, and decay of the tissues of an animal body. We have seen the beautiful simplicity of arrangement that exists in its various stages ; and now let us conclude our observations by a retrospective glance at the life of the highest being in animated nature, Man. Let us view him as a helpless infant, unable to assist himself to the common necessaries of existence ; a being on whom the meanest reptile that crawls might wreak its venom with impunity : but years roll on, one epoch after another is passed; and then, bursting forth "like a giant rejoicing in his strength," appears the man ! Proudly he casts his gaze o'er creation's face. The fiercest animals that rove the desert wilds tremble at his presence, and

quail before him; alike he laughs to scorn the strength of the unwieldly elephant, and the lordly lion's roar; and undauntedly journeys onward, secure from all, except—his fellow man!

The lapse of revolving seasons brings him near to his appointed "threescore years and ten;" when truly "a change comes o'er the spirit of the dream!" Behold him now! a picture of the very nothingness of human power. His arm, that would have felled a giant, hangs powerless by his side; his eye, that rivalled the eagle's in penetration, has lost its brilliancy; his tottering limbs almost refuse to perform their wonted office; and even his reason fails him; till Death, seeming to pity the abject condition of creation's lord, draws a veil over the scene: thus he "shuffles off this mortal coil," and his name, perhaps, is heard no more.

Thus, too, is fulfilled the spirit of that terrible denunciation,

"*Dust thou art, and unto dust shalt thou return.*"

[The discussion that followed the reading of this interesting paper gave proof of thoughtful study and research, highly creditable to the members who took part in it; and it likewise elicited matter meriting the most serious reflection; but from its being mostly of a theoretical nature, its insertion is withheld. With it closed the meetings of the Association for the session; the usual thanks being previously voted to the Officers.]

Session 1847-8.

The earlier meetings of this session, during which the election of Officers and the presentation of medals took place, with the account of morbid parts and communications received during the vacation, have been already recorded.

November 9, 1847.

The President in the Chair.

A Case of Tetanus in the Horse.

By Mr. W. Brown.

On the 22d July I was requested to see a horse, said to have fallen down in the night, and which could not get up without assistance. It was a bay horse, fifteen hands high, six years old, and had

been used in a pug mill. The animal was observed to be very dull in his work for some time, and was low in condition, yet he appeared to feed well. I did not make any particular examination, concluding he had merely fallen from exhaustion, and therefore ordered bran mashes and rest.

July 23*d*.—He fell down again, and on being got up it was observed that the eyes were drawn within the sockets, the cartilago-nictitans forced as far over the eyes as possible, the muscles of the neck rigid, and the jaws nearly closed. It was now clear that it was a case of tetanus; and he was, certainly, the most wretched-looking object I had ever seen.

I determined to try what Nature would do, with a very little assistance, in this case, the value of the animal not warranting any expense to be incurred. I therefore gave six drachms of aloës on the point of a stick, took off all the shoes, sent him behind a farmer's cart a short distance into the country, and placed him in a field by himself. The reason why so small a dose of aloës was administered by me in this instance arose from the fact, that I have seen two or three cases of tetanus sink from super-purgation, after all the contracted state of the muscular system had been removed; and, moreover, I anticipated the grass would assist the action of the agent.

July 24*th*.—To-day I saw my patient; he had been down again, and was obliged to be lifted up. The physic had not operated. I therefore ordered a quantity of grass to be cut and placed in a heap before him: of this he partook freely.

July 25*th*.—Saw him again: the bowels were acting freely, and he had been down and got up again without any assistance. I now rubbed some mercurial ointment all along the spine, and left him. From this time I saw him occasionally: he gradually improved, and is now quite recovered, and in good condition.

Mr. Gowing related a similar instance to the above, in which all the indications of tetanus were present; and the animal being of no value, he was allowed to be at liberty on the road side, and he got well. Mr. Gowing likewise communicated to the members a case of occult visceral disease, in which the prominent symptom was, the animal continuing to sit on his haunches for a very long time. He was led to suspect the existence of a rupture of the

stomach; but by the means he resorted to the animal got well, thus negativing this sign as being pathognomonic.

Speaking of the action of medicated enemata, he expressed his conviction that, in bowel affections, they are more effective than when medicaments are given by the mouth.

Mr. Varnell described the lesions that had taken place in the humerus of a horse, the cartilage of incrustation covering the larger condyle of which had become ulcerated, and a large portion exfoliated. In his opinion it was the result of concussion.

Mr. Bird laid on the table a diseased submaxillary bone of a cat, which he had been called in to see; but from the state of the poor animal he at once recommended its destruction. It was in great pain, and several abscesses existed in the submaxillary space and extended down the neck, two of which were discharging viscid pus; the power of mastication was also lost. It was probably caused by a blow or kick.

The remainder of the evening was occupied by the reading of the Prize Thesis "On Diseases of the Bursæ Mucosæ," by Mr. S. Fisher, V.S., which has already appeared in this Journal.

November 16, 1847.

Mr. T. W. Gowing, V.P., in the Chair.

Mr. Varnell related a case of ventral hernia that had that evening entered the College infirmary. The history of the case was brief. The horse had fallen in the street, and while struggling a rupture of the muscular parietes of the abdomen, near to the margin of the fifteenth rib on the left side, had taken place, through which a portion of intestine, probably of the ileum or jejunum, had protruded. The opening appeared but small, and no external wound existed. Mr. Varnell directed the animal to be placed in a loose box, and, being tied up, by careful manipulation he returned the intestine, and employed as a compress some cotton wool with a common roller. He enjoined perfect quietude, and restricted the diet to a cold mash, waiting the development of further symptoms before other measures were adopted.*

* This case got well without the manifestation of any further unfavourable symptoms.

Mr. Gowing in such cases recommended an entire abstinence from food, and, having reduced the hernia, to apply a compress, as Mr. Varnell had done. Depletive measures should only be had recourse to on the pulse shewing the necessity of them; nor would he administer purgatives, fearing that they would unnecessarily increase the vermicular and peristaltic motions of the intestines by their irritating action. At any rate he would administer a laxative only.

Mr. Wallis advocated the withdrawal of blood immediately on the pulse becoming in the least accelerated, with a view to prevent the accession of inflammation.

Mr. Brown would abstain from it, and rely on the use of sedative agents. In fact, he condemned the freedom with which the lancet is generally used, and stated his belief that it often proved prejudicial rather than beneficial. In the stage preceding inflammation, that of congestion, he thought venesection was wisely had recourse to; but when the bloodvessels had lost their appropriating power, from a diminution of nervous energy, he considered it bad practice to withdraw the fluid from the system by which this force was communicated; as so doing only hurried onwards the fatal termination of inflammatory action.

Mr. Clements objected to the employment of a compress possessing any great degree of power, since it never could bring the edges of the wound in apposition, and might be the means of causing a fold in the skin, which would prove prejudicial. It was better to allow Nature to obliterate the sac by throwing out granulations.

Mr. Carter suggested the application of a "charge" after the subsidence of all inflammatory action, which he had frequently found most effective in preventing a return of the intestine.

The external application of cold after the reduction of the hernia was deemed advisable by all who took part in this incidental argument.

On Organic Chemistry.

By Mr. W. B. Lord.

Animal chemistry has for its object the elucidation of the changes and transformations that take place in the great laboratory of the living body, and, as you are all well aware, it is a subject that, up to comparatively recent years, was either neglected or but little known, until, in fact, Liebig published his works on animal and vegetable chemistry; the former in its application to physiology and pathology, and the latter in its bearings on agriculture. It is more especially to the first of these divisions that I am desirous of directing your attention.

It would be difficult, perhaps, to find a wider contrast than that presented to us in the chemistry of animal and vegetable life. In the vegetable organism we witness changes of the most occult, nay even incomprehensible, nature, the effects only of which changes become evident to our senses.

We see the vegetable deriving its nutriment from sources entirely inorganic, and changing the materials thus imbibed, by some hidden and mysterious agency, into organized compounds. Animals, on the other hand, subsist only upon organic matter, or, in other words, upon such matter as at one time formed part of a living organized being. These substances, we find descending, step by step, as it were, into compounds less and less complex, and this by such changes as we can readily comprehend and sometimes even imitate, until at length, slowly and surely, like the eddying stream rippling its way back again to its parent ocean, they return to the inorganic kingdom from which they sprung, again to be reconverted into food for the vegetable world.

What, I would ask, can possibly shew more palpably the evidence of design and forethought, than the perpetual and unbroken chain thus established between these kingdoms of nature? The decay and death of the one affording sustenance and support to the other. In a word, the vegetable produces what the animal consumes.

It is well known that the animal body is made up of solids and

fluids in variable proportions. The solids give firmness and stability to the frame: the fluids communicate that roundness, symmetry, and contour so much admired in a sleek and well-fed animal. An Egyptian mummy will give you a good idea of the first, namely, an animal body deprived of its fluids: a horse in high condition, or a prize fighter, may be accepted as among the best illustrations of the second, where solids and fluids are equally apportioned. Amid the solids chemists have discovered a group of three proximate organic principles, out of which, it may be said, all the solid materials of the body are constructed and built up, excepting, possibly, the earthy constituents of the bones.

These three principles are albumen, fibrin, and caseine. A ready example of the first may be found in the white of an egg or the serum of the blood. The second is also met with in the last-named fluid, in which state it is perfectly fluid: it is also found in the muscular fibre, solid or coagulated; a state it appears to assume spontaneously when deprived of life. The third principle is only found in a special secretion, that of milk, in which it is held in solution by a small quantity of the alkali potash.

I believe the honour is due to M. Mulder, of Amsterdam, of first discovering the exact chemical constitution of these three principles. He found them to be composed of carbon, hydrogen, oxygen, nitrogen, sulphur, and phosphorus; but the latter element is said to be wanting in caseine.

It is a remarkable fact, that all three agree exactly in chemical composition as far as the first four elementary bodies are concerned; the only difference between them is in the sulphur and phosphorus, which bear but a small proportion to the other constituents. The importance of this discovery, as simplifying the transmutation of those substances the one into the other, naturally excited much surprise; but how much was the wonder increased, when more recent discoveries revealed the startling fact, that vegetables contain in their organism a group of three proximate principles identical in composition with those derived from the animal body.

By identity of composition, I do not mean simply external resemblance, but actual chemical composition; so that were you to place in the hands of the most practised chemist some dried

white of egg, some gluten from wheat flour, some caseine from beans, or some fibrin from blood, he would state—strange as it may seem to you—that in chemical composition he could not tell you one from the other. When the recently expressed juice of vegetables is allowed to remain at rest for a short time, a separation takes place, a jelly-like precipitate subsides of a greenish tinge; on removal of the colouring matter, a white substance remains—this is vegetable fibrin. If we take the same liquid after separating the fibrin, and expose it to the boiling temperature, a coagulum is formed, which is, in every respect, analagous to the white of egg—this is vegetable albumen. This principle exists in considerable quantities in nuts, almonds, &c. Having separated the coagulum, and added an acid to the remainder of the solution, we get another coagulum, just as you would in milk—this is vegetable caseine. This principle is most abundant in peas, beans, and other leguminous seeds.

How clear and admirably simple does now the hitherto mysterious process of nutrition in the animal frame appear to us! It is easy to explain the increase of mass, and the formation of its organs, in which vitality resides.

The herbage, cropped by the animal and employed to form its blood, contains its chief constituents, fibrin and albumen, in a fit state to be appropriated. All plants, too, contain iron; and this we also find in the colouring matter of the blood. If the food be deficient in these principles the nutrition of the animal is arrested; and, when present, the graminivorous animal obtains in its food the principles on the presence of which the nutrition of the carnivora is completely dependent.

Vegetables, says Liebig, produce in their organism the blood and flesh of all animals; for the carnivora, in consuming the blood and flesh of the graminivora, consume, strictly speaking, only the vegetable principles which have served for the nutrition of the latter. Vegetable fibrin and albumen take the same form in the stomach of the graminivorous animal as animal fibrin and albumen do in that of the carnivorous animal. Hence, we are led to the startling conclusion, that vegetables contain the flesh of animals ready formed, the animal having only to appropriate it a place in its organism.

These three principles contain a large amount of nitrogen, and are the true elements of nutrition. The more of these constituents food contains, the more useful will it be for building up and supplying the waste of the frame. But in the food of man and herbivorous animals we find other matters, such as starch, gum, and sugar, in which (gum excepted, in which it has been said a very minute portion has been found) no nitrogen is present, but they abound in carbon, with the elements of water. Whence come they? What use are they? I have just told you that the others were all that are required to supply the waste of the frame. What else, then, can be wanted? A slight reflection will shew us how essential these, too, are to the functions of life.

The average temperature of our bodies is about 100°, or about 40° above the ordinary temperature of our climate; hence some provision was necessary to sustain this degree of heat, which is essential to the performance of the organic functions; since the air being so much colder, it constantly abstracts heat from the body and lowers its temperature.

Whence, then, comes the fuel for keeping up this temperature? The question is easily answered: the starch, gum, and sugar, the ingredients of that kind of food from which nitrogen is absent, but which, as I said before, are made up of carbon and the elements of water, are employed as such.

You all know that the air by which we are surrounded is being continually respired by animals. There is no pause or cessation whilst life continues. With this you inhale oxygen, which is never again exhaled as such; expired air containing carbonic acid, a gas composed of carbon and oxygen. In the body, therefore, the oxygen has united with the carbon, and produced the very same gas which is obtained by burning a piece of charcoal in the open air. Now, the heat generated by the combustion of the carbon in the body must be exactly the same as would be produced by burning the same amount of this element in the air. And till within the last few months the heat thus eliminated was considered amply sufficient to account for the heat of the body; but recent discoveries have led to the belief, that a small portion more is still wanting, which is supposed to be produced by electricity, formed by the free lactic acid of the tissues coming

in contact with the alkali soda in the blood. But as the temperature of the body is the same in all regions, it must be obvious that the amount of food or fuel required to keep up this temperature must differ according to the nature of the climate. It is a well-known fact, that the animals of the colder regions are much more voracious than those of more genial climates, where the temperature of the air equals or approaches to that of the body; and nothing can more clearly evidence the design of a beneficent Providence than the arrangement and adoption of the food to meet the exigences of the climate. Turn we now to the tropics, where the scorching heat of the sun begets, nay, almost compels, man to lead a life of indolence and inactivity. Breathing an atmosphere greatly expanded, little oxygen is taken in, and there is consequently very, very little waste of the frame. What can be more admirably fitted for his wants than the fruit and vegetables on which he mainly subsists, containing only about twelve per cent. of carbon? But let us for a moment glance at the situation of the Greenlander or Esquimaux. Dwelling in a miserable hut composed of ice and snow; clothed in a garb of fur or seal skin, he bids defiance to a degree of cold that would nearly freeze mercury. It is but rarely, indeed, that he enjoys the luxury of fire; the small pieces of drift wood he may chance to find are too precious to be burned. It is from these he makes his spears and other instruments for capturing the seal and the walrus, from the oil and blubber of which he obtains nearly his sole subsistence.

Here the air is condensed to an extraordinary degree, and a great amount of oxygen is taken in at each inspiration, and therefore more carbon is required to combine with it; hence the oil and blubber, containing about seventy per cent., are, of all things, the best adapted to supply his wants, as oxygen never escapes from the system after having entered it without being combined with carbon or hydrogen. Whatever tends to increase the amount of oxygen inspired must occasion a greater consumption of food; thus, by exercise, you increase the number of respirations, more oxygen, consequently, is introduced into the system, and therefore more food is required to combine with it. The exposure on the deck of a ship, the enjoyment of the cool and bracing air of the sea-coast, are all known to increase the appetite, simply de-

pending upon the increased quantity of oxygen taken in. The only use of clothes, in the abstract, is to economise food. They retain the heat of the body and render less food or fuel necessary for this purpose. I have told you, in herbivorous animals the fuel used for the production of heat are starch, gum, sugar, and other principles of food containing no nitrogen. In the carnivora the heat is kept up by the combustion of their own tissues. You see the hyena and the bear in a menagerie constantly moving about their dens; it is necessity in a great measure, and not impatience, that makes them do it to keep up the temperature of their bodies; for constant motion accelerates the waste of the body.

We have a very beautiful example in the slow development of heat by the combustion or burning up of the fat in hybernating animals; they (it is well known) grow enormously fat ere they retire to take their winter's sleep. In these animals every vital function, except the process of respiration, is suspended; and therefore they only require, like a lamp slowly burning, a substance rich in carbon and hydrogen to support the process of combustion in the lungs. On their awaking from their torpor in the spring the fat has disappeared; but it has not served as nourishment—it has not caused the slightest increase in any part of their body, neither has it changed the quality of any of their organs. With nutrition, properly so called, fat therefore has in animals not the least connexion.

From the preceding rapid sketch of the part the different ingredients of the food play in the animal organism, you will understand that the elements of nutrition contain nitrogen, and are of the same composition as flesh, whilst the elements of respiration, or the fuel, are destitute of nitrogen, and are therefore unfitted for the nutrition of the frame. We have now to consider the nature of the forces which exist in the body to produce its increase of mass, as well as to occasion that waste for the restoration of which food is partaken of.

[To be continued.]

TO CORRESPONDENTS,

AND SHORT NOTICES OF COMMUNICATIONS, &c., RECEIVED.

We beg to acknowledge the receipt of the history of a case of lacerated rectum in a mare, accompanied with the morbid part, from W. Sweeting, Esq., Surgeon, Abbotsbury. It shall appear in the next Number.

Some time since we received from Mr. W. Plomley, V.S. Maidstone, a set of shoes, with the following Communication:—

Dear Sir, *Maidstone*, 14*th Dec.* 1848.

Having shod horses for some time past most advantageously with shoes made in a peculiar form, and these having been likewise used by many of my veterinary friends, who think highly of them, I have taken the liberty of sending you a set for your opinion and trial. The advantages of the shoe are,—It renders the horse capable of travelling with ease, whatever the condition of the roads may be; he feels no blows from the constant battering on the hard Macadamized roads; it gives great protection to the foot, particularly to its posterior part, preventing bruises and the picking up of stones; it preserves the horny exfoliating sole from being chipped out; it offers a large surface to come in contact with the ground, thus lasting very much longer than a shoe of the usual make. Sometimes the horny sole comes upon a level with the shoe without inconvenience, the bottom of the foot being as hard as possible.

The shoe takes a circle of one uniform width and thickness with the crust, not extending beyond its outer edge until it approaches to about the width of one's finger to the heels of the frog. From six to eight nails are required to fix it on, which are counter-sunk, and a clip exists at the toe. When the shoe is applied rasp the crust to a proper length, but the sole is not to be touched, except loose and nearly exfoliated pieces are in the way. The frog seldom requires any interference with. The shoe may be allowed to remain on until quite worn out.

I remain, your's truly.

To Professor Spooner.

*** We have refrained from giving publicity to this matter before, being desirous of subjecting to a fair trial the shoes advocated by Mr. Plomley; and we can now speak with confidence of their worth. The great advantage resulting from their employment principally consists in giving to the plantar surface of the foot greater protection. As Mr. Plomley has fully described the form, &c., of the shoe, there is no necessity for our attempting any further explanation.

In a Communication received from Mr. R. Bowles, V.S. Abergavenny, he says, "A friend of mine, Mr. Thos. Morgan, of this place, has a ewe which brought forth a lamb on the 12th of March last, and on the 9th of this month (April) she produced another. Both the lambs are alive, and doing well. I should have told you that the ewe gave milk only from one teat until the second lamb was born, when she gave plenty of milk from both."

We thank Mr. J. Jones, V.S., for his Specimens of Intestinal Calculi, and shall be further obliged by the promised histories of the cases in which they occurred.

Also, to Mr. W. Cartwright, V.S., for a diseased kidney and impervious ureter taken from a pig. It shall be laid before the members of the Veterinary Medical Association at their earliest meeting in the next session, as requested by him.

We are obliged to Mr. A. Fowler, V.S., for his Specimen of "Syngamus Trachealis" taken from a turkey, with information of the means resorted to by him for the destruction of this parasite. Being engaged in its microscropic examination—and it is an object of considerable interest—we are desirous of obtaining a few more so as to render the examination perfect; which, being done, the account thereof shall appear, with Mr. Fowler's Communication, in the next Number of the Journal.

Mr. Page Wallis, V.S., in a note received, says, "In a patient which died the other day from impactment of ingesta in the colon I found two hundred and fifty, at least, of *lumbrici* in the stomach: some of them were five inches in length, and others three and two inches. In the small intestines were a large number of the *tricocephalus Equi*. There was no symptom indicative of the presence of these parasites, except a variable or unequal appetite. The animal lived three days after the attack of the disease of which he died; but all efforts to get the bowels to act proved ineffectual."

Mr. W. Smith's case of Varicose Veins in the Horse waits for an illustrative woodcut, which shall appear in the next Number.

Likewise Mr. Gowing's interesting cases of an unusual disease occurring in ewes and lambs.

Since going to press we have received a paper on Veterinary Homœopathy from Mr. Charles Wills, V.S., New York, which shall appear in the next number.

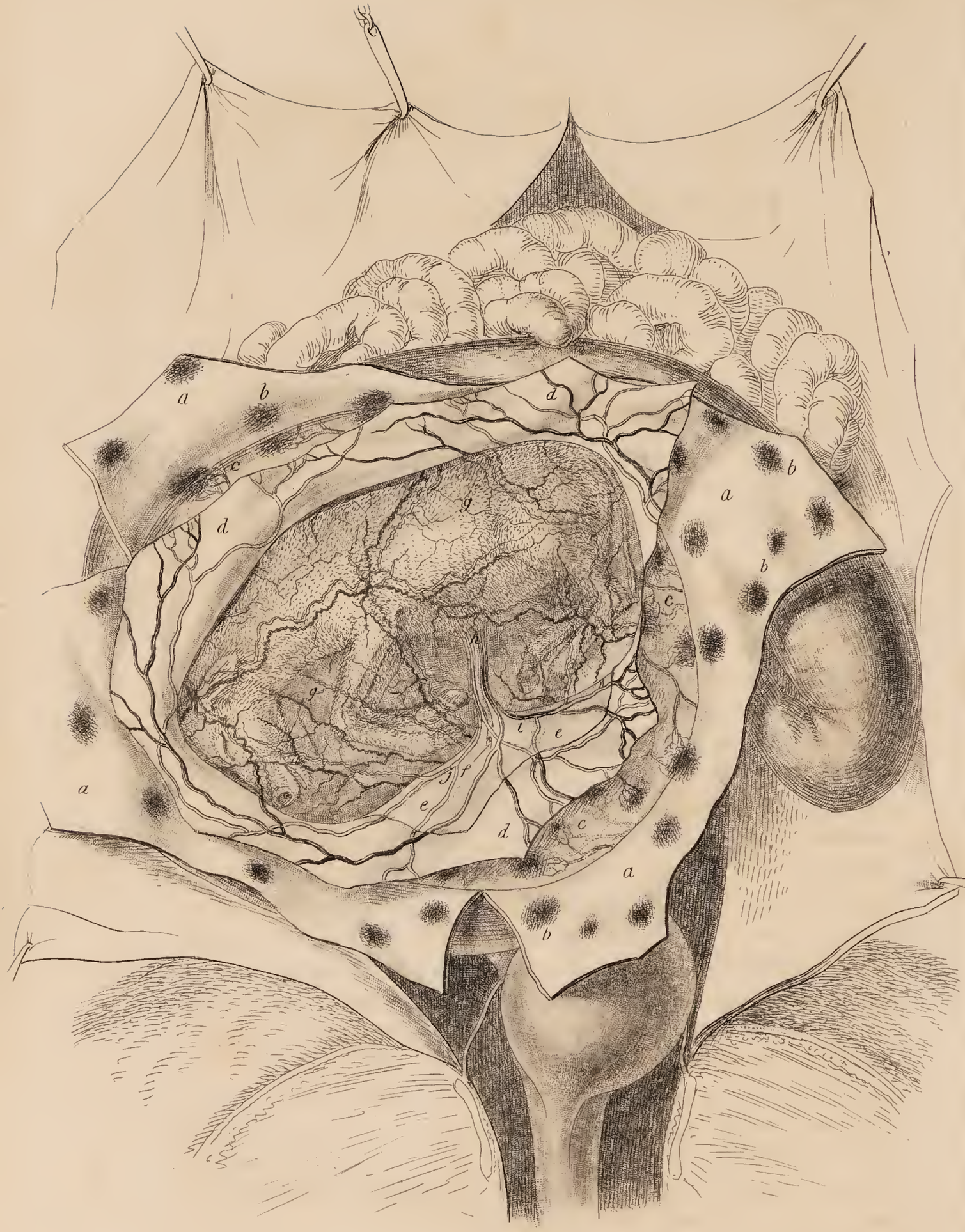
To Mr. P. Wakefield we beg to say that the value of anatomical plates to study from is questionable. We know of none so extensive as those by Professor Gurlt, of Berlin, and which may be procured through Baillière, Foreign Bookseller, Regent Street. The works he may advantageously peruse are those by Blaine, Percivall, and Youatt.

RECEIVED FOR REVIEW.

"The Horse's Mouth, shewing the Age by the Teeth." By Edward Mayhew, M.R.C.V.S., London. Fores, 41, Piccadilly: pp. 194.

ERRATA IN THE LAST NUMBER.

At page 120, for Mr. *M*alford *read* Mr. *W*alford.
,, 122, for 1st January *read* 1st December.
,, 154, for Mr. Cartwright *read* Mr. Cartledge.



FOETUS IN UTERO.

surrounded by its membranes.

THE

VETERINARY RECORD, &c.

Vol. V.] OCTOBER 1849. [No. 21.

A Lecture on the General Anatomy and Physiology of the Maternal Organs of Reproduction in the Cow and Ewe:

DELIVERED BEFORE THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

By J. B. Simonds.

[Extracted from the Journal of the Society.]

My Lord Duke, and Gentlemen,

ON an occasion like the present, knowing that so many and important matters require your attention, I shall not presume to intrude unnecessarily upon your time by the introduction of remarks which are purely of a prefatory nature. It is, therefore, my intention to proceed forthwith to the consideration of the subject which has been selected for this lecture, namely, the general structure and function of the organs of reproduction in the cow and ewe, and the rules or principles which should guide us in cases of preternatural parturition. As the latter is that which chiefly interests you as men of practice, so it will receive from me the fullest description; but it is of equal importance that I should explain the construction of those parts in the female which are specially employed in the act of parturition. It fortunately happens that no argument is needed to shew to either the scientific or practical breeder, or to those who are more immediately connected with the feeding and rearing of our native breeds of cattle, the necessity of such investigation. It is a matter which may be said to come home to all, being intimately identified with our agricultural, and therefore with our national, prosperity. As Englishmen we may well be proud of our improved cattle and sheep, which are at once the boast of Britain and the envy of the world. But we

might ask, how frequently are the hopes of the breeder disappointed, and his endeavours to improve a race of cattle rendered fruitless, by the casualties attending upon their birth? In such a dilemma science stands waiting, and offers a ready hand to guide him through difficulties and overcome danger. Essential, therefore, to success is a knowledge of the principles to which we have alluded, and which will form the basis of this discourse.

It is not our intention to enter on the *vexed* question of the best means to improve the breed of any particular class of animals; nevertheless, we may be allowed to make a few passing remarks on what is commonly designated "the theory and practice of breeding."

Breeding, with a view to improvement, may be said to be founded on an established law of nature, that *like produces like*. We should, however, always bear in mind that in animals there is a perpetual tendency to change, by which the development of their frame and strength of constitution are materially influenced, arising from a variety of causes, such as domestication, system of management, removal to a different climate, a continued habitation of the same district, partaking in general of the same diet, feeding on many kinds of provender, a liberal or niggardly allowance of food, especially when young, with protection from or exposure to the inclemencies of the weather, &c. But although these may be regarded as the chief causes in operation to produce the tendency to change, still among them we have the required means to promote the permanent improvement of a breed. Thus it will be seen that, in the language of Sir J. Sebright, "it is not always by putting the best male to the best female that the best produce will be obtained; for should they both have a tendency to the same *defect*, although in ever so slight a degree, it will in general preponderate so much in the produce as to render it of little value*."

In order to improve a particular race of animals, two plans are advocated by the two classes of practical breeders. Of these one is commonly called "the crossing," the other "the in-and-in" system. The latter of these was strongly advocated by the late Mr. Bakewell, and his example had, at least, the effect of destroy-

* "The Art of Improving the Breeds of Domestic Animals," by Sir John Saunders Sebright, Bart., M.P. London, 1809.

ing the great prejudice which existed against breeding from animals having a close relationship to each other. The too rigid adoption of this plan is found, however, to produce degeneration, and therefore its advantages are limited; for animals of the same family, living in the same locality, and subjected to the same system of management, are predisposed to the same defects and diseases, and these become hereditary. Besides which, every improvement of a breed requires the application of the same means to maintain it which produced it, and the chief of these is *care in the selection* of both the male and female, so as to avoid the consequences of that predisposition to which we have alluded. As with defects so it is with improvements; these are transmitted from parent to offspring. Hence, when *care in selection* is fully and efficiently carried out, deterioration from ordinary causes does not so rapidly occur. To assist in overcoming these causes, the taking of animals from different families and localities, or "crossing," is adopted. But even here care in selection is of equal importance.

We have spoken of hereditary predisposition to disease: this is exemplified by the fact that horses bred from "roarers" are so susceptible of this abnormal state of the respiratory organs, that "roaring" follows from causes which would be insufficient to produce it in other horses; and experience has shewn that very many of the young horses sent from this county (Yorkshire) to London, being in such condition, early become thus diseased through the altered circumstances under which they are placed. That which is true with regard to horses applies equally to cattle, sheep, and all domestic animals. As with disease so it is also with colour; this not only becomes immediately hereditary, but passes back, as it were, through several generations; hence the necessity of looking to the *purity* of a breed. In illustration of this position I quote from Mr. Wilkinson's Letter to Sir J. Sebright, wherein we read that, "suppose a number of pure Devon cows to be crossed with a breed of perfectly white bulls, it is probable that some of the calves would be perfectly red, others white, and the greater part would partake of these colours jointly. If we were now to take the red heifers produced by this cross, and put them to a Devon bull, it would not be a matter of any great surprise if some of their progeny, though sprung from red parents, should be

perfectly white, and still less that several should be mixed with this colour, though it would not by any means be so probable as in the former instance. And were we thus to proceed through several generations, this white colour would be less and less apparent in the breed, but would most probably occasionally shew itself in some individual or other. If, on the other hand, we were to breed from pure Devons only, that is, from those that have been carefully bred for a great length of time, we should reasonably expect their offspring to be of the same colour with the parents themselves*."

It has often been remarked, that wild animals undergo but very slight changes either in form, size, or colour; the reason of this, in many tribes, is obvious. We may take the class to which deer belong as an example. At the season of rut, when the herds commingle, great contentions take place between the males, by which the larger number of females falls to the most vigorous and healthy males, and a strong progeny is the result. Besides which, many of the weaker animals not unfrequently are carried off by the cold and privations of winter, thus leaving parents of good constitutions, and able to support their young, during the earliest periods of their life. In these uncongenial seasons, the robust, however, do not suffer to an extent sufficient to produce permanent injury, as the range they take is extensive, and thus space makes up for the local deficiency of herbage, and exercise overbalances the sedative effects of cold. Many other reasons might be advanced, were it necessary: these, however, are sufficient to shew that here we have Nature's plan of *selection*, which man but imitates in the *care* he bestows in pairing animals to breed together.

There are several singular circumstances connected with this division of our subject, and which may be here mentioned, although their causes cannot now be discussed. To speak of the existence of affection, or of favourable impressions in a female towards a particular male of another variety, but of the same species to which she belongs, being so strong as to influence the form and colour of her offspring, the immediate produce of a different male, appears to be very speculative, if not otherwise objectionable. Love of animals to man is, however, an attribute

* "Remarks on the Improvement of Cattle, in a Letter to Sir J. S. Sebright," by J. Wilkinson. Nottingham, 1820.

the possession of which will scarcely be denied to them. We know but little of the affection they have for each other, nor of its bounds or duration; and consequently it is difficult to say whether the facts we shall mention do in reality depend upon it, or on the *one* sexual connexion with a favourite male exciting a peculiar development in the still immature ova of the female. The physiologist and the psychologist could each bring forward many well-grounded arguments in favour of his particular view. With these we have not now to do, and therefore we proceed to narrate the cases themselves. The first is as follows :—"The Earl of Morton, being desirous of obtaining a breed between the horse and the quagga, selected a young mare of seven-eighths Arabian blood and a fine male of the latter species, and the produce was a female hybrid. The same mare had afterwards, first a filly and then a colt by a fine black Arabian horse. They both resembled the quagga in the dark line along the back, the stripes across the forehead, and the bars across the legs. In the filly the mane was short, stiff, and upright, like that of the quagga ; in the colt it was long, but so stiff as to arch upwards, and hang clear of the sides of the neck. In other respects they were nearly pure Arabian, as might have been expected from fifteen-sixteenths of Arabian blood*." The second case is analogous, but it occurred in the pig :—"D. Giles, Esq., had a sow of the black and white kind, which was bred from by a boar of the wild breed of a deep chestnut colour : the pigs produced by this intercourse were duly mixed, the colour of the boar being in some very predominant. The sow was afterwards bred from by two of Mr. Western's boars, and in both instances chestnut marks were prevalent in the litter, which in other instances had never presented any appearance of the kind†." The third we shall quote is thus given :—A cow, the property of Mr. Mustard, of Angus, "chanced to come in season while pasturing in a field which was bounded by that of one of his neighbour's, out of which an *ox* jumped, and went with the cow until she was brought home to the bull. The ox was white, with black spots, and horned. Mr. Mustard had not a horned beast in his possession, nor one with any white on it :

* Bell's "British Quadrupeds," page 392.

† "Philosophical Transactions," 1821.

nevertheless, the produce of the following spring was a black and white calf with horns*."

We select one other case, and in another animal, namely, the dog:—"On one occasion, when the late Dr. Hugh Smith was travelling in the country, accompanied by a favourite female setter, she became suddenly so enamoured of a mongrel that followed her, that, to separate them, he was forced, or rather his anger irritated him, to shoot the mongrel. The image of this sudden favourite, however, still haunted the bitch; and for some weeks after she pined excessively, and obstinately refused intercourse with any other dog. At length she admitted the caresses of a well-bred setter; but, when she whelped, the Doctor was mortified with the sight of a litter which he perceived bore evident marks (particularly in colour) of the favoured cur, and they were accordingly destroyed. The same also occurred in all her future puppings: invariably the breed was tainted by the lasting impression made by the mongrel†." The latter two cases, and many similar ones which might be related, particularly in the dog, would seem to shew that mental impressions received at the time of œstrum are of themselves sufficient to stamp the progeny. Be this as it may, each has a practical bearing, which he who looks to the preservation of the purity of a breed will not fail to profit by.

Before concluding this section of our address, it will be right to allude to the circumstance that accidental varieties, or *lusus naturæ*, may, by care in their selection, form the types of a future progeny. The solidungulous breed of swine, the two digits or toes being united and covered with a hoof similar to that of the horse, is thus accounted for, as is also the ancon or otter breed of sheep.

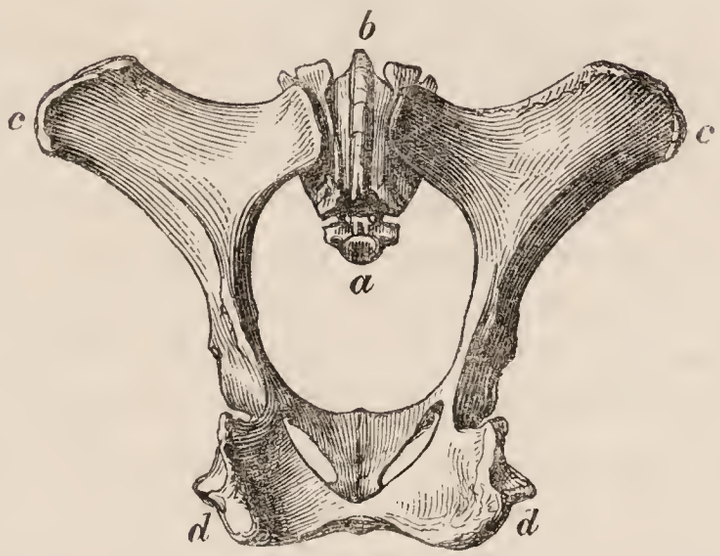
We proceed to speak of the general structure and functions of the organs of reproduction in the cow and ewe; these are the vagina, uterus, Fallopian tubes, and ovaries, with their several appendages. In an unimpregnated state the uterus is chiefly lodged within the pelvic cavity, but encroaches more or less within the abdomen when in the opposite condition. The cavity of

* "Quarterly Journal of Agriculture," vol. i, Essays, p. 28.

† "Blaine's Canine Pathology," 1832.

the pelvis is formed by the bones constituting the hips and buttocks (see fig. 1), and it is important to bear in mind that its size

Fig. 1.



a.—The pelvic cavity.
b.—The sacrum, a continuation of the spine.
c, c.—The projections, called the hips.
d, d.—The bony prominences of the buttocks.

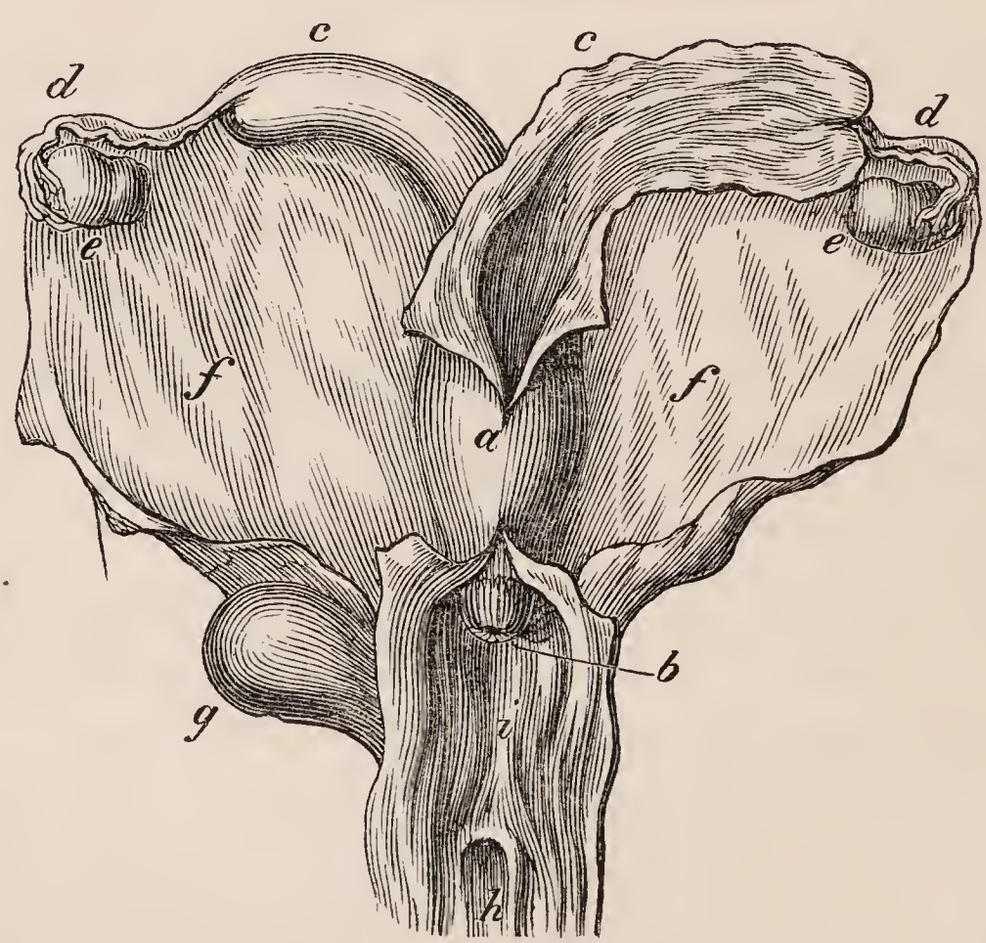
will materially interfere both with the rapidity and safety of parturition. Many an animal is lost from too narrow a pelvis mechanically obstructing delivery. The practical breeder should therefore always remember, that external form is but a type of internal development; and consequently, when the hips are narrow, the buttocks compressed together, and the spine drooping, the dimensions of the pelvic cavity must be small, and parturition thereby rendered more dangerous. The woodcut (fig. 1) shews the relative connexion that the bones of the pelvis have to each other, and the way in which they form the opening through which the fœtus passes in delivery.

The vagina, *i* (fig. 2, p. 308), extends from the external shape, the *labia pudendi*, to the mouth of the womb, *b;* it is placed at the lower part of the pelvis, and has the rectum above it, and receives inferiorly the opening of the urinary bladder, *h:* previous to parturition its walls become flaccid, and its inner surface is bedewed with a copious mucous secretion to favour the passage of the fœtus. In the act of coition the intromittent organ of the male is placed within the vagina, and is thus brought in contact with the mouth of the womb, by which means the fecundating fluid is conveyed into that organ.

The uterus, or womb, *a*, is held in its situation chiefly by the

broad ligaments, *f f;* at its anterior part its coats are continuous with the vagina, and posteriorly it is divided into the two horns, *c c*, which have attached to their extremities the Fallopian tubes, *d d*, and connected with these are the ovaries, *e e*. During the period of gestation the os uteri (mouth of the womb) remains closed; but at the time of parturition it is widely dilated, thus forming a free and open passage from the vagina to the interior of the uterus. The coats of the uterus are three, and are united to each other by areolar tissue: the external or serous coat is smooth and continuous with the lining membrane of the abdomen; it gives support to the viscus, and by its reflections forms the two broad ligaments. The middle or muscular coat varies considerably in strength and thickness, referrible to impregnation or non-impregnation; it is thin and comparatively weak in the

Fig. 2.



a.—The body of the uterus.
b.—The os uteri.
c, c.—The horns, one of which is laid open.
d, d.—The Fallopian tubes, with their fimbriated extremities.
e, e.—The ovaries.
f, f.—The broad ligaments.
g.—The urinary bladder.
h.—The opening of the bladder.
i.—The vagina cut open, to shew the passage leading to the bladder and os uteri.

latter case, and its fibres, which interlace each other in every direction, become greatly increased during gestation. On the muscular coat the expulsion of the fœtus from the uterus in delivery partly depends. The internal or mucous coat has a velvety appearance, and it secretes the menstrual fluid; but its principal use in the lower animals is to form a bond of connexion between the mother and her young ones, by which their vitality is preserved and their development effected. To this we shall hereafter more especially refer.

We will now add a few remarks on the causes of œstrum, impregnation, and the development of the fœtus. The term œstrum is employed to designate that condition of the female which shews her fitness and desire for the male. Its early or late appearance is governed by a variety of external circumstances. It is associated with puberty, and passes off on the approach of old age. In some of our improved breeds of cattle, especially when well kept and tended, œstrum comes on very early in life, and in such instances the animal often conceives when she is little more than a year old. These early conceptions, however, too frequently prove injurious, by interfering with the development of the frame of the female, and also by deteriorating the quality of her offspring. Domestication, with its ordinary accompaniments, exerts a considerable stimulating influence on the generative system: thus, some animals, which in a state of nature produce but one litter a year, will, when domesticated, bring forth several; such are the dog and pig. The immediate cause of œstrum is the existence of fully matured ova within the ovaries of the female; and, when these escape without coition and consequent impregnation, we observe a temporary cessation of the desire until other ova are equally perfected. It follows, therefore, that impregnation can only be effected when the ova are in this condition. The time occupied in the development of the ova differs in different animals, hence the variation we witness in their return to the male. The ordinary symptoms of œstrum in the cow and other animals are too well known to render it necessary to repeat them; and it is sufficient to state that they denote a highly excited state of the system. Impregnation is produced by the fecundating fluid of the male acting on the matured ovum of the female, which action probably takes place in the ovarium. Physiologists are acquainted with many

phenomena which illustrate this. The way in which the male or seminal fluid finds its course through the body and horns of the uterus, and thence through the Fallopian tube to the ovarium, is disputed: its conveyance, however, is generally believed to be effected through the agency of moving filaments, called spermatozoa, with which it abounds. Hence it is all important that the Fallopian tubes should be pervious, or impregnation cannot take place. If their passage be obliterated, as we have often proved by the experiment of passing a ligature around them, the animal is as effectually rendered non-productive as if the whole parts had been taken away. The above facts explain how it is that, in the ordinary operation of spaying, the simple removal of the ovaries, leaving *in situ* the uterus with its horns and Fallopian tubes, destroys the desire as well as the power of conception; and when, by accident or otherwise, the operator leaves behind an ovarium, all other parts being cut away, the animal returns to the male, notwithstanding she is sterile.

The impregnated ovum, when it bursts and escapes from its ova-sac, is seized or entangled by the fimbriated edge of the Fallopian tube, and subsequently conducted into the uterus, where it excites that extraordinary action which leads to the formation of a new creature in every essential particular like its parent. Should the ovum not be caught by the fimbria, it falls into the cavity of the abdomen; but is not necessarily destroyed, as even here, although out of its proper matrix, its sets up an analogous action to that which otherwise would have been produced within the uterus. Thus we have explained the formation of those extra-uterine fœtuses which are occasionally met with both in human and veterinary practice.

Without describing the earliest stages of the formation of the fœtus from the impregnated ovum, it will be sufficient to remark that, in the descent of the ovum into the uterus, it receives a coating of effused fibrin, which forms the membrane termed the corium, by which the fœtus is attached to the inner surface of the womb, and obtains from the mother the materials necessary for its vitality and growth. The outer surface of the corium [see *Plate*] is thickly studded in the cow and ewe with shaggy projections, *c*, named cotyledons, and these are fitted into corresponding concavities, *b*, in the membrane lining the womb, the *tunica*

decidua uteri, thus forming the bond of connexion we have spoken of. The tufts of the corium contain the ramification of the fœtal vessels, and the concavities of the *tunica decidua uteri* the enlarged and elongated branches of the uterine arteries of the mother: thus, by the two sets of vessels lying in contact the blood of the fœtus is purified and reinvigorated, as the maternal blood is more highly oxygenated than that of the fœtus. The change which is effected is a chemical one, and analogous to that taking place in the lungs of an animal after birth; the cotyledons, therefore, may so far be regarded as the fœtal lungs. Besides this important office performed by them, the vessels of the fœtus are here surrounded by a thick layer of cells which absorb nutrient matter from the mother and transmit it to the blood of the fœtus. Hence the cotyledons may also be compared to the stomach, or rather to the digestive and assimilative organs of a perfect animal. Thus it will be seen, that, although there is no direct communication between the vessels of the mother and those of the fœtus, yet every requisite for its life and growth is provided for.

Besides the corium, there are two other membranes to be noticed as belonging to the fœtus, the amnion, *g*, and the allantoid, *e*. The amnion immediately surrounds the body of the fœtus, and secretes a fluid, the *liquor amnii*, in which it floats, and by which it is protected from those injuries which might otherwise destroy its life, it being a property of fluids to diffuse and modify the force of a blow. The liquor amnii, with its investing membrane, is also made to serve a no less important office, that of being protruded into the mouth of the womb at the commencement of parturition, thus acting as a hydrostatic dilator.

The allantoid membrane is situated between the amnion and corium, where it forms a sac to receive the urinary secretion of the fœtus: it is of large size in the lower animals, and its dimensions increase with the growth of the fœtus, a phenomenon which is not observed in the human subject. The allantoid sac has a direct communication with the true urinary bladder by means of the urachus [see *Plate*, *f*]. The umbilical cord, *h*, is composed of this tube, the urachus, and the arteries, *i*, which convey the impure blood out of the body of the fœtus to the cotyledons, and the veins, *j*, which return it after having been re-oxygenated in the manner previously alluded to. It will be evident, from the fore-

going remarks, that a due provision is likewise made for an equal distribution of this pure blood through the body of the fœtus, so that every part of the frame may be built up at the same time; consequently we meet with vessels in the fœtus that are not needed after birth. To enter more fully into this interesting and instructive subject would be to encroach on the practical part of our lecture, and therefore we proceed to speak of the symptoms of pregnancy and the period of utero-gestation.

The first and most striking indication of impregnation is the cessation of œstrum, the animal not returning to the male at the usual period, or refusing his overtures when introduced to him. With this is associated a general quietude of the system, and a tendency to accumulate flesh, and in some animals, as the mare, a sluggishness while at work. Shortly afterwards the abdomen is found to increase in size, the loins to droop, and the muscles of the croup to be less prominent. The *labia pudendi* are swollen and flaccid; a blush of redness pervades these parts, extending into the vagina, from which an augmented quantity of mucus is discharged. The abdomen gradually gets larger and larger, and has a peculiar round appearance at its lower portion, with a falling-in immediately beneath the bones of the loins. As the period of labour approaches, the mammary gland enlarges, the secretion of *colostrum* takes place within its follicles, and the teats are hot and full. When delivery is about to be effected, the animal becomes restless, often lies down, strains, rises again, changes her position, looks at her flanks, and carries the tail higher than natural, &c.

As I shall have again to allude to these indications, I pass on to remark on the means taken to satisfy ourselves that a fœtus does exist within the uterus. During the earliest periods of gestation the question of pregnancy is a most difficult one to decide, but subsequently that which was ambiguous becomes clear, and we are then enabled to make a correct diagnosis. As the fœtus is early located within the womb, so we shall find that, in such animals as will admit of the hand being passed up the rectum, we can detect its presence in the form of a small, roundish, and slightly moveable body situated below and without the intestine. The hand being quietly kept in this situation, and pressed upon the enlargement, will occasionally recognise voluntary movements in the living embryo. Some persons prefer to introduce the hand

into the vagina, and carry it towards the os uteri, so as to ascertain its condition; for, as I have elsewhere observed, the mouth of the womb is closely shut during gestation, and we also find at this time that it contains a layer of thick albuminous matter. There are serious objections to this latter proceeding, for even when the manipulations are most carefully performed abortion will not unfrequently result. Percussion over the uterine region is also of great assistance; and auscultation has its advocates, who inform us that the ear, placed in contact with the abdomen of an impregnated animal and moved gently from spot to spot, will often detect the sound of the fœtal heart. We confess, however, that we have not succeeded to our satisfaction, although we have made very many investigations of this kind. With reference to percussion, all are particularly acquainted with the manner in which this is adopted, and the side of the cow, viz. the right, that is selected. The inclination of the impregnated uterus to the right side depends upon the rumen being situated in the left division of the abdomen. In the still more advanced periods of gestation, fœtal movements can be seen while standing by the side of an animal; and as these are often found to be both stronger and quicker in the mare after drinking a full quantity of cold water, grooms and stablemen have frequent recourse to this plan; to which, however, we object, as spasms of the intestines and death have occasionally been produced by it.

The period of utero-gestation, or length of time that the fœtus is detained in the uterus, depends upon several causes, and differs in nearly every variety of animal unless belonging to the same tribe or family. The average period that the mare carries her young may be stated as being nearly *forty-eight weeks*, the cow *forty*, the ewe *twenty-two*, the bitch *nine*, and the sow *sixteen weeks*. It certainly is a remarkable fact, and one which shews the mighty power of the all-wise Creator, that, in animals placed so high in the scale of organized beings as the canine race, full and perfect development of their young should be effected in the short space of sixty-three days. If, however, we descend the scale, we shall find that this is comparatively a long period to be occupied in the perfecting of the offspring of the lower animals.

The late and much lamented Earl Spencer has recorded in the pages of your Journal* his observations on the duration of gesta-

* Vol. i, p. 165, *et seq.*

tion in no less than 764 cows; and we are much gratified in being able to say that he has thereby rendered most efficient aid to science, as well as considerable service to the practical breeders of cattle. I refer to the table accompanying the paper for full details, but I shall nevertheless make an extract or two, in consequence of the important bearing these statements have on this part of our subject:—"From the inspection of this table," his Lordship says, "it will be seen that the shortest period of gestation, when a live calf was produced, was 220 days. Any calf produced at an earlier period than 260 days must be considered decidedly premature, and any period of gestation exceeding 300 days must also be considered irregular; but in this latter case the health of the produce is not affected. It will also be seen that 314 cows calved before the 284th day, and 310 calved after the 285th; so that the probable period of gestation ought to be considered 284 or 285 days, and not 270, as stated in the book upon Cattle, published under the superintendence of the Society for the Diffusion of Useful Knowledge."

The facts here mentioned with reference to the great differences in the time of gestation cannot, even in the present advanced state of science, be satisfactorily accounted for. Dr. Carpenter, writing on the same subject, remarks that "the average length of time which elapses between conception and parturition in the human female appears to be 280 days or 40 weeks. There can be little doubt, however, that gestation may be occasionally prolonged for one, two, or even three weeks beyond that period; such prolongation not being at all unfrequent among the lower animals, and numerous well authenticated instances of it, in the human female, being on record. Upon what circumstances this departure from the usual rule is dependent has not yet been ascertained; but it is a remarkable circumstance, ascertained by the observations of cattle breeders, that the *male* has an influence upon the length of gestation—a large proportion of cows in calf to certain bulls exceeding the usual period, and a small proportion falling short of it. Hence we must attribute the prolongation of the period to some peculiarity in the embryo, derived from its male parent*." Alluding to the opinion which is also entertained with respect to the sex of the fœtus influencing the time of gestation, Earl Spencer observes, "there is a prevalent belief among farm-

* Carpenter's "Manual of Physiology," p. 473.

ing men, and I believe farmers, that, when the time of gestation of a cow is longer than usual, the produce is generally a male calf. I must confess that I did not believe this to be the case, but this table shews that there is some foundation for the opinion. In order fairly to try this, the cows who calved before the 260th day, and those who calved after the 300th, ought to be omitted as being anomalous cases, as well as the cases in which twins were produced; and it will then appear that, from the cows whose period of gestation did not exceed 286 days, the number of cow-calves produced was 233, and the number of bull-calves 234; while from those whose period exceeded 286 days, the number of cow-calves was only 90, while the number of bull-calves was 152." This places the matter in so clear a light, that it is unnecessary to add another word; and therefore I shall pass on to the last division of this lecture, namely, NATURAL and PRETERNATURAL PARTURITION.

Labour, although perfectly natural, may occupy some time, or be rapidly effected; we observe a considerable difference in this respect among the different animals which man by domestication has rendered subservient to his use. Delivery under ordinary circumstances is quick in the mare, the birth of the foal rarely occupying more than a few minutes: in the cow, half an hour may be regarded as about the average time after labour-pains shew themselves; while in the ewe it not unfrequently happens that several hours will be spent in labour. I will here advert to a table in which I have attempted a classification of labours, shewing the several varieties met with in practice.

CLASSIFICATION OF PARTURITION.

DIVISION.	VARIETY.
Natural.....	Quick. Lingering. Twin.
Preternatural	Lusus Naturæ. Every kind of Malpresentation.
Premature	do. do.
Protracted	Mechanical Impediments. Imperfect Throes.
Impractical	Maternal Defects.
Instrumental	Destructive, or not, of the Fœtus.
Complicated	Uterine Dropsy, Hæmorrhage, Rupture. Inverted Vagina, Bladder, Rectum. Ruptured do. do. do. Scirrhous Os Uteri, Lacerated Vulva. &c. &c. &c.

Before describing PRETERNATURAL LABOUR arising from false presentations, I must speak of NATURAL delivery, and the way in which it is accomplished. The symptoms denoting the approach of parturition have been before described; namely, restlessness, frequent change of position, lying down, quick rising, straining, &c.; these all indicate an excited state of the system accompanied with pain: this pain is not, however, of the ordinary character, but early becomes propulsive or bearing down, and also intermittent. It is important to distinguish between *straining* and the *true propulsive pains* of parturition; the former not unfrequently depends on the dilatation of the os uteri, and this, in many cases, precedes labour for some days. The dilatation of the mouth of the womb is often associated with great pain, and this is apparently proportionate to the freedom with which it expands. Proprietors of stock should not be in too great a hurry with their animals at the time of parturition, although they may express much uneasiness by continued *straining*. I have known many cases where valuable animals have been lost in consequence of impatience on the part of the owner in seeking too soon to give assistance; I have also frequently seen cases where the symptoms of approaching parturition have disappeared, and not returned for two or three days. A careful examination *per vaginam* should be made under these circumstances, and, if the mouth of the womb be found only partially dilated, the case must be left to Nature's efforts, when all will generally end well. I should state, however, that in *extreme* cases of this description an ounce dose of tinct. opii administered to a cow, and followed by an ordinary aperient, will be productive of much benefit.

The act of parturition, by which the fœtus is expelled from the uterus, is in part effected by the contractility of the muscular coat of the womb, and in part by the energetic action of the abdominal muscles. The cause of this contraction taking place at the expiration of a given time cannot be satisfactorily explained: it does not arise from the full development of the fœtus, nor its capability of living, comparatively, independent of its parent; if so, neither abortion nor premature labour would occur. Nor can the length of gestation be said to depend on the mere life of the fœtus, for then a dead fœtus would be cast off immediately, no matter what might be the stage of gestation; whereas daily

instances are met with where a dead fœtus is retained the full time.

The mouth of the womb being freely dilated, and every thing prepared for the birth of the young, the simultaneous and repeated contractions of the uterus and abdominal muscles propel the fœtus, covered by its membranes, first towards and next into

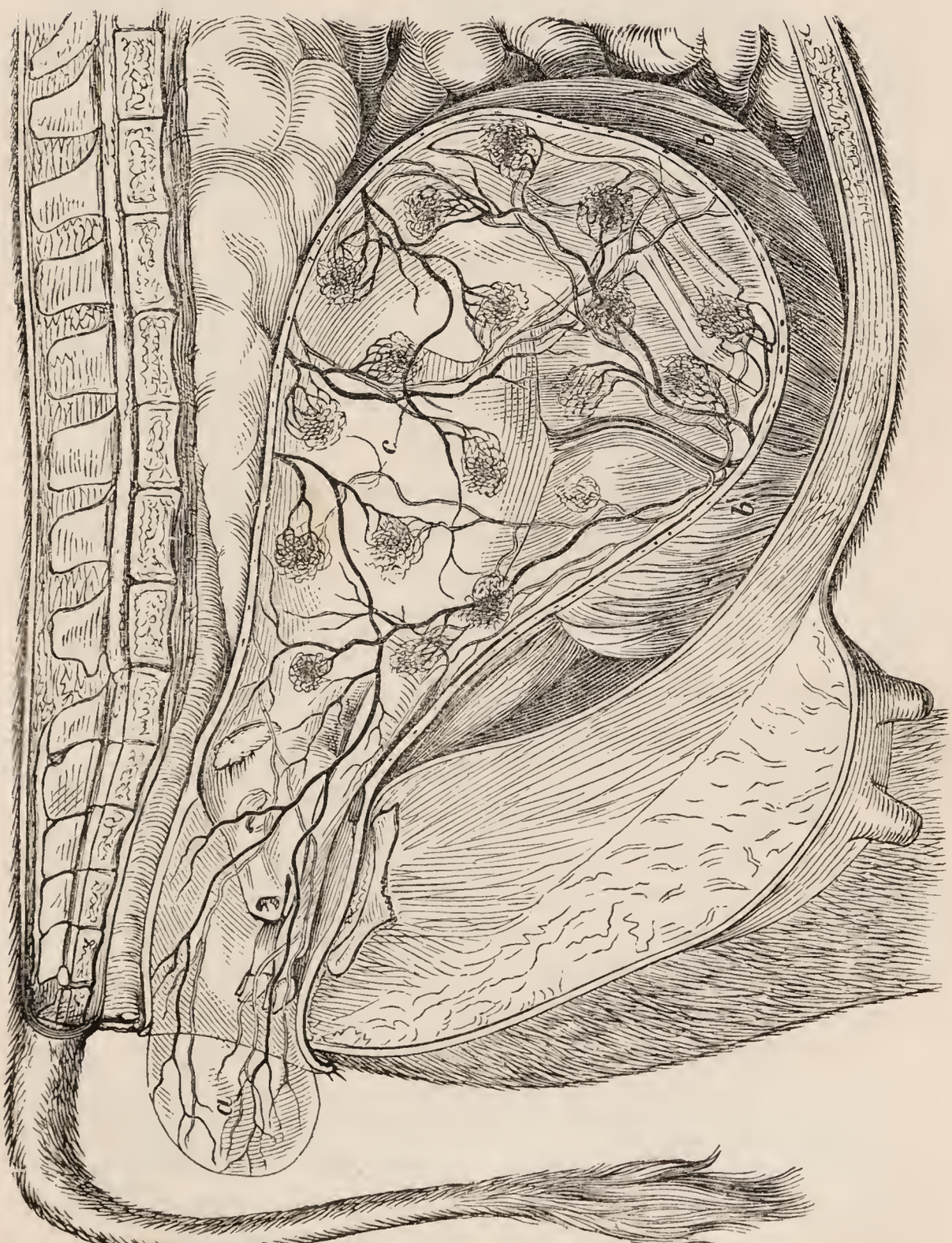


Fig. 3.

a.—The water-bladder. *b, b.*—The uterus. *c.*—The fœtus enclosed within the amnion.

the vagina. This advance is assisted by its position, and also by the pushing forwards of the liquor amnii. This fluid, contained within its proper membrane, first appears at the "shape," and is commonly designated "the water bladder:" as soon as it bursts, the propulsive action of the uterus is brought to bear immediately on the body of the fœtus, by which it is ultimately expelled. In *fig.* 3 we have a view of the calf placed in the natural position and covered by the amnion, which, with its contained fluid, is protruding from the shape: the sketch will materially assist the description we have given.

With the birth of the young the mother experiences an immediate relief, but labour is not considered to be completed until the membranes have also been cast off. This is effected by a more gradual and far less painful action of the uterus, which first detaches the cotyledons from their numerous connexions, and then ejects the membranes by an augmentation of the propulsive power. After this the womb contracts with some force upon itself, and thus effectually compresses the mouths of the uterine vessels and stays the escape of blood.

It is not always that delivery is accomplished with the facility I have described, although the presentation is perfectly natural: delay may arise from a disproportion between the size of the fœtus and its dam, when force will be necessary to assist the expulsive throes. This assistance ought only to be rendered during the continuance of each *alternate* pain: by a steady adherence to this rule considerable resistance may be overcome, and the life of both the mother and her young preserved. We can call to mind one case in particular, where we succeeded to our perfect satisfaction in removing from a small Suffolk cow a calf which weighed, when taken away, no less than eight stone (fourteen pounds to the stone). Upwards of two hours were occupied in the act; nevertheless, we had the gratification of being instrumental in saving both the parent and her offspring.

Protracted Labour in a natural presentation may result from congenital disease of the fœtus; that which is most commonly met with is dropsy of the abdomen, and this is depicted in the annexed sketch. Under these circumstances no advance can be made by the application of a proper amount of force, and the life of the fœtus should at once be sacrificed. To effect the ne-

cessary reduction in the size of the body by giving an exit to the fluid, a trocar of sufficient length should be thrust through the

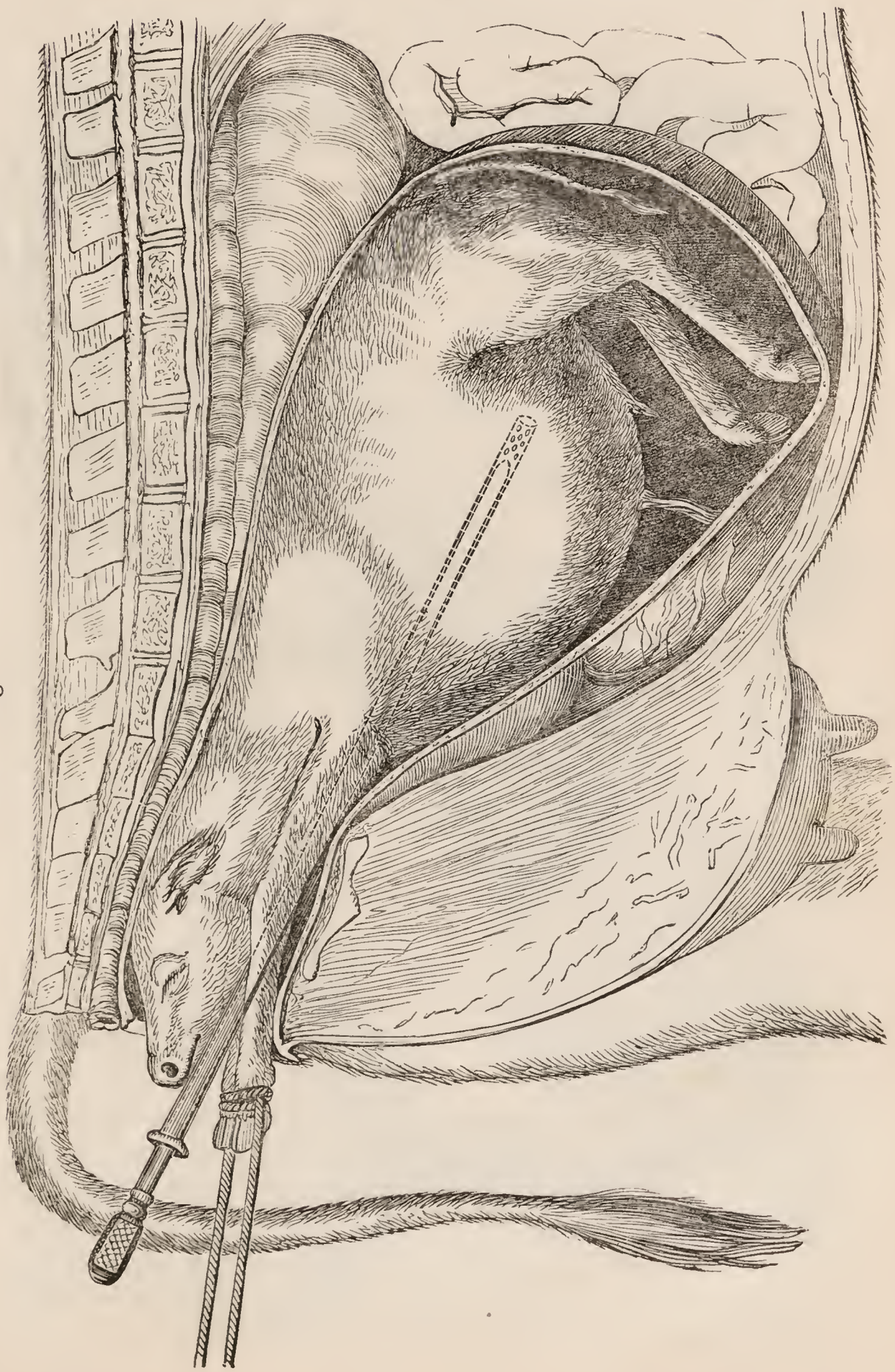


Fig. 4.

chest into the abdomen (as represented in *fig.* 4), and the stilet withdrawn; when the pressure which is brought to bear on the

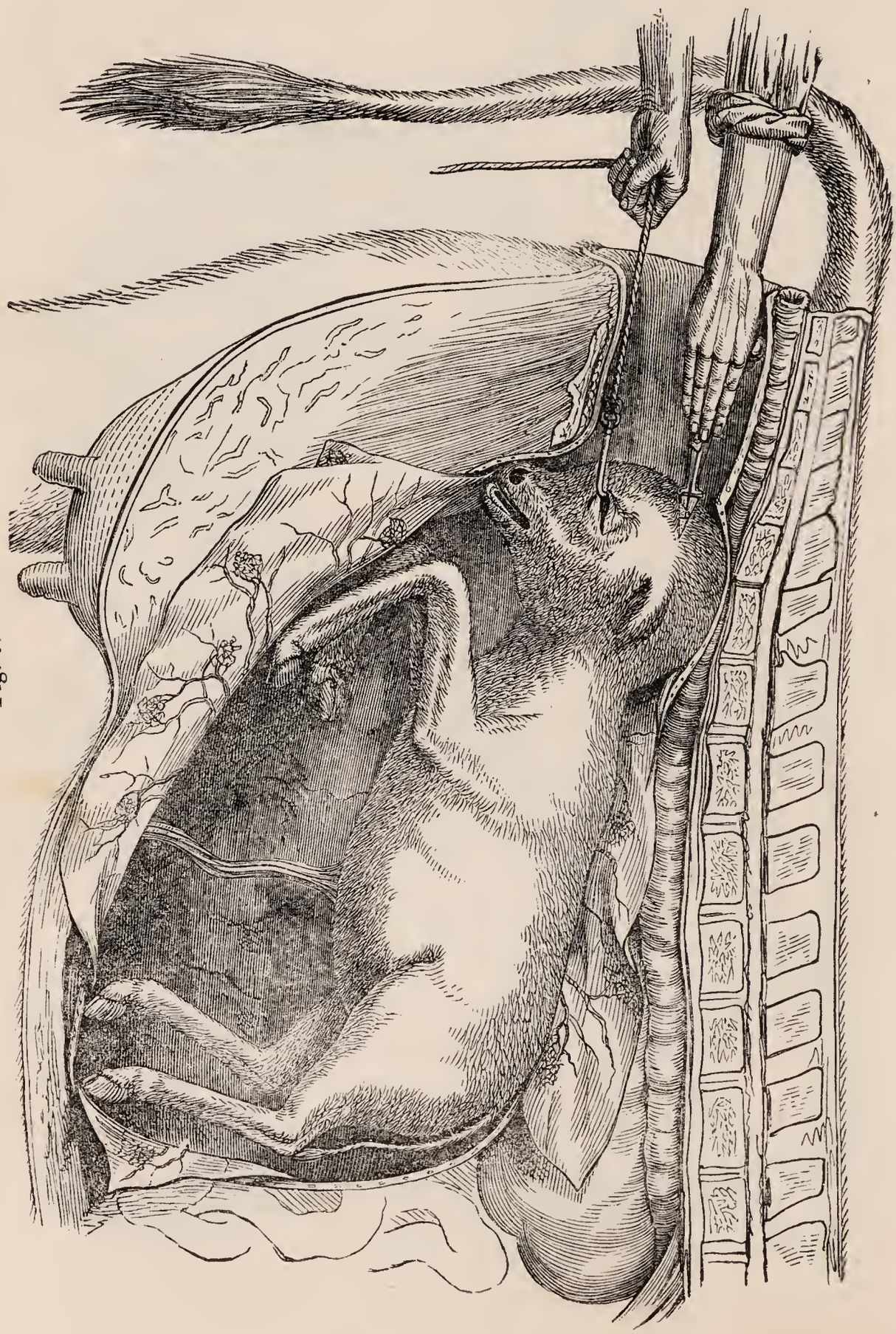


Fig. 5.

fœtus by the traction employed, together with the labour-pains of the mother, will be sufficient to forcibly drive the fluid through the sheath of the instrument, thus reducing the enlarged abdomen and facilitating delivery. Several years ago I was called to a mare in labour, where the obstruction to its progress depended on the accumulation of a large quantity of urine within the bladder of the fœtus, from a congenital closure of the urachus. The case cost me a great deal of labour and anxiety; the mare, however, did well; and I make mention of the circumstance for the purpose of stating, that I was led to the subsequent employment of this instrument from the difficulty I then experienced. The particulars of the case are given at length in "THE TRANSACTIONS OF THE VETERINARY MEDICAL ASSOCIATION for 1841-2."

Among other causes of LINGERING LABOUR from congenital disease, and where the presentation is natural, is an accumulation of fluid within the cranial cavity, designated *water on the brain.* In such instances the body of the fœtus is unusually small, so that we have little to apprehend if we can succeed in reducing the size of the head. Having satisfied ourselves by an examination of the real condition of the parts, let the fore-legs be returned into the body of the uterus *(represented in fig. 5)*, thus making more room in the vaginal passage for our further manipulations. Then place a hook attached to the end of a cord within the orbit; draw firmly at this with the left hand, so as to fix the head against the brim of the pelvis below and the sacrum above. Introduce with the right hand an instrument called a perforator, thrust its point through the bones of the head, and split them asunder by compressing the handles of the instrument; an exit will thus be given to the fluid, and the bones will consequently now yield sufficiently to allow the fœtus to pass through the pelvic cavity. Prior to attempting delivery it is, however, necessary to re-adjust the legs by bringing one after the other into the vagina, when moderate traction alone will be needed to remove the fœtus; the force being applied in this, as in every other case, only during the maternal efforts to unburden the uterus.

Among the varieties of natural delivery we may name TWIN-LABOUR, although it rarely happens that both fœtuses are presented with the head and fore-legs advancing; one being thus placed, and the other in the reverse position. It is, however, in

but few instances that the veterinary accoucheur is required when parturition is delayed, simply in consequence of twins: the young are generally of small size, and the one which lies in the natural position is first expelled, thus bringing the parts into a fit condition to favour the birth of the other. And here I would remark, that neither the veterinary practitioner nor the farmer should ever leave a case of parturition in which his services had been required without a manual exploration of the uterus, to satisfy himself that another fœtus was not present.

I pass on to consider some of the principal forms of PRETERNATURAL PARTURITION; and the first to which I shall allude is the one depicted in *fig.* 6. It will here be observed that the two fore-legs have passed through the mouth of the uterus into the vaginal passage, while the head is turned back and lies in contact with the side of the young animal. This presentation is of common occurrence, and may be regarded as a mere alteration of the natural position, arising from the circumstance that, when the head reached the pelvis, instead of its passing onwards in a straight direction, it became turned a little aside, and the repeated throes of the mother, acting on the hinder part of the body of the fœtus, forced it into the position here represented. The difficulty of adjusting the fœtus and effecting delivery will be proportionate to the distance the head is placed backwards. In some cases it will be found within our grasp, while in others we can only succeed after repeated efforts have been made to reach the ear or the orbit. Under either circumstance we are first to secure the fore-legs, by passing around each, directly below the fetlocks, a cord having a running noose; they are then to be returned into the body of the uterus; after which pressure is to be made upon the curved side of the neck or chest, depending on the position of the head, which pressure must resist the propulsive efforts of the mother; when it will be found that the neck will be thus straightened, and the head consequently brought nearer to the pelvic opening. We should remark, that in this presentation the fœtus is often found dead, and therefore we may venture to adopt those means which otherwise we should not have recourse to. In extreme cases, however, of this description, the preservation of the life of the mother is of the first consideration, and we must not hesitate to use instruments to facilitate our manipulations.

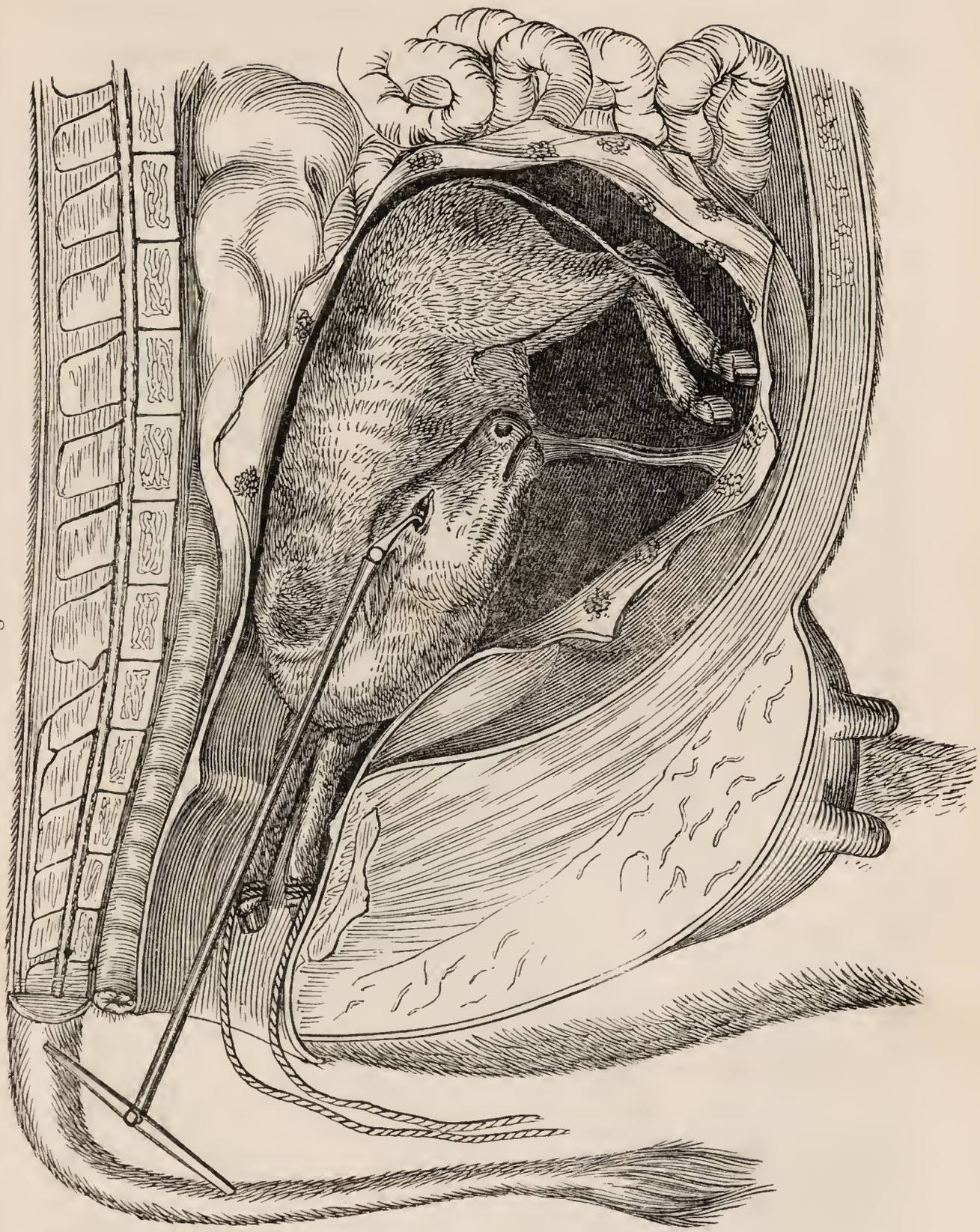


Fig. 6.

A hook attached by a hinge-joint to a steel rod, and which has at the other end a cross handle, removable at pleasure, is the most useful instrument which can be employed. The operator, taking the hook in his hand and carrying it towards the orbit, directs his assistant to advance or draw it backwards, as he may

find it necessary, so as to aid his efforts to place it within the orbit. After having adjusted the head, the legs by means of the cords are to be brought up, and delivery accomplished in the usual manner.

The *second form* of false presentation that I shall describe is shewn in the sketch, *fig.* 7. It will here be seen that the head

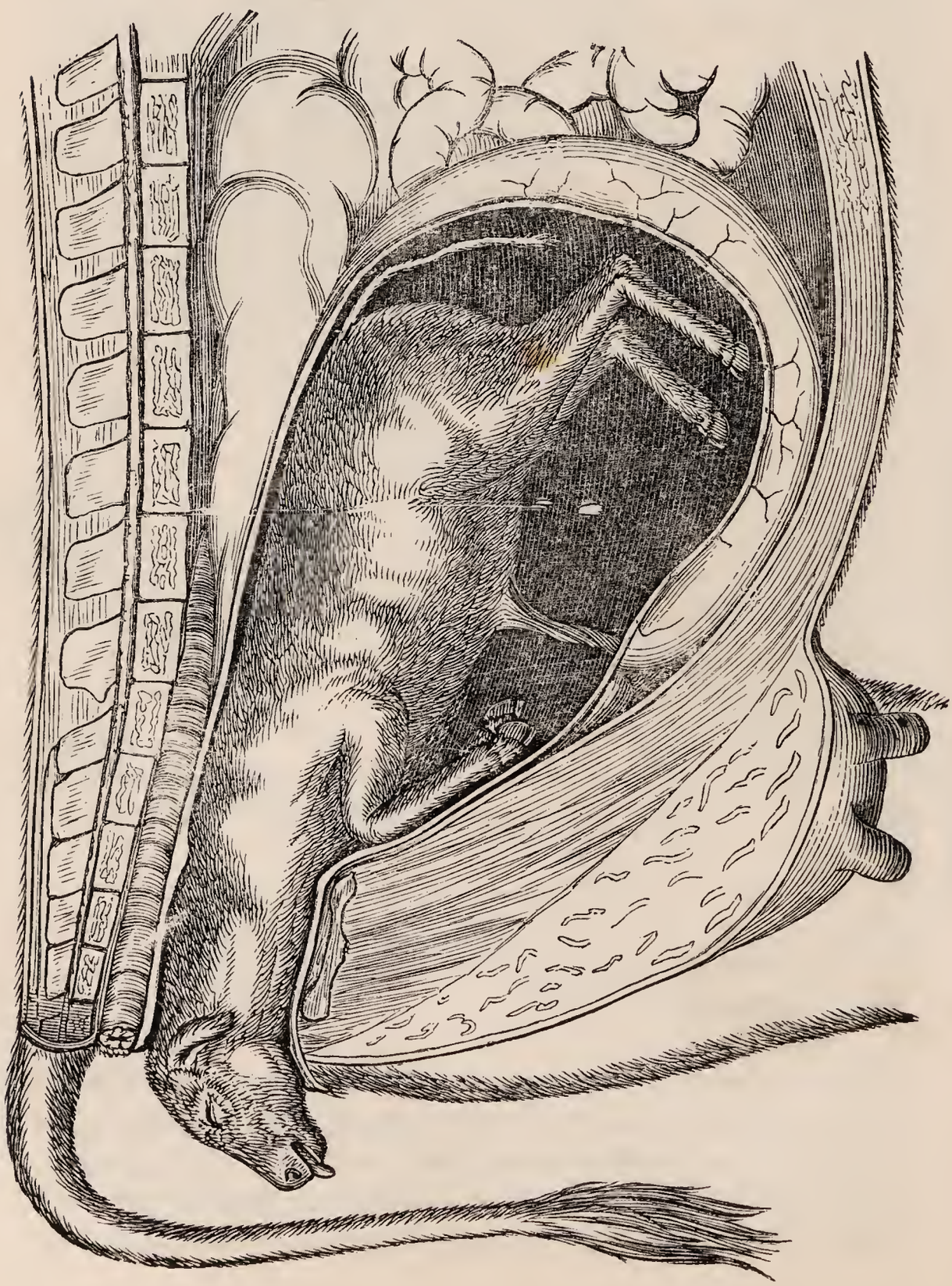


Fig. 7.

of the calf is protruding from the labia; in other words, it is born while the fore-legs and the rest of the body of the animal still occupy the vagina and uterus. The first remark to make is, that at the commencement of labour this was a presentation of the head within the vaginal passage, unaccompanied with the simultaneous advance of the legs, a condition of things of not unfrequent occurrence. Occasionally it will happen in this presentation, when the pelvis is large and the parturient pains very strong, that the head will be forced out; but, far more frequently, its being born depends on the misapplied efforts of those who are called to give assistance to the cow. Farmers and others are too apt to imagine, when an examination proves the head of the fœtus to be located in the vagina, that, by applying force and bringing it through, delivery will be effected; but it should always be remembered, that in mares and cows, and even in ewes, unless the lamb is very small and the pelvis of the ewe of full dimensions, it is impossible for this to be done. In a head presentation the operator should first place a cord, with a running-loop, on the lower jaw of the fœtus; next exercise force sufficient to return it into the uterus; afterwards adjust the legs; then bring up the head by drawing at the cord on the jaw, and proceed to deliver. Should he be called to a case like the one figured, no attempts to return the head, or to draw away the fœtus, as I have before stated, ought to be made, as these will be altogether futile. The fœtus must at once be sacrificed, that the life of the mother may be saved. Let an incision be made through the skin from the poll to the muzzle, and another from the gullet to the end of the lower lip; dissect the skin on either side from off the head so as to unite the upper and lower cuts, and then detach the skull from the trunk at the occipital joint. Having done this, attach a cord to the incised skin, and put back the neck into the womb; feel for, and place in, their proper position the fore-legs; then bring up the neck, and deliver.

The *third kind* I shall mention is represented in *fig.* 8, p. 326. In this instance one of the fore-feet protrudes through the os uteri, while the other foot and the head are still in the body of the womb; the latter being curved downwards, and pressing on the brim of the pelvis. We have here an occipital and foot presentation, but which is not very difficult to overcome, unless the labour-pains are

very powerful. The first step to be taken is to secure the fore-foot in the manner described in the preceding cases, and the next to fasten a hook to one of the orbits. The hand is then to be re-introduced and carried towards the chest, following the direction of the protruding limb, and sufficient force employed to drive the fœtus backwards: this being accomplished, the hand is to be

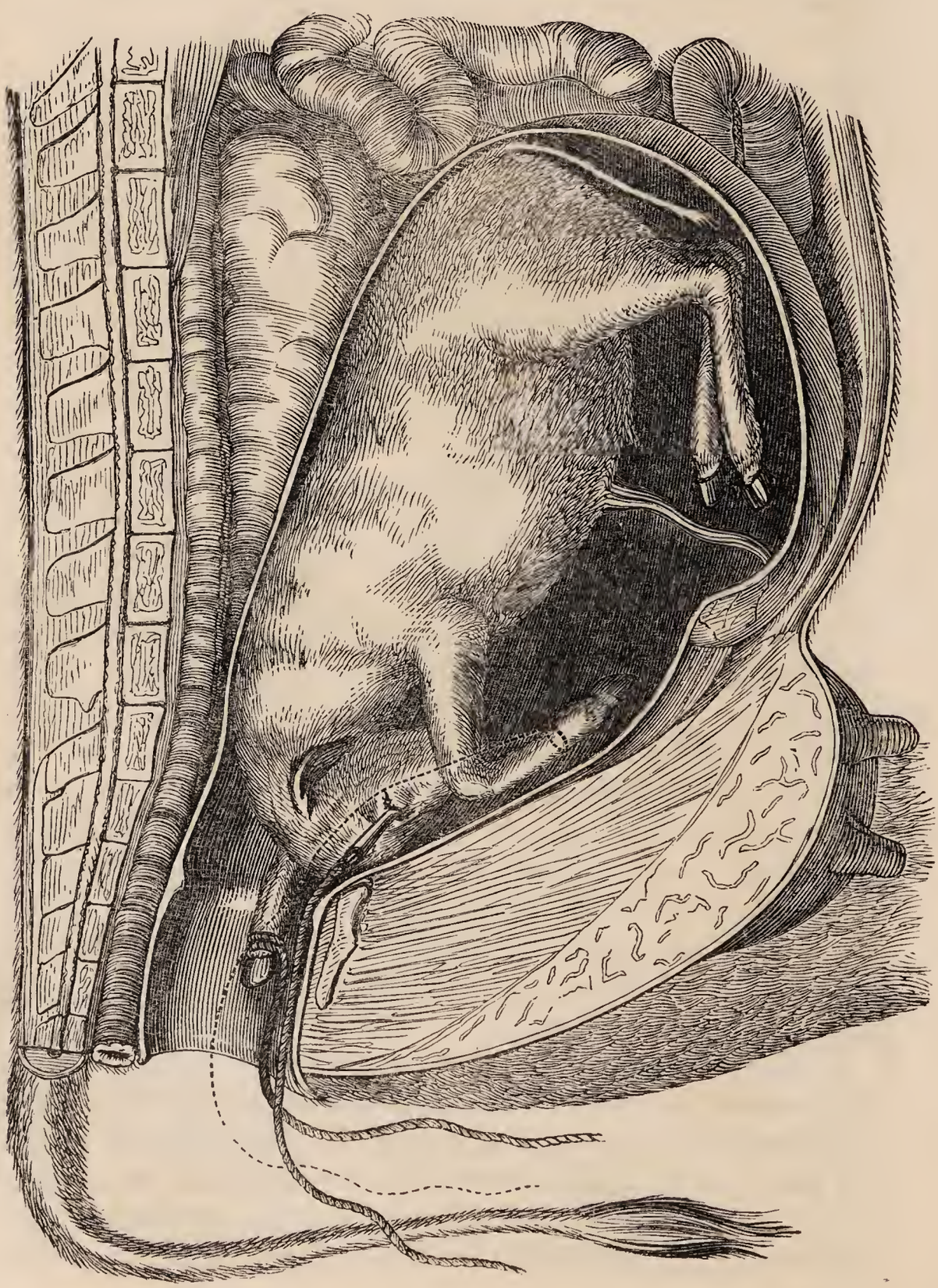


Fig. 8.

shifted to the upper part of the neck immediately behind the occiput, when, moderate pressure being here made, it will be effective in straightening the head and neck. When the operator has thus

Fig. 9.

far succeeded, his assistant is to draw the cord attached to the head *moderately* tight, to prevent it again bending downwards. Another cord is now to be carried in and made fast to the other leg, as shewn by the dotted line in the sketch. The legs are then to be alternately brought forwards, and, by simultaneously drawing at them and the head, the fœtus will be extracted.

The *fourth variety* I select for explanation is shewn in *fig.* 9, p. 327. In this instance the calf is lying on its back in the womb, with the legs turned towards the spinal column of the cow. Labour here is usually of long duration, and various expedients are adopted by practitioners to adjust the fœtus prior to the employment of traction to remove it; but in most cases I have proceeded as follows:—first, a cord has been placed on the lower jaw, to secure the head so that at will it might be brought forward; next, similar cords have been fastened on each fore-leg, the one attached to the leg represented in the fore-ground running on the outer side of the other limb, marked *a* in the sketch. An assistant has then been directed to draw *tightly* at this, so as to facilitate our endeavours to turn the fœtus on its side, by placing the hand near the withers, as represented in the sketch. This being effected, the legs are brought into the vagina, and then the head: these additional manipulations will cause the fœtus to turn, as it were, upon itself, when it may be safely extracted.

One of the most difficult forms to deal with, and which invariably costs the practitioner considerable labour and anxiety, is that represented in *fig.* 10, p. 329. Here we observe that the fœtus is lying with its head towards the chest of the cow, having the hinder parts pressed against the brim of the pelvis, and the hind legs placed under the body, so that on introducing the hand we can only feel the breech. We have here to reverse the position of the hind legs and bring them into the vaginal passage, as delineated in *fig.* 11, p. 331, or delivery will be impossible. The great difficulty in doing this arises from the little command we have over the parts from our inability to grasp the hind legs; consequently, many years since, I was led to construct a simple instrument to enable the practitioner to surmount this difficulty. The instrument, which is sketched in *fig.* 10, consists of a curved piece of steel having an aperture at one end, to which a small cord is attached; at the

other a female screw is placed, which admits of its junction to a whalebone staff; and between the two another opening exists, into which is inserted a stronger cord.

Taking the staff with the two cords in his hand, the operator is to pass the instrument between the thighs of the calf, and push it in front of the stifle-joint, and then with a turn of the wrist to

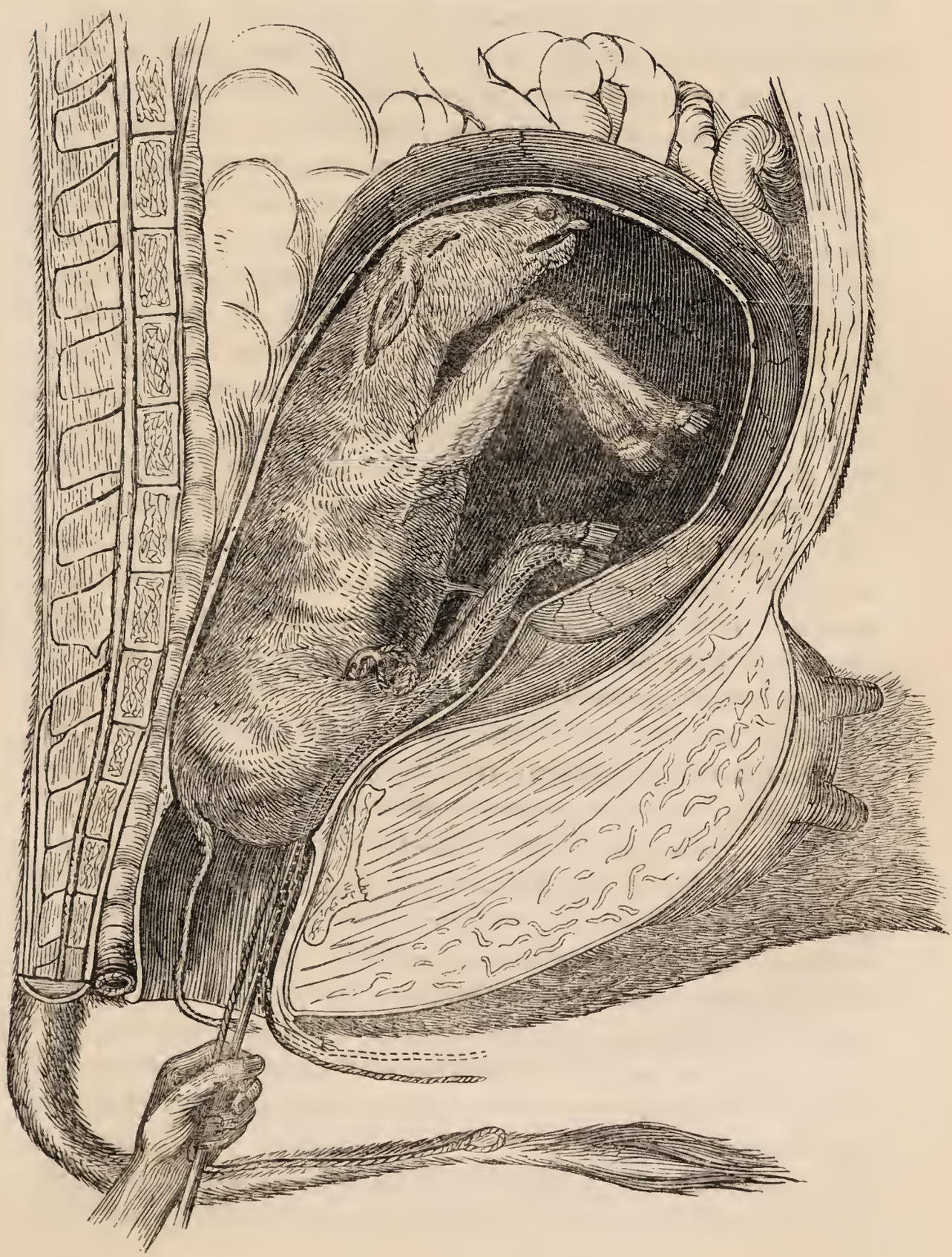


Fig. 10.

direct the small cord outwards. An assistant holding the instrument, the hand of the accoucheur is now to be introduced, and directed to the front part of the stifle-joint, when the cord can be readily grasped and brought out; thus the limb will be embraced between the two cords: the whalebone staff is then to be detached, and the smaller cord to be run through a noose at the free end of the larger one, when, by drawing the smaller cord, the curved part of the instrument will travel round the limb, bringing with it the larger cord, and thus a looped ligature will be placed upon the leg above the hock. The like proceeding is to be adopted with the other leg. The operator is next to push the body of the fœtus forwards, by either placing his hand against the breech, or employing for the purpose an instrument similar to an ordinary crutch: by these efforts he will succeed in flexing the hock-joints, and be enabled to pass the loops downwards to the fetlocks. Having accomplished this, a careful manipulation will allow of his bringing up the feet towards the os uteri, and ultimately so to turn the legs as to place them in the position of *fig.* 11, p. 331; after which, ordinary traction during each throe will enable him to effect delivery with safety, both to the mother and the young.

The above constitute the principal varieties of preternatural presentations; there are, however, some modifications of each, but these will not require from me a further explanation. The rules I have laid down are applicable as general principles, and can be adapted to each particular case.

Besides the methods of extraction which I have spoken of, it will sometimes be necessary, from the great size of the fœtus and other causes, to have recourse to *embryotomy*, or the dissection of the fœtus. In a lecture of this kind it is not to be expected that we can describe this process, which must necessarily differ in almost every instance, and ought never to be undertaken by any but those who have made this subject their especial study. One rule, and only one, I will mention; and that is, never to remove a limb *before having dissected back the skin*, so that the various instruments employed may be attached to it, thus securing all the advantages of the limb to exercise traction upon, without having the disadvantage of its size.

To the veterinary surgeon I need scarcely say that varying the position of his patient will materially assist his efforts, and that

he is enabled to manipulate with far greater facility when the animal is standing; but whether standing or otherwise, he must not cease his endeavours to adjust the fœtus and accomplish its early removal.

During protracted labour, the patient's strength should be sup-

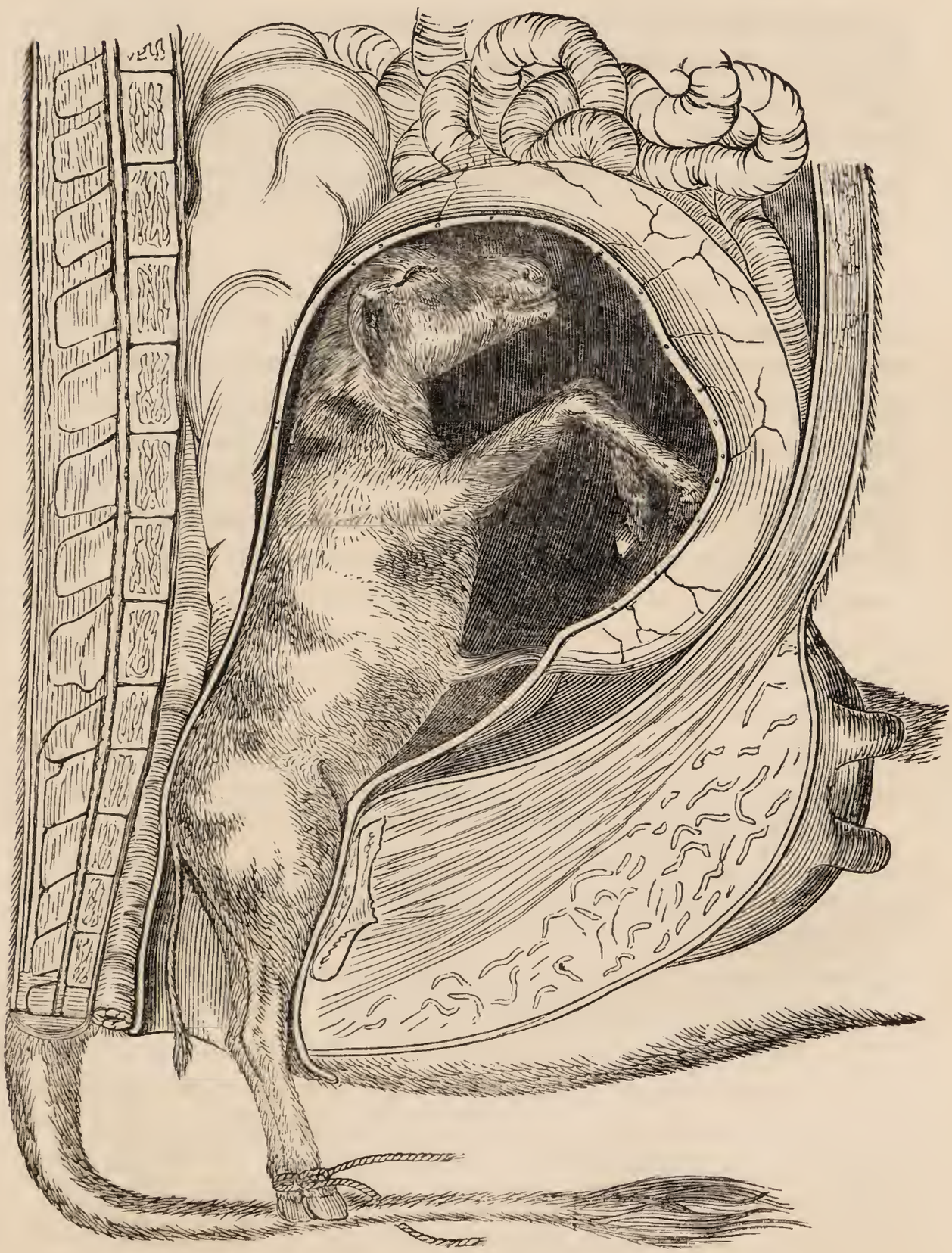


Fig. 11.

ported by diffusible stiumulants and cordials, for the expenditure of the vital powers is very great: many cases are lost even after delivery from inattention to this circumstance. Good ale, with the addition of some alcoholic spirit, constitutes a most useful agent for the purpose.

When the fœtus has been extracted, no stimulants should be given, as these would bring on inflammatory action; but, to quiet the system, a dose of *tinct. opii*, varying from one to two ounces, ought to be exhibited. The quantity here named will be proper for a mare or cow, a fourth part of which will be sufficient for a sheep. And I should also state that, although my remarks have been chiefly confined to parturition in the cow, still the rules laid down are equally applicable to other animals.

It was my original intention to have spoken of the consequences of parturition and the diseases and casualties immediately connected therewith; but, having already exceeded the limits of an ordinary lecture, I must bring my observations to a close, thanking you sincerely for the kind attention I have received, and expressing a hope that the principles I have laboured to expound will hereafter prove of advantage in regulating your proceedings in these difficult and dangerous cases.

Explanation of Plate 2, vol. v.

a.— The interior of the uterus, studded with, *b*, the maternal portions of the cotyledons.

c.—The outer surface of the corium, with the tufts of the fœtal vessels, some of which are seen in union with the maternal portions of the cotyledons.

d.—The inner surface of the corium.

e.—The allantoid membrane, which forms a receptacle for the urinary secretion of the fœtus.

f.—The urachus, or passage through which the urine is conveyed to the allantoid sac.

g.—The amnion, the membrane which envelopes the fœtus, and secretes the fluid in which it floats.

h.—The umbilical cord, shewing, *i*, the arteries conveying the impure blood to the cotyledons, and, *j*, the veins returning it after its purification.

On Auscultation as applied to the Horse.

By Mr. G. T. Brown, *M.R.C.V.S.*

An Essay read before the Members of the Veterinary Medical Association, Session 1848-9.

Gentlemen,

The subsequent pages on the importance of auscultation as applied to the horse are simply the result of my own investigations on this point, confirmed by repeated experiments extending over a considerable space of time, and referring only to that animal in a state of health, according to the general acceptation of that term.

Now, as

"Order is Heaven's first law,"

(and it must be confessed a most important law it is), I have deemed it advisable to divide my remarks into two distinct parts.

Part 1*st* treats of the character of the respiratory murmur in a state of apparent rest, and under certain circumstances in which we may be called upon to give advice.

Part 2*d* refers to animals under different degrees of exertion, still keeping in view the premise of their soundness; for although, in the course of my investigations, I have met with many phenomena resulting from morbid action being set up, still, from my limited experience, I do not feel justified in entering upon such an extended field as the consideration of diseased organic structures would necessarily lead me into.

Auscultation as applied to the healthy Respiratory Sounds in the Horse.

The importance of auscultation to the practitioner of veterinary medicine, as a means of correct inference both in questions of soundness and of diagnosis in disease, no one, I think, will venture to deny. Allowing the validity of this position, the propriety of making ourselves well acquainted with the normal sound follows as a corollary; for how can the delicate modifications consequent on chronic affections make any impression on the ear that is unacquainted with the sound in its healthy condition? As well might we expect "the man that hath no music in his soul" to appreciate the beauties of a piece of concerted melody.

The subject itself is one, I feel convinced, of immense interest, and highly conducive to the advancement of veterinary medicine, as well as to its elevation in the scientific world. By its aid we may be, indeed are, enabled to ascertain the situation and extent of disease in organs removed from sight with a certainty and precision that seem to the unreflecting mind as some approach to magic; to detect changes of a chronic nature whose symptoms are so ambiguous as to defy other means of diagnosis; and on every occasion, where opinion is sought as to the extent of respiratory capability, it is certainly a valuable adjunct to our usual methods of procedure in such examinations.

In the archives of human medicine, auscultation may be said to rank as a separate science, the various modifications of sound being expressed by an immense number of technicalities, which are wholly inapplicable to the horse; these not so much on account of any structural peculiarity, as from the absence of certain facilities possessed by the human practitioner. To illustrate my meaning more fully, I need only direct your attention to the government of reason in man. The medical attendant can direct his patient to carry on his respiratory functions under a great variety of positions; can investigate inspirations and expirations partial, protracted, or suspended for a time, and these by various degrees of cough, and other aids which are totally out of the reach of the veterinary surgeon. To attempt, therefore, to place the subject on any thing like a level with the position it has attained in the annals of the sister science, would be an effort the most aspiring ambition could not justify, nor the most sanguine expectation ever hope to reach.

In this, therefore, as in other points, we must be content to follow in her wake, with an unflinching determination to stand as adjacent as we can; never dreaming of defeat even in the most dangerous position, but boldly persevering, in the firm conviction that

"In great attempts 'tis glorious e'en to fail."

In entering more particularly into our subject, I propose to consider it under the following divisions:—

1st. The manner and means of auscultating as applicable to the horse.

2d. The points of examination.

3d. The number of respirations in a given time.

4th. Vesicular and bronchial respiration, noting the difference of sound between the inspiratory and expiratory movements.

5th. The modifications observable in different conditions of the animal.

First, in offering my opinion as to the most available instrument for distinguishing sounds, I am scarcely in a position to take an unprejudiced view of the question, inasmuch as, from habit possibly, I find no instrument preferable, or, in fact, equal to my own ear. I have likewise carried on my experiments with the stethescope, and find no difficulty in detecting the modifications of sound, especially when the hair is covered by a damp cloth; to those, therefore, who prefer this instrument, it is quite available: it must be allowed to have a surgical appearance, and although, as I before remarked, from being accustomed so to do, I feel more satisfied by the appliance of my ear to the sides.

In cases where vesicants have been applied, the intervention of a damp cloth does not in any way interfere with the transmission of sound, and is therefore a convenient method of examination when the stethescope is not employed.

Regarding the second consideration, namely, the points of examination, there appears to me a vast deal of importance attachable to them, from the fact of the marked difference in the force of the sound in different situations, depending on the thickness of muscle, and also in a great measure on the portion of lung examined.

The point where, to me, the murmur has invariably been most audible, is between the superior third and the inferior two-thirds of the eighth or ninth ribs; and for this reason, this is the part where I usually first apply my ear. As you proceed back to the termination of the thoracic cavity, the sound gradually becomes less and less distinct, it being seldom clearly distinguishable beyond the fifteenth or sixteenth rib. This phenomenon is readily explained by a reference to the lungs themselves, the most cursory review shewing that they gradually decrease in size as they proceed to the posterior part of the chest; and, from the lesser volume of atmospheric air permeating that part, it is not difficult to conceive a diminution in sound consequent thereon. Carrying the

ear from the point first mentioned forward to the shoulder, the same variation in degree is observable, though not to the same extent as posteriorly: immediately behind the scapula the decrease in sound is most marked, especially at the superior part, arising from the greater amount and thickness of muscular fibre here. But I must again repeat that the modification of sound, in passing from the point of examination to the shoulder, is nothing near so obvious as the same modification in passing to the posterior part: of course, to obtain any thing like a correct idea of these particular distinctions, auricular evidence is indispensable; as language, even in its most studied expressions, would signally fail to convey to the mind a perfect estimate of the variations.

As connected with, though not indispensable to, the subject of auscultation, we will pause for a little to consider the number of respirations in a given time in the tranquil condition of the animal.

As far as my memory serves me at the present moment, all the sources I have searched on this point concur in stating the number of respiratory movements in the horse to be from 6 to 8 per minute. Did I hold as sacred the weight of the authorities from whom such assertions have emanated, and content myself with reiterating their statements, I should be granting an unqualified admission to positions directly opposed to my own conclusions. From what cause has arisen this discrepancy between communicated opinion and actual experiment, I have no means of explaining; however, as I intended this paper to be an experimental essay, I should not be performing my duty did I permit any other than the results of my own observations to appear in its pages.

In a bright and clear day, and of medium temperature, I have found the number of respirations to range from 8 to 12; in an atmosphere more dense and dull, from 10 to 14. In the morning previous to any exertion I have found 10 the most common number; and, making allowance for varying circumstances, I look upon 10 as the standard; at any rate, in a practical point of view this is sufficiently near, for as, in reference to the pulse, the variation of number is of less moment than its character, I should no more consider 15 respirations in the minute to evidence disease, than I should a pulse of 40, without looking to causes from without to account for it.

In speaking of circulation and respiration, therefore, it is quite impossible to take one definite number as a standard of comparison, without reference to the modifying influence of various circumstances.

Vesicular Respiration.

On quietly placing the ear to the sides of an animal in a state of tranquility, and divesting the mind of all outward impressions, a soft silky sound will be audible, faint at its commencement, gradually swelling, and as gradually decreasing, till it is lost in perfect silence. This is the penetration of the atmosphere into the various membranous cells existing in every portion of the lungs or *inspiration*. The sound occupies about two seconds, and it should be perfectly free and clear; no crepitus, rumbling, or interruption, and followed by a pause of, perhaps, half a second's duration. Then commences another sound, less audible, lower in pitch, and longer, approaching more the character of a true murmur, but possessing no semblance of rumbling or roaring; time occupied is about three seconds, and an interval of apparent silence of half a second as near as may be: this is the expulsion of the atmosphere from the lungs, or *expiration;* the two motions constituting vesicular respiration, or, the penetration of the air into the cells of the respiratory organs and its subsequent ejection from them. In order to explain the intermissions of sound, or intervals of apparent silence between the processes of inspiration and expiration, we may, I think, have recourse to the following reasons:—

The cavity of the thorax is expanded by the action of certain muscles, by which an attempt to the formation of a vacuum is made; the pressure of the superincumbent atmosphere forces a volume of air down the trachea till the lungs are filled, and then they prepare to expel the air again. Just at this point I imagine the pause to take place; the inspiratory muscles in the mean while relaxing and the expiratory commencing to contract; by whose aid the greater part of the atmosphere is at once driven forth with some degree of force, as seen by the distance from the nostrils to which it is thrown; but the entire bulk of air is not thus got rid of. To prove this last position, let me direct your observation to a horse on a frosty morning, when the breath is rendered obvious by the condensation of watery vapour. You

observe the expired air to rush out from the nostrils with considerable impetus, and, after the muscular contraction has (as far as we can discover) ceased, the air still continues to ooze gently forth for a short space, which phenomenon I consider to result from the inherent resiliency of the lungs themselves: thus they expel the remaining aerial contents independent of muscular influence, and it is during the exercise of this resiliency that I conceive the second interval of apparent silence to take place. In our examinations of vesicular respiration, there are certain sounds emanating from motions of the abdominal viscera which might possibly be confounded with sounds in the thorax. I am sure I need not point out the importance of separating these the one from the other, but this can only be acquired by personal and careful investigation.

Having considered the phenomena of vesicular respiration, or penetration and expulsion of the atmosphere into and out of the membranous cells, let us now observe the difference distinguishable between this and bronchial respiration, or the passage of air into the ramifications of the bronchial tubes. Conveying the ear from the side to the front of the chest, about the top of the cuneiform cartilage the alteration of sound is at once evident, imparting to the mind the idea of the transmission of atmospheric air through a larger space, which is in reality the fact: the sound is clear and more of a rushing character, perfectly free and smooth, and may be divided into inspiration and expiration, of which the former is sharper and more sonorous; the time occupied is, of course, the same as noticed in vesicular respiration, and the slight pause readily discoverable. The trachea may be explored in its course up the neck to the larynx, the sound increasing in power the nearer we approach the external openings of the respiratory organs.

We now come to an investigation of the fifth subdivision of our subject, namely, the modifications of sound under certain conditions.

First, in respect to age and temperament, some little importance must be allowed to exist under these heads. In young and excitable animals, I have found the murmur more obvious by far than in old and plethoric ones, or those of a sluggish temperament. This fact may be worthy of consideration in numerous

cases which may come under our notice ; at any rate, it will teach us not to arrive at a hasty conclusion, independent of external causes.

The variations consequent on atmospheric influence are not of that marked character specially to excite our attention. When the air is frosty, the murmur has appeared to me invariably clearer than when it is warm and moist ; a point not difficult of solution, as all sounds are conveyed better by such a medium.

The inhalation of an atmosphere impregnated with irritating matters will, as might reasonably be expected, cause a material modification, from the abnormal stimulus imparted to the membranous lining of the respiratory passages, and a temporary or even permanent thickening may be the result, and the phenomena observable come, of course, under the division of diseased structures.

The last modifying circumstance concerning the animal in a state of rest which I think it necessary to dwell upon is, the existence or not of food in the stomach.

If we attempt to auscultate the chest of an animal that has fasted some time, the borborigma, or sound consequent on the passage of gas along the intestinal tube, is frequently so intense as to render the murmur inaudible ; beyond this the existence or not of food in the stomach is a matter of trifling import, unless that organ be filled to repletion, in which case the effect on the respiration is most marked : such condition is not, of course, included in the consideration of normal function.

The respiratory Murmur in Animals under Exertion.

In pursuing our subject to its second division, it behoves us, for the convenience of memory, to keep in view analogous subdivisions as observed in the first part. Thus we may advantageously pursue our investigations under the different degrees of exertion comprehended in the terms walk, trot, and gallop, concluding with some general observations ; and review, in a measure, the entire subject, by considering the comparative value of the two distinct divisions, and their applicability as a means of correct diagnosis.

The Walk.—Placing the number of respirations in a state of

rest as 10 per minute, the animal may be walked for a short space of time quietly. On an examination afterwards the number will be found to be 16. In this state the respiratory murmur is increased in intensity of sound, while its characteristics remain the same as in a state of quiescence; the modifications, however, are not so well marked, the degree being nearly similar all over the chest until you arrive quite at the posterior portion. In most cases (unless the animal be very excitable) the respiratory movements will subside to their normal standard even while you are proceeding with your examination, provided the organs be in a normal condition.

The Trot.—Increasing the amount of exertion by a sharp trot, the respiration may be accelerated from 20 to 60 per minute, and depending on such acceleration will be the degree of sound, which, in fact, is the only difference I have observed.

Proceeding to the *Gallop*, my opportunities, I must confess, have not been sufficiently extended to enable me to judge how far this may be carried; but as far as my experiments have gone, the increase in the number of the respirations ranges from 30 to 120 per minute, depending on the condition of the animal. When it reaches the latter number, from the rapidity with which the atmosphere is *in*spired and *ex*pired, the distinctives between the two sounds are not so well marked: these partake more of the character of a continuous murmur, but it is only for a short time; for, as I before remarked, provided the breathing apparatus be in a state of health, the respiration rapidly regains its normal number, this being influenced, of course, by the amount of exertion to which the animal has been submitted. And taking, as I have done, the range of acceleration from 16 to 120, the time that, in most cases, may reasonably be expected to elapse before the animal is again tranquil, may be from five to fifteen minutes, this depending on condition and temperament.

In conclusion, let us take a retrospective glance. Respecting the comparative merits of the two divisions under which we have considered our subject, as a means of detecting disease, I decidedly give preference, in the first place, to the auscultation of the animal in a state of quiescence, for reasons that will presently appear. It must be obvious, on the slightest reflection, that the manner in which an animal sustains exertion will materially depend on his

previous habits; thus, a horse in a plethoric condition, and who has been used but little, if at all, may have his respiration accelerated to 120 in the minute by the same amount of exertion that in the case of another animal, more favourably situated, would be attended with an increase of not more than 30 or 40 in the minute. Again, immediately subsequent to a full meal the same reasoning may apply; and even some slight obstruction to the free passage of the atmosphere into the lungs, such as thickening of some portion of the membranous lining, which in a state of rest would be probably detectable, under exertion, from the larger volume of air and consequent increase of pressure, with the resulting increased intensity of sound, it would be more likely to escape observation. For such reasons as these do I feel justified in commencing my examinations while the animal is at rest, having recourse to exertion afterwards, as discretion may point out. Indeed, it may sometimes happen in a horse of a plethoric habit and lethargic temperament that the murmur is scarcely audible; in such a case walking for a few moments will have the effect of rendering it more obvious.

Thus, gentlemen, we have reviewed in a somewhat systematic manner one of the most important functions of the animal economy. That you will reap much benefit from the attempt, I have not the presumption even to hope, being fully alive to the certainty of the insufficiency of any means of acquiring information on this subject short of actual personal and persevering investigation. If I press this matter too strongly on your consideration, let its importance be my apology. If I assert the value of method in your inquiries; if I assure you that, in order to derive benefit from such inquiries in your future professional career, you must in the first place render yourselves familiar with the phenomena of normal functions before you can justly appreciate diseased ones, it is with a full conviction of their correctness that I feel emboldened to make such assertions.

With a view of stimulating you to the culture of this almost untrodden field, I have been induced to lay before you, somewhat prematurely, the results of my experiments. I might have more firmly established my inferences by withholding them until future and more extended opportunities had furnished proof of their correctness, or in their stead have raised up others; still I find

satisfaction in reflecting that, instead of working alone, I may now have others in the same field with me, to the benefit of our common cause; and should this "plain unvarnished tale" tend to that "consummation so devoutly to be wished," the little pains I have taken in its arrangement will be more than amply compensated.

COMMUNICATIONS.

Case of Laceration of the Rectum of a Horse.

By W. Sweeting, *Esq.*, *M.R.C.S.*

Sir, *Abbotsbury, Dorchester, May* 24, 1849.

A farmer in this neighbourhood sent a mare on Saturday last to be covered. By some unaccountable accident, the groom allowed the stallion to force the penis into the rectum instead of the vagina. The same evening the mare was perceived to be in pain, and in the course of a few hours died in excruciating agonies.

The fact of the penetration into the rectum was not discovered, or at least not reported to the owner, and he had no suspicion of the cause of the animal's illness and death; but upon opening the body, a laceration of the rectum was discovered. There is a rent about nine inches within the fundament at its superior part, of about five inches long, so as to justify the supposition that the penis in the act of copulation must have been carried into the cavity of the abdomen.

I saw the rectum yesterday, and secured it as a preparation for the Veterinary College, if it be worth your acceptance. I have it immersed in a solution of the bi-chloride of mercury. What further particulars I can obtain shall be forwarded to you.

I remain,

To Professor Sewell. Your obedient servant.

Dear Sir, *Abbotsbury, Dorchester, June* 5, 1849.

I sent off the preparation by the South Western Railway on Saturday, and hope it has reached you in safety.

The mare was led to the horse early in the morning, and returned to her owner about six o'clock. The man said, that upon

the withdrawal of the penis the mare shivered violently. She walked home, a distance of four miles, without apparent distress; but on being put into the stable again shivered violently. The gentleman attempted to bleed her, ordered her to be moved out, and gave her, I believe, some gruel. She was suffering a great deal of pain, which increased hourly; and so great were her agonies, that, in order to relieve her, he ordered her to be shot.

The body was opened, and all the abdominal organs and pelvic viscera appeared to be healthy; but being at a loss for the cause of the illness, he had the intestines carefully removed, and upon raising the rectum discovered the laceration.

The mare at the time of covering was not hobbled. It appears that the groom was aware of the entry of the penis into the rectum; but said he could not beat the horse off.

I remain, dear sir,

To Professor Sewell. Your obedient servant.

[We feel obliged to Mr. Sweeting for this unusual case, and also the morbid specimen, which was duly received.]

Case of Varicose Submaxillary Vein, with the deep seated Massiter and Ophthalmic Veins of a Horse.

By Mr. W. Smith, *M.R.C.V.S.*

The above woodcut represents the state of the left submaxillary vein, with other facial veins of a horse, sent to the College infirmary

by Mr. Smith, of Epsom, for our inspection, on account of the rarity of the occurrence, for which we feel much obliged. The animal appeared to be in good condition, and was aged two years off. In a short note subsequently received from Mr. Smith, he says :—

"I am sorry so little of the history of the case is known. It appears there was a slight enlargement on the cheek (the owner says about the size of a marble) when she was foaled, or, at any rate, it was seen a very few days after, and it was attributed to a bite from another horse. From that time to the present it has gone on increasing in size, and still continues to increase. At the present time it evidently interferes with her mastication. She is still in my possession, but I expect the owner will have her home, as he continues to think she is of more value than she really is."

This condition of the veins of the head and face is very unusual, and it is certainly the first instance of the kind in which we have seen varix exist to so great an extent. We have witnessed varicosity of the jugular and plantar veins, but have always been able to trace it to some injury inflicted on the coats of the vessels by blood-letting. As long as the head was kept in the natural position, no unfavourable symptom was manifested; but on its being depressed, and kept in that state for some little time, the distention of the submaxillary and facial veins became markedly increased, and this engorgement extended itself to the deep-seated masseter and orbital veins, which was shewn by the atrophied state of the inner surface of the masseter muscle, and the protuberance within the posterior orbital fossa, as seen in the woodcut. Very soon this was followed by cerebral derangement, the animal evincing signs of approaching vertigo, and certainly would have fallen had not the head been released. Pressure on the jugular vein was attended with the same results.

On Veterinary Homœopathy.

By Mr. C. Wills, *M.R.C.V.S., New York.*

From the great success which I was led to believe attended the human homœopathists in this country, and also from conversations had with two veterinary practitioners on the same system, I have for some time past, as opportunities served me, given it my attention, and likewise put it into operation in some few cases.

The first, a case of pneumonia, yielded either to the action of the remedies, or Nature wrought the cure, in twenty hours. *Aconite* and *bryonia* were the agents employed; the *aconite* was given (thirteen dilutions) three times, half an hour between; the *bryonia* was given twelve hours after, four or five pellets, medicated with six dilutions.

The second case was one of open-joint: this had given me a very great deal of trouble, and I having tried the usual allopathic practice without effect. It was the pastern joint. I had closed the first opening, but a second and a third had broken out, and I was on the point of abandoning the case, when I consulted Dr. Bayard, of this city, an eminent practitioner, who had kindly volunteered to give me every information I required from time to time. I gave six No. 2 pellets, medicated with the thirty dilution of *selicia*. The next day the part seemed greatly enlarged and inflamed, and when I took off the bandage a stream of dark blood ran from it for ten minutes. I thought ulceration of the bloodvessels had taken place, and that the case was now hopeless; but, to my astonishment, the day after the discharge of synovia had almost ceased, the inflammation was less, and the wound appeared better. On the fourth day the escape of synovia was entirely stopped, the horse stood firm on his foot, and other symptoms of improvement were present. Six days after, I gave one dose, the same as before. The case now rapidly improved, and in a fortnight from the time I tried *selicia* the horse was discharged cured, and continues well.

The next case was one of quittor, and it had been of long standing. I treated it in every respect similarly to the one of open-joint, and with the same result.

Cases of sprain yield to two doses of *rus radicans* (twelve and thirty dilutions, given four or five hours between). In two or three days they are well. Bruises and cuts treated with *arnica*, internally and externally, recover with astonishing rapidity.

The next case I will mention is one which seldom yields in a short time to the allopathic practice. It is paralysis of the hind extremities. It had been treated by a practitioner for some time, and given up, as he said the horse would certainly die. When I was called to see it the pulse was 60, respirations 20,

and rather laborious. I gave nux vomica, twelve dilutions. In one hour after he stood up, voided his urine and fæces, and the next morning he was perfectly well, and has continued so.

The foregoing case inspired me with confidence, and before night I had another opportunity of further testing the efficacy of my new remedies. A very valuable horse was seized in the middle of the night with phrenitis. At ten o'clock the next day the symptoms were, pulse 80, respirations 36; the animal perfectly unconscious; he would dash his head against the wall, fall down, and work his feet as if running. He had had several of these fits before I saw him: they usually lasted from fifteen to thirty minutes. I am sorry my space will not allow me to give you this case in detail. I treated it with *aconite* and *belladonna*, and in eighteen hours from the time I saw the horse he was perfectly recovered from the disease. Although the greatest care was taken of him, he, nevertheless, bruised and cut himself; but inflammation was obviated by the timely use of *arnica*.

I should be glad to hear that some of the members of our profession had tested the efficacy of the homœopathic practice; but they must be certain that the *proper* remedy is selected, and the *proper dilution* (the higher the more potent). I use mostly twelve and thirty in acute cases, and in chronic cases the two hundredth.

There is one great barrier to homœopathy;—it cures too quick. But are we to keep poor animals in pain for a long time for the sake of making a large bill? He surely is not worthy the name of a veterinary surgeon that would. I believe a person, master of the homœopathic system, could relieve more diseases than ten allopathists: there is so very little trouble in administering the remedies, and, except in very acute cases, they are repeated so seldom. External dressings are unnecessary; and, best of all, the result is certain. Many may fail, but let them not attribute it to the inefficacy of the system. A little knowledge is not sufficient for a homœopathist: he must be conversant with the laws, both primary and secondary; he must be sure that his remedies are genuine; he must also be sure that no others are given at the same time, otherwise they neutralize them; and, lastly, to guard against such contingencies, he should have the animals under his own care.

For structural diseases, such as spavin, ring-bone, and ossific deposits, there is no remedy (at present known) to reach them; I have no doubt, however, but ultimately we shall obtain effectual ones.

The best plan for any veterinary surgeon who wishes to satisfy himself, or to try experiments, is to go to a homœopathic practitioner of note, tell him the symptoms, and I have no doubt he will willingly furnish him with all the information he desires, and the medicine also free of charge. I know, for my part, all who I have come in contact with feel pleasure in accommodating me thus. There is no secresy nor mystification in the system: if it were empirical, there would be; and every remedy is a specific when properly applied.

There is another thing I would suggest:—the remedies are not to be thrown into a bucket of water, or on the food. I know the advantage of the diffusibility of matter; and, from the experiments that have been tried at the Veterinary College, that glandered matter may be conveyed into the stomach with impunity, whilst, at the same time, an almost imperceptible quantity taken into the system through the absorbents will be attended with sad effects. Beside, there exist certain acids in the stomach which might neutralize the medicine and destroy its effect. The best method, in my opinion, of exhibiting the agents, is the form of medicated pellets put on the horse's tongue. I would also caution those who would try their action not to crowd them: the *duration* of the remedy is a very material point to be considered.

I know there are many who will laugh at the idea of five or six pellets, each the size of a pin's head, and those only impregnated with perhaps the one-millionth part of a drop of medicine, producing any effect on a horse. I only wish I had the most sceptical with me; I could convince him to the contrary in one week, and make him an enthusiast the other way.

You see I have devoted a good deal of space to homœopathy. May I ask if any veterinary surgeon in London practises on this system?

I shall feel further obliged if you will tell me what is given off in the smoke of the smelting works in Wales, which produces ossification in many of the joints of horses and cattle? I well

remember your specimens of the disease and observations on it, but I omitted to take a note of what the composition of the vapour is that produced it. The reason I want to know is, according to the laws of Hahnemann, whatever effects a medicinal agent will produce on a healthy subject, when those symptoms are brought on by other causes, that medicine administered in a homœopathic form will remedy those symptoms; hence the substance which produced those effects in healthy cattle will be a specific remedy for osseous diseases.

Since writing the above I have had two cases of phrenitis, one a very severe one. Both yielded readily to *belladonna* and *lactisis*. You would hardly credit the number of cases of simple colds I have relieved by one or two doses, when otherwise they would have taken weeks to recover.

To Professor Morton.

[Although not professing ourselves to be disciples of Hahnemann, nor subscribing to his doctrine "*Similia similibus curantur*," we have not the slightest objection to comply with Mr. Wills' request, and to put him in possession of a knowledge of the composition of the vapours disengaged from the smelting-works in Wales; which vapours being inhaled by animals, or condensed on the herbage, are said to produce the "copper smoke disease," which shews itself by enlargements about the hocks and knees of horses and the cannon bones of cattle. With this view we make the following extract:—

New Compound of Arsenious and Sulphuric Acids.

This new compound has been obtained by Dr. Shafhaeutl from the escaping smoke of copper-calcining furnaces, near Swansea, in South Wales, and is another singular instance where an anhydrous crystallized body is deposited under the presence of water only; it is also a remarkable proof of the unlimited number of different forms of combination which might be produced, even in organic nature, by bringing chemical substances in contact under varying circumstances. The copper ores smelted in South Wales

are, for the greatest part, copper pyrites, mixed with iron pyrites, grey copper ore, &c.; in fact, a mixture in which the sulphurets of copper, iron, arsenic, antimony, cobalt, nickel, zinc, and tin, are invariably found together. The sulphur and arsenic escape from these ores during the calcining process, as sulphurous and arsenious acids, and have been found to destroy all vegetation for miles around the copper works, without affecting animal life in the slightest degree. By bringing the escaping fumes in contact with steam, and forcing it through burning charcoal, or subjecting it only to a great pressure in contact with steam, the new solid compound was deposited on the cool surfaces of the chambers connected with the calcining furnace. It is deposited in beautiful crystallized leaves or tables, perhaps belonging to the same class as Wohler's dimorphic modification of the crystallization of arsenious acid, the regular form of which belongs to the octahedron, and is found to consist, in 100 parts, of

68.250 arsenious acid
27.643 sulphuric acid
3.029 protoxide of iron
0.420 oxide of copper
0.656 oxide of nickel

99.998

Corresponding to 51.741 metallic arsenic
11.095 sulphur
2.339 iron
0.336 copper
0.516 nickel
33.971 oxygen

99.998

These crystals attract moisture from the air with great rapidity and with evolution of heat, corroding animal and vegetable substances as powerfully as concentrated sulphuric acid. Their taste is pure, but powerfully sour, similar to sulphuric acid, and, dissolved in water, the remainder of 100 parts of these crystals is 17.436 grains only. The shape of the crystals is perfectly re-

tained, only their appearance is changed from transparent into opaque. Their chemical composition was found to be,

16.778 grains of arsenious acid
0.656 oxide of nickel

17.434

What the water had dissolved consisted of

51.472 arsenious acid
27.643 sulphuric acid
3.029 protoxide of iron
0.420 oxide of copper

82.564 grains.

One of the remarkable changes during the formation of this compound is the conversion of sulphurous acid into sulphuric acid, as well as the presence of iron, copper, and nickel, in a deposit from gaseous matter. No other definite compound of arsenic acid with another acid seems to be known, except those with the organic tartaric and paratartaric acids].

A Case of Re-opening of the Foramen Ovale of a Filly by Rupture.

By Mr. J. Moon, *M.R.C.V.S.*

Dear Sirs, *Kingston-upon-Thames, August* 15, 1849.

The following is a brief history of a case which I trust may not be uninteresting to your readers. I believe it to be of very rare occurrence, if indeed it does not stand alone in the annals of veterinary medicine. The subject of it I had known from the time of her birth. She was a two-year-old thorough-bred filly, and previous to her leaving home, when a yearling, was a very healthy animal, but of rather nervous temperament: she left here to go into training about the latter end of July last year, or the beginning of August, having been previously handled and partly broken. She continued apparently well up to some day in the month of November of the last year, when, being out at exercise, and coming up a

very steady gallop, she all at once stopped suddenly as if shot, her legs appearing to have no other office than that of acting as four props for the support of the body. She stood perfectly motionless for two or three minutes, when she walked home to her stable as if nothing had happened; food being offered her, she partook of it as usual. I am also informed that her pulse was not increased to more than forty-eight beats in the minute, and no undue excitement was indicated. After several days, Mr. Barrow, veterinary surgeon, Newmarket, saw her, and he has kindly favoured me with the detail of the symptoms then present. He states that on examination he at once came to the conclusion that it was a disease of the heart. The pulse was frequent, between sixty and seventy, *and particularly intermittent;* the respiration was occasionally hurried; great inequality of the circulation, more especially of the extremities; appetite very delicate, and considerable prostration of strength, accompanied with *frequent sighing*. The only treatment then had recourse to was the administering of some fever medicine, in conjunction with vegetable tonics, no more active treatment having been resorted to by him.

She came from Newmarket to this town on the 13th December 1848, and on the following morning I was sent for. The symptoms that then shewed themselves were a peculiar dejected appearance, pulse 75, and *slightly intermittent*, but scarcely perceptible at the jaw. On placing my ear to the side, the action of the heart at once struck me as being very singular: connected with the systole and diastole of the organ there was an additional sound of a rushing character; the extremities and body generally were cold, the head particularly so; the respiration much quickened, and sometimes laboured; the mucous membranes were much injected and of a dark hue; an occasional cough was present, and loss of appetite, with great prostration of strength; the least movement around the box would cause the pulse to rise to a hundred beats in the minute; at times she would lie down. I gave her an alterative combined with a febrifuge; inserted a rowel under the chest, stimulated her throat and chest, and had her legs bandaged. Ordered her diet to consist of mashes and carrots, &c. In the course of a few days, finding that no alteration in the symptoms had taken place, I began the use of sedatives. The extract of belladonna, digitalis, opium, &c., and other agents of the class,

were all in turn tried, but none of them had any decided effect on the action of the heart. After a time, vegetable tonics were given, and then the mineral ones, but with no better success. Although corn was allowed her, she still continued to lose flesh. The appetite was very precarious. Sometimes for a week or ten days she would feed comparatively well, and then again she would not look at her food. After this she was turned out to grass, and I only occasionally saw her.

Some time about the month of May my attention was directed to a swelling on the near side of her neck, several inches above where the jugular vein enters between the two first ribs. This gradually increased in size till it arrived opposite the fifth cervical vertebræ. If you placed any thing on the ground for her to feed from, above the enlargement the pulse was easy to be taken on either side. The appearance of the animal had now become truly piteable: she would stand for hours under a wall, the countenance being most dejected; the pulse ranged about seventy in the minute, *but it was not intermittent* as before; it would, however, rise on the least exertion; the visible mucous membranes had assumed a perfectly leaden hue, and the skin was in several places quite denuded of hair; her external muscles had nearly all disappeared, particularly along the back and the hind quarters. Mr. Varnell being here at the latter end of the month of July, I at once took him to see this, to me, most singular case. He carefully examined her, and at once stated his opinion, that the enlargement above referred to was a distention of the jugular vein; also that there was considerable disease of the heart, and from the appearance of the membranes, he imagined that, arising from some cause or another, there was an admixture of the arterial with the venous blood in the general circulation; and the sequel of the case proved the correctness of his diagnosis. No hope whatever existing of any cure being effected, on Tuesday the 8th of August 1849, the filly was shot, and the post-mortem examination was at once proceeded with. On making an incision along the linea alba, and exposing the contents of the abdomen, the general appearance of the intestines was healthy; on a closer inspection, the veins of the mesentery were found to be gorged with blood, and of a considerable size; the lacteals were also much distended, of a beautiful transparent colour, and rebounded

on being compressed. The liver was of greater magnitude than usual, and the veins on the outer surface were elevated, and very much enlarged, being of the size of a swan's quill. The organ on being laid open was of a dense texture, and of a greyish aspect. All the lymphatic glands were much enlarged, and of a dark colour. The stomach and spleen were healthy, as also were the kidneys. The diaphragm was next taken away, when slight adhesions were perceptible between the right lung and the pleura costalis, evidently shewing that disease had existed there for some time. The pericardial sac was of a large size, and contained within it an increased quantity of a pale serous fluid. On its being reflected back, the heart was seen much enlarged; the apex of the organ was also more round and flabby than natural. On the right ventricle being laid open, the parietes were found to be highly attenuated, and the inner surface had the appearance of arterial blood having passed through it, the valves also at the auriculo-ventricular opening were not healthy. The right auricle was next opened. This, too, was considerably dilated, and its walls were in a state of hypertrophy. And now was perceptible the immediate cause of the disease under which the animal had laboured: THE FORAMEN OVALE HAD BEEN RUPTURED. On a careful examination being instituted, the fossa ovalis was perceived to have become a *cul de sac*, of considerable magnitude, protruding into the left auricle, and at its apex the rupture had taken place. Of its being a rupture no doubt whatever could be entertained, the opening in the membrane being elliptical, and its edges jagged: thus, the venous and the arterial blood had become commixed, and the great emaciation of the animal could consequently be satisfactorily accounted for on the loss to the system of that essential support to the frame, pure arterial blood. In the left ventricle the chordæ tendineæ were found much thickened, and the bicuspid valves diseased. The jugular vein was also traced from the anterior cava to above the fifth cervical vertebra, and the swelling noticed during the life of the patient was found to be produced by a sac formed in it, which would when distended measure about six inches in diameter.

Chronic Disease of the Thoracic and Abdominal Viscera of a Cow—Loss of Lambs from Castration—Effects of Railroads on Animals.

By Mr. W. Boag, *M.R.C.V.S.*

Dear Sirs, *Jedburgh, 1st July*, 1849.

If you have room in the next number of The Veterinary Record, and think the enclosed papers worthy of a place in it, please insert them. I should like to have an opinion as to the probable duration of the cow's disease.

I am, Sirs,

Your's obediently.

To the Editors of the "Veterinary Record."

To shew the difficulty which young practitioners may occasionally experience by being required to give their opinion on the duration of disease, or soundness of an animal, and to shew them, also, the extent to which disease may exist in the animal frame before causing death, I record for their perusal and thought a case on which I was lately examined, and about which there is at present a litigation. The cow came into the purchaser's possession six months prior to the date of her death and my post-mortem examination, but about her history I was not allowed to know any thing. The appearances are before you, I was told, and from them you must form an opinion as to the period of disease. Query: How long has the cow been ill? Was she diseased nine, or six, or four months ago? Might she be sound, so far as you can judge from the morbid appearances, two years ago? In short, how long has the disease, to your knowledge, existed? I believe different questions are dependent upon an answer to the different dates. The following is a copy of my Report:—

"I hereby certify that I have this day made a post-mortem examination of a cow belonging to W. S. A., said to have been purchased from W. P. H., and find the beast to have dilatation of the left ventricle, with thinness of its outer or external wall; the pericardium thickened and indurated, and adhering closely and firmly to every part of the surface of the heart, with a deposition of lymph between it and the right side to the extent of half an

inch in thickness. The lungs I find to be very much diminished in size from absorption of the pulmonary tissue, and possessing, over various parts of their surface, vesicular emphysema, and united by adhesions in numerous places to the ribs and diaphragm. The inferior part of the posterior lobe of the left lung possesses an abscess containing a few ounces of thick well-matured matter. Nor is the trachea free from morbid phenomena; a number of worms, of the filaria species, being discoverable on its lining membrane. Co-existent with these morbid conditions of the system the mesenteric glands are studded here and there throughout their course with numerous tubercles, containing pus of a dirty white colour, and of the consistence of thick cream, and varying in quantity from a few drops to several ounces. Some of the intestines, also the colon, and rectum especially, exhibit conditions of the same morbid character, containing scybala of a very hard description and covered with mucus, and their inner or mucous membrane is red and thickened. From the morbid appearances and alteration of structure manifested by the intestines, mesentery, heart, and both lungs, I am of opinion that the cow has been diseased for some months."

Loss of Lambs from Castration.

I know not to what extent the fatality of lambs may exist in other districts from the operation of *cutting* or castration, but certainly the following instance, which occurred a short time ago in my neighbourhood, and under the hands of a man distinguished for his care and dexterity in the performance of this operation, stands to my mind unparalleled.

A gentleman who rents, I believe, a farm from three different landlords, had on one of his *off* farms ten score of lambs cut by his shepherd, and out of that number he lost no less than *eight score*. The lambs began to drop on the morning succeeding the day of operation, and on that and during the two subsequent days the scene on the hill where they were going was frightful. The farmer sent out a long cart in which to deposit the dead, and the task of collecting them, strayed as they were in all parts of an extensive hill or muir, and from the rapidity with which they died, was alike a serious and a heavy one. The lambs were cut

in the usual way, and various causes are assigned for the heavy fatality. The most common one is, that the man had been intoxicated on the night previous, and that his *foul breath* had excited inflammation in the newly exposed parts. This notion is a very common one, and very deeply rooted in the minds of the shepherds in this part of the country: the truth or soundness of it I cannot perceive. These parties, however, hold that the partaking or indulgence of spirits on the morning of the day of operation is not attended with the like injurious and fatal effects. Another cause given is, that the operator had an eruption on his lips from cold; some say that they were venereal sores, and that the secretion from these eruptions or sores infected and tainted the eight scores of lambs. The right explanation, I believe, remains to be given. It is a curious circumstance, that the same party who operated on this lot, cut, a few years ago, on another farm higher up the country, twenty lambs, and out of the twenty he lost sixteen. I ought to mention that he is an elderly shepherd of great experience, is considered a good gelder, and has cut all his lifetime. He operated many years before the first unfortunate lot, and every year in the years intervening between the first and second unlucky lots, and has been, I understand, cutting since the last lot in which he was so unsuccessful, without any loss or unpleasant circumstance occurring. I ought, perhaps, also to mention, that he operated at a farm belonging to the same party, two miles distant from the scene of his unfortunate labours, on several score, only three or four days before this immense loss occurred. I have communicated this matter to you, because I think facts such as these ought to be recorded. They may be of use and interest to us by and by.

I know little or nothing about railways, or the effects produced by travelling on them on man and animals; but I have been to-day requested to see three horses labouring under inflammation of the lungs, and which came this week by rail from London to Berwick. A day or two after their arrival, illness manifested itself, and the horse I was more especially desired to examine will not live many hours. His ears and legs are cold, deathy cold—has laborious breathing—is nearly pulseless, at least the pulse is very imperfectly felt—has a bloody exudation from both nostrils—the conjunctival vessels are of a very dark red colour, nearly black

from congestion; the Schneiderian membrane is very dark-coloured; he is lying and looking at his sides with an expression of great suffering; in short, he has all the symptoms denoting a speedy dissolution. Has railway travelling any thing to do in the production of pulmonary or other diseases?—are horses that travel by rail more liable to head or chest affections, or any other disease? I have no experience in this, as we have no railway as yet in our quarter; but I have been told that butchers prefer purchasing cattle that have been driven by the road to those conveyed by rail; there being present in the latter an infiltration of bloody serosity into the muscular and cellular tissues, or something, as they say, resembling that, the muscles being flabby, and not possessing that firm feel and pure colour like those animals driven by the road. Is this a fact?

[We coincide in opinion with Mr. Boag, that the cow's disease had probably existed for some months; nevertheless the lesions described by him might have taken place in a much shorter period. We are unable to speak more definitely as to time, from not having had an opportunity of ascertaining the character of the morbid depositions.]

Case of Imperforate Hymen in a Heifer.

By Mr. J. Jekyll, *M.R.C.V.S.*

Newland-street, Lincoln,
July 28th, 1849.

My dear Sirs,

On the 12th of last January my attention was called to a singular case in a three-year-old heifer: such cases, I believe, are rare. But perhaps many such may have occurred in the field of your extensive practice; if they have, I trust you will pardon me for troubling you with the particulars of this case.

I beg to remain,

Very respectfully your's.

To the Editors, &c.

The heifer was the property of Mr. Bayls, of Riseholm, near Lincoln. When I arrived at his establishment, I was informed the animal had been unwell for a week, and had been during that

time under the treatment of a practitioner of the old school; further, that she had taken "a deal of physic;" but she was worse every day, and had not eaten any food during the last three days; that she was usually in a recumbent position, and during the last three days had been suffering intense pain; and beyond all this, the "doctor" had been there a few hours before me to make his final examination, and he had given her up, with the consolatory assurance that "she would die and be out of pain and punishment in a few hours."

At the time I first saw her the following symptoms were present:—She was lying down, and evidently in very great pain; straining with her utmost strength, as though she wanted to expel something from the uterus. These efforts closely resembled regular labour throes, only they were more continuous. The head was sometimes turned on one side, when she would utter a low plaintive moan: the extremities were very cold; the coat staring; the ears pendulous; the eyes very dull, and the nose dry: the visible mucous membranes were not injected; the pulse 90, and very weak. Hypercatharsis, induced by the free exhibition of purgatives, was also present, and lent its debilitating influence to drain this piece of almost worn-out organization of its little remaining vital power. Although the heifer had eaten nothing during the last three days, and very little in the four preceding ones, her abdomen had not much diminished in size, which circumstance very much surprised the owner.

Observing the above symptoms, together with the age, sex, and week's history of the case, I came to the hasty conclusion that the heifer was in calf, and that from some anormality of parts delivery had not been effected. Under such circumstances a scirrhous state of the os uteri might, I surmised, produce similar appearances, or some malformation of the pelvis, &c. It would, however, be idle for me to attempt to pourtray all the multifarious forms that might have been in existence even in this case. I asked the proprietor if the heifer had been admitted to the male: he replied that she had not while in his possession, and added, that he bought her three months previous to that time at a distant fair. I examined her in the ordinary way, but could not detect the existence of a fœtus. My next expedient was an examination per vaginam. When I had passed my hand and wrist within the labia pudendi,

my course was arrested. It may be said this is nothing unusual; indeed, only what should have been expected: it was the os uteri, of course. No, it was not, since the os uteri was anterior to the impediment. What, then, could this obstruction be, and what could it have to do with the production of pain? On further examination I found the obstructing body to be about three inches in diameter, circular, convex posteriorly, and the convexity increasing with the violence of the throes; it was likewise firmly adherent, and growing from the parietes of the vagina, and very soft; furthermore, it felt thin, and the fluctuation of fluid was very perceptible through it. Percussion upon the side over the region of the uterus gave pain to the animal, and decided fluctuation to the abnormal impediment. With such indications, I thought it quite clear that, whether a fœtus was in the uterus or not, a very large quantity of fluid was certainly imprisoned there, and that the membrane abovementioned was the cause of its retention. Then it followed that the membrane must be divided.

I concealed a small scalpel in my hand, and carefully conducted it into the vagina; then as carefully made a vertical section of the obstructing tissue. Instantly a large volume of fluid rushed past my hand, and continued to escape with greater or less velocity, according to the straining of the animal. When some few gallons had been thrown out, I made a second examination, and found that I could now readily pass my hand through the divided membrane, and thence through the os uteri into the body of the uterus. This viscus contained nothing solid, impregnation never having taken place.

I administered some ale and oatmeal gruel, after which the animal laid down, and looked cheerful and composed. I directed that gruel should be given her until she would eat a bran mash and soft hay, and sent her some mild fever medicine to be administered each day for five or six days. She quickly recovered, and in a fortnight was as playful as the rest of the herd. The owner retained her in his possession until spring, up to which time she continued well.

The above case is, I believe, one of imperforate hymen. The fluid was odourless, and of the colour and consistence of a very thin solution of starch, it being merely an accumulation of the menstrual fluid. I will give you my reasons for this decision, since it may be thought by some to have been a case of hydrops uteri.

I am aware that many writers doubt the existence of *coloured* catamenia in animals, and I quite agree with them; there are also others that believe in *colourless* menses, and with these I fully concur. If the fluid does not possess exactly the character of the same excretion in the human subject, shall it follow that we are to deny its existence altogether? The same physiological use may be claimed for the menses in the lower animals as in the human being. During the œstrum of the cow, there is a thin transparent glairy fluid thrown out by the mucous membrane lining the genitals. What name shall be given to this discharge? Shall it have some other name, because it is not sanguineous? If, then, there is a periodical flow in the heifer, beginning at the age of puberty, and there is in any case an impediment to its escape, may it not accumulate, and thus cause enlargement and distention of the uterus? If there is a difference in the appearance and constitution of the menses at the time they are secreted in different animals, may there not also be a difference in their appearance and constitution when they have been pent up for some long time? As red colouring matter is not present in the fluid discharged by animals during œstrum, it is quite probable the fluid contains less of the nitrogenized principles; and if so, its non-convertibility into fœtid compounds is at once explained.

I have seen one case of hydrops uteri. The subject was an impregnated cow that died two hours after she had been delivered of a dead calf. In this instance the fluid was as clear as the purest water, and contained in a membrane equally as transparent and beautiful: it bore, in every particular, a striking resemblance to the vitreous humour of the eye.

I cannot conclude the narrative of this case without a remark upon the treatment of this pseudo-veterinarian. Here was the absence of all knowledge of the real nature of the case; and the adoption of treatment perhaps the most injurious he could have devised, viz. the exhibition of active purgatives, which by irritating the mucous membranes would much increase the urgency of every symptom, and materially hasten the death of his victim. If a professional man had evidenced such ignorance, his reputation would be deservedly blighted: empiricism can be guilty of this, and even more, with impunity.

On the Use of a Solution of Gutta Percha in Chloroform.

By Mr. G. White, *M.R.C.V.S.*

Dear Sir, *Hill Hall, Lichfield, July 5th,* 1849.

Having for some months past made use of a preparation which I consider valuable to us in our profession, and as I have not heard of its being used by any one else, I take the liberty of forwarding to you a brief account of the same. It is a solution of gutta percha in chloroform, about one of the former to two of the latter. I have used it in many surgical cases, and find it superior to collodion or any preparation of the kind.

I occasionally meet with cases of fistulæ in the milk duct of the teats of cows, which disease, you know, is sometimes caused by a bite from dogs or an accident, or, what is far more frequent, it arises from warts being taken off them: such cases I could never treat successfully until I used the preparation just alluded to.

A short time since I had a case of fistulous withers which I was obliged to lay open: it caused a large gaping wound, and, the animal having bruised it, an unhealthy sore was the result, which would not heal for some time until I used this solution. I first washed the wound perfectly clean, allowing it to get quite dry; then gave it several coatings with the solution, and in three days found it had assumed a healthy appearance: the granulations were even, the skin forming, the wound contracting, and the fly was effectually prevented from annoying her. By continuing the above treatment for a short time, the wound got quite well.

I have likewise successfully treated two cases of open-joint with the solution. One was a very bad case, being the hock. The parts should be quite dry and free from moisture before applying it, or a little gold-beaters' skin may be put upon the part first.

You are quite at liberty to make what use you please of this communication.

I have to thank you for your very kind answer to my inquiries about the cow that regurgitated her food. I adopted the mode of treatment you advised: she got a little better, laid on some flesh, and the owner sold her, so that I was unable to ascertain the real cause of the affection.

I have a four-year-old filly under my care; she has partial

luxation of both patellas. I have blistered twice and turned her out. I suppose nothing more can be done.

I have a cow with complete dislocation of one patella, caused by her getting the leg over a gate, and I cannot reduce it. It was done nine days before I saw her. I think I have heard it said it is impossible for this to occur in the cow.

Believe me to remain

Your's truly.

To Professor Simonds.

Dear Sir, *Hill Hall, Lichfield, July* 16, 1849.

I am sorry I have not had an opportunity of answering your kind letter of the 5th inst. before this time.

I am much obliged to you for referring me to Dr. Simpson's account of the solution of gutta percha; and although I take in your valuable Record, I had overlooked his account of the same, until it was mentioned by you: and upon looking at Mr. Taylor's case, as related in the Record of this year, at page 146, I find that he has used the collodion in the same manner that I employ the solution of gutta percha. I am glad to be thus supported.

The horse that had open hock joint belonged to a Mr. Robinson, near this place. I saw him in about two hours after it occurred. It was caused by another horse kicking him upon the front of the hock, inclining to the outer side. I never saw so great a discharge of synovia in my life from a joint. I cut the hair away very close from the parts, washed and dried the wound, then, pressing the lips of it together, applied the gold-beaters' skin, and afterwards the solution of gutta percha with a feather, commencing at the centre, and gradually extending each layer of the same for two inches round the wound: I then put a bandage over the whole, but I think the latter was of no use. I gave a dose of physic, and kept the animal upon bran mashes for three days and a very short allowance for nine days. I then examined the parts, and found the wound almost healed up: the subsequent application of the nitrate of silver, once only, completed the cure. The horse has been turned out since, and, with the exception of a little fulness of the hock, the lesion cannot be perceived.

The case of open knee joint was so much like the above, that

I need not mention it farther than to say that the gold-beaters' skin was here of very little use, if any.

I make the solution of the consistence of cream.

I had a case of ruptured diaphragm about two years ago, and another a week since. I found that there was exactly the same kind of breathing as in broken-wind, and the pulse 70, throughout both the cases. I have no doubt that both resulted from colic in the first instance. I also noticed the same symptom in a case that occurred at the College during my pupilage; I therefore consider this diagnostic, and believe that, should another case come under my care, I shall be able to form a correct opinion at once from it.

Your's, truly.

To Professor Simonds.

A Fatal Disease in Sheep.

Communicated by Mr. T. W. Gowing, *M.R.C.V.S.*

Dear Sirs,

Believing that the following account of an unusual and fatal affection occurring in a flock of sheep, to which my attention has been recently dircted, cannot fail to interest the readers of the Veterinary Record, I have forwarded it for insertion in that Journal.

The disease in question was first noticed by the person who had charge of the sheep in the month of April last: he says, that "on visiting them early one morning, I found two lambs very unwell; they staggered in their gait, had separated themselves from the others, were dull and dispirited, their heads drooping, their mouths closed so firmly that I could with great difficulty only open the jaws, and a frothy saliva covered their lips. I administered to each a small quantity of castor oil, mixed with some warm milk, and as they appeared a few hours afterwards to be somewhat better, I placed them again with the ewes. The medicine having operated, they gradually recovered; but remained very weak for several days. From this time all went on well, until the commencement of the following month (May). I had left the

flock apparently in perfect health over-night, but on the succeeding morning one of the ewes presented similar symptoms to the lambs; in addition, however, she was considerably hoven, and breathed with much difficulty. I immediately gave her a full dose of castor oil, and had her walked about very slowly; this, however, caused evident distress. As no fæces had passed by noon, I repeated the oil, and late in the afternoon, the ewe being still in the same state, I determined on exhibiting a saline aperient, but she died while taking it. On opening the body, the paunch burst from the pressure of the great mass of food which it contained; and as little or no gas escaped, I concluded she had overgorged herself, which produced a stoppage in the bowels, and death.

"A few days afterwards a lamb, which to all appearance was well at noon, was found dead about 4 P.M.; and on the third succeeding day another was discovered dead on the flock being visited early in the morning. A third was taken ill two days after this, to which I gave a dose of castor oil, and bled it in the eye and ear veins: the blood was very dark in colour, and flowed slowly. This lamb lived until the following morning: the breathing was laboured and difficult, and at intervals was suspended for several seconds. The medicine operated freely, but no diminution in the severity of the symptoms was observable."

The lamb above alluded to was sent to my establishment, and my attendance on the flock was also requested, in consequence of the serious and fatal character the disease had now assumed. In conjunction with my friend, Mr. Varnell, I instituted a post-mortem examination of the lamb, and found the following lesions:—

The abdominal viscera were free from structural disease; but the chylopoietic veins generally were distended with dark blood. The biliary ducts and gall-bladder were also very full of bile. The liver was larger than natural, and darker in colour than we usually find it. The spleen normal. The lungs slightly congested, and a small quantity of limpid fluid in each pleural sac. The thymus gland large and dark in colour, which seemingly depended upon venous congestion. The pericardial sac contained about two ounces of fibrin and serum: the fibrin was in a state of semi-coagulation, but not adhering to any part of the membrane, which shewed no redness or abnormal thickening. The external part of the heart, particularly on the left side, was observed to be studded with dark-looking spots.

On making a section through the outer wall of the right ventricle, from its base to its apex, the cavity was found to be empty, and the lining membrane free from disease; but at the upper part, and near to the septum ventricularum, a group of petechiæ existed beneath the membrane. The right auricle was normal. The left ventricle contained some coagulated blood of a dark hue, which, being removed, shewed similar spots on the septum to those seen in the right ventricle. The muscular structure of the outer wall of this cavity was discoloured by blackish streaks and spots.

On arriving at the farm, I first made an autopsy of another lamb, and found similar morbid appearances to those above described, with the exception of the petechial condition of the heart. My attention was then specially directed to a lamb which was suffering from the disease: the symptoms were analogous to those named by the bailiff. I ordered its removal to a well-ventilated shed, prescribed some aperient medicine, and gave directions for it to be kept apart from the others. On minutely inspecting the flock, I could not discover any indications of ill health in the animals; but, concluding that the quality of the food was mainly concerned in producing the attack, I determined on making a complete change both in the management and feeding of the sheep; I therefore had them turned on to a common, where the herbage was scanty, and where they could roam at liberty, and ordered that they should be carefully watched. On the succeeding morning another ewe was found dead, which was also forwarded for my inspection. This I sent to the College, when the following lesions were discovered:—

The abdomen was found to contain a large quantity of fluid of a sero-sanguineous character, and venous congestion of all the abdominal viscera existed to a considerable extent, some parts being nearly black. The vena porta, and the contiguous portion of the posterior vena cava, were distended with coagulated blood. The spleen was likewise much enlarged. The biliary ducts, gall bladder, and ductus communis choledochus, were full of bile; and the liver, as in the lamb, was large and dark in colour, from repletion of its vessels and ducts. A small quantity of fluid was found in each pleural cavity; the lungs were much congested, but no structural disease existed. The pericardial sac contained about its usual quantity of fluid. The heart had an unnaturally large

appearance. On laying open its right side, both cavities were found to contain a large quantity of coagulated blood, which likewise extended into the large vessels connected therewith, particularly the anterior and posterior cava and coronary veins. The right auricle, when freed from its contents, also exhibited ecchymosed spots in its muscular structure beneath the lining membrane. The left side of the heart contained but a small quantity of blood, which was likewise of a dark black colour, but shewed no marks of structural disease.

Finding that no abatement of the disease was likely to follow the means hitherto adopted, I resolved on trying the effects of medicine, and prescribed for each ewe, mag. sulph. ℥ij, sol. aloes ℥j*, et spts. ammon. aromat. ℥j, and about half the quantity for each lamb. This medicine having produced a satisfactory action, no more losses occurred for a week, when another lamb was found dead, which led me to repeat the medicine and continue the plan of feeding, which was attended with the wished-for result, as no more deaths took place from this time. In a note received from the bailiff, he says, "that the weather, which had been cold and moist, now changed to dry and warm;" and he adds, "that when the malady first appeared, the sheep were pastured on *rich* ground, where there was a very good, but not a superabundant, supply of succulent grasses. So quickly did death take place, that I was fearful the sheep had picked up some poisonous plants, which led me to carefully examine the fields and hedge banks, but I did not discover any of a noxious character. I am not aware that other flocks in this immediate neighbourhood have been similarly affected, but I have heard that in other parts of the country the losses from this disease were very great, one farmer losing as many as eighty sheep in a very short time."

To the Editors, &c.

[During the spring and early part of this year our attention has been, from time to time, directed to the fact of sheep being quickly carried off by causes which were not very apparent. In some of those cases we have made post-mortem examinations, and although the lesions have slightly differed, they, nevertheless, all tended to shew that the circulatory system was chiefly involved.

* Morton's Manual of Pharmacy, 4th Edit. p. 94.

Sudden repletion of the bloodvessels in sheep is always attended with serious consequences, as death from asphyxia may speedily occur; or should this not be the case, and life become prolonged, then effusion of serum, holding in solution the colouring principle of the blood, takes place into the various cavities of the body. Hence we have an explanation of many cases which are improperly designated red-water, from the abdomen containing a red-coloured fluid. The quality and quantity of the food, the limited range these animals are often allowed, the state of the weather, &c., are, doubtless, the causes of this repletion; but whether the constituents of the blood are likewise altered, cannot be satisfactorily ascertained. Under such circumstances it is of the first importance to alter the system of management of the whole flock by adopting a plan similar to the one described by Mr. Gowing. Prophylactic and not curative measures must be chiefly relied on to stop the progress of such fatal maladies.]

Case of acute Congestion of the Lungs, with Bronchitis, in a Pony.

By the same.

On the 13th of May a pony was brought to my infirmary, the property of Mr. Collingwood, Camden New Town. The animal was in very high condition—the pulse rather increased, but feeble—the tongue dry—the mouth clammy—the bowels rather constipated—the visible mucous membranes of a yellow tinge—occasional rigors were present, with an aqueous discharge from the nose—the respiration increased, and attended with a cough. He was immediately sent home, and ordered to be placed in a loose box, on succulent diet. The following mixture was administered :—

℞. Liq. ammon. acet. .... f℥viij
Sol. aloes. ..... f℥ij
Spt. ether. nit. ..... f℥iss
Tinct. opii ..... f℥j
Hyd. chlorid. ..... ℥ss. Misce.

Febrifuge medicine was continued daily until Wednesday, the 16th, when, visiting my patient, a marked change for the worse was

apparent. The breathing was hurried and stertorous, the submaxillary artery full, and almost incompressible, excepting that the pulsatory action was thready and numbered 70 beats in a minute. Upon auscultating the chest, the mucous râle was audible, and could be detected without the application of the ear to that cavity. Upon a further examination at the animal's sides, there was heard a continuous distant rumbling sound, but no audible respiratory murmur; the air seemed only carried through the trachea and bronchial tubes, without permeating the parenchymatous structure of the lung, and then again expired. The eye was amaurotic, the animal partially unconscious, arising from the impure blood sent to the head; he walked round his box frequently, in a circle, pawing; then occasionally he would stop and neigh, dip his head into a pail of whitened water, throw the fluid about with his nose, leave off, and again commence the circuitous route: the breathing still continued to be stertorous.

Diagnosis.—Acute congestion, with bronchitis.

Prognosis.—Unfavourable.

Treatment.—The sides and chest were fomented with hot water, and then mustard cataplasms applied. One and a half drachm of the carbonate of ammonia were given in a bottle of stout every four hours until re-action had taken place, and an enema thrown up; the legs were stimulated and bandages applied, the body clothed, and the animal placed in a cool loose box, without exposure at night. The fomentations and mustard at the sides were repeated during the day, the breathing becoming so difficult that I apprehended asphyxia to take place hourly: an assistant was left with him for the night.

Thursday morning.—The sinapism has done its duty. There is a great tenderness over the sides and chest, and a large quantity of serum effused into the tissues; the ears and legs are a little warmer; the respiration less difficult, the stertor less audible; the pupillary openings contracting again to the stimulus of light, and the brain relieved, as the animal knows the attendant who is in the habit of looking after him; the pulse reduced to 55 in number, but weak, and the artery more compressible. Give the stimulants as before, with gruel at intervals, so as he is not distressed by its administration. Saw him again at 8 o'clock, P.M.: pulse considerably stronger, larger in volume, breathing less laborious; the animal

standing quiet when left to himself, and comes to the side of the box at the call of the horse-keeper, and will also eat a sliced carrot without producing much cough. Ordered the man to sit up with him, the ears and legs to be hand-rubbed, and gruel to be given at intervals, sweetened with honey. Diffusible stimulants discontinued.

Friday, A.M.—Evident improvement manifested, excepting that the pulse has become very weak: it is 50 in number. As this probably arose from the loss of the stimulants, ordered the stout to be repeated, with half an ounce of the spirit æth. nit. and a drachm of the extract of gentian: gruel to be given, as before, at intervals. The mustard to be washed off, the sides to be well rubbed, giving dry friction to the skin, and the animal to be again clothed up: there is present a muco-purulent discharge from the off nostril, which is thrown out in clots.

P.M.—My patient appears cheerful, and inclined to eat a little hay; the discharge from the nose has increased, and the respiration is more tranquil; the pulse the same as before.

Saturday morning.—Animal still improving; pulse 50, but stronger, and bowels acting naturally. He has eaten some tares and a mash, and partaken of some hay tea. Continue diet as before; no medicine given.

Saturday evening.—I was informed my patient fed pretty well during the day, and, the pulse being stronger, he was ordered gruel, with no more food until the morning.

Sunday morning.—He is still feeding; pulse 50, and weak; extremities cold, and does not appear quite so lively as yesterday. Tonics and stimulants repeated in the form of extract of gentian, with ginger and sulphate of iron: the spirit of æth. nit. to be given in stout, as before.

Sunday evening.—There is more tone in the pulse, the animal has fed well during the day, and is more cheerful; the extremities warmer. No medicine.

Monday morning.—The pulse is about the same in number, the appetite improving, and the pony has laid down and rested during the night; the bowels are acting naturally, the general secretions are returning; indeed, the case is going on as favourably as we could wish. Ordered the tonic mixture as before, all further treatment being discontinued.

In the above case it will be seen that I did not bleed, also that the circulation became depressed whenever the stimulating treatment was withheld; further, that I was compelled to return to the same plan of treatment again and again, so as to support the nervous system and to rouse the heart's action to force the current of blood onwards, so that the tonicity of the vessels might not be lost, for, then, probably, effusion would have taken place. Not that I would condemn blood-letting, for I think that in the majority of such cases it would be required, but not to the extent that it is sometimes carried. Sufficient blood should be withdrawn to relieve the vessels, without depressing the system too much; and then we should resort to the use of stimulants, so that the nervous system may be supported so as to assist the heart, although it may have impure blood to propel, the character of this being altered by the administration of such agents as will impart oxygen to it; this being aided by counter-irritants, exposure to pure air, &c.

1, *Stucley-terrace, Camden-town.*

Case of extensive Sanguineous Effusion between the Abdominal Muscles.

By Mr. G. T. Brown, *M.R.C.V.S.*

Sunday morning, Aug. 26th, 1849.—At ten o'clock my attention was called to a bay mare, eight years old, who had been admitted an hour previous, on account of bleeding from the mouth.

History.—I was informed by the owner that the mare had drawn about five cwt. of timber the previous day, and was seen, up to nine o'clock, p.m., quite well; but on the following morning, on entering the stable, he observed a quantity of blood on the ground and sides of the stall, amounting, it was supposed, to about two quarts (certainly not more), and, perceiving that the hæmorrhage was still going on, he sent her to my infirmary.

Symptoms.—My first act was to ascertain the source of the blood, which had now ceased to flow. I discovered it to have been a wound, about two inches long, situated over the second inferior molar tooth on the left side, and which had penetrated the

buccinator muscle. The teeth being extremely sharp, it seemed probable they were the cause of the lesion. While examining the mouth, I was particularly struck with the marked whiteness of the lining membrane. The pulse was irritable, numbering about 80; and, the animal being left to herself, she stood with her head resting on the manger, and manifested pain by pawing. A general examination disclosed an enlargement of the right hind leg, extending above the hock, and which I was told had existed a week; and apparently connected with this was an enlargement commencing from the right mammary gland and reaching upwards to the anterior spine of the ileum, and anteriorly to the last rib. It was tender to the touch, and the under surface was cold and covered with moisture. No opening being discoverable, or any symptom to lead to the inference that hernia was present, I contented myself with ordering local fomentations and giving some laxative and febrifuge medicine.

Monday, August 27th. — The enlargement has been gradually increasing since yesterday, and now extends forward to the sternum. Passing the hand up the rectum, the enlargement may be distinctly felt, and it conveys to the mind the impression that the stomach had shifted from its place and become immensely distended. I was unable to cause it to yield to pressure, and there seemed an amount of resistance analogous to the elasticity communicated to the hand by a solid ball of India-rubber: the symptoms in all other respects were the same as yesterday. The animal has eaten nothing; the bowels have not acted; the pallidness of the membranes is even more obvious, appearing as though covered with flour; the pulse 80, and of moderate fulness. Before adopting any further remedial measures, I sought the opinion of Mr. Varnell, and subsequently that of Professor Spooner. After a careful investigation, the conclusion arrived at was to the effect that there was much mystery enshrouding the case. Some of the systemic symptoms indicated extensive hæmorrhage, to which, however, the character of the pulse was opposed. That the tumour was hernial in nature seemed most probable; but in the absence of any discoverable opening into the abdominal parietes we came, by negative inference, to the opinion that the internal layer of muscles was ruptured, and, in association with them, some of the neighbouring vessels. Lastly, the crowning conclusion, about which there could

be no question, was, that the mare was fast sinking, and that the only chance, and that a very slender one, of saving life, was to place the patient on her back in order to examine her more minutely, and, if necessary, have recourse to an operation. I communicated with the owner, and received his consent to take the mare at the price of a dead one, as I declined to undertake the operation on my own responsibility.

Acting on the quotation made by Professor Spooner, that "If 'twere done, 'twere well 'twere done quickly," the animal was cast, placed on her back, and the reduction attempted; but although the tumour sensibly decreased in size, no rupture could be felt. I again passed my hand up the rectum, but was unable to carry it beyond the elbow, from the pressure and superincumbent weight.

The scalpel was now carried through the integument to the extent of a couple of inches in an oblique direction, from before backward and inwards, and a quantity of sero-sanguineous fluid escaped from the incision; the fibres of the obliquus externus were next cut through, and immediately a quantity of fluid blood poured out: the opening was enlarged, and the hand introduced, when a large mass of coagulum was removed from the sac, but no communication with the abdomen could be found. Some tow was now placed in the cavity, and the external wound closed by three sutures, a diffusible stimulant administered, and the mare allowed to remain quiet on the ground: much thirst being present, cold water was plentifully given her; but she died, as it was apprehended she would, about two hours after the operation.

Post-mortem examination, fifteen hours after death.—The removal of the skin disclosed a large quantity of serum and plastic matter thickly effused over the subjacent structures, and extending as far forward as the sternum, and backward to the pubis. On elevating the panniculus, some coagulum was found. The external obliquus was next raised, and between that muscle and the internal a cavity was discovered capable of holding several gallons of fluid, and in which a quantity of coagulum still remained. As the inevitable result of fluid pressure, the muscular fibres had become disintegrated, the blood had passed through to the torn fibres of the internal oblique muscle to the rectus, and still further inward to the faschia of the transversalis. On many parts the lymph was so closely adherent to the muscles as to be inseparable; the fibres

being torn in the attempt to withdraw it. The knife was now carried forward along the linea alba, and the abdominal cavity laid open. The peritoneum in connexion with the tumour was congested, the rest was somewhat pallid; in other respects the viscera were healthy, excepting the right ovarium, which was enlarged to treble its natural size, and filled with coagulated blood. The contents of the alimentary track were fluid. An examination of the hock and metatarsus shewed a similar affection to exist, coagulated blood being here in considerable quantity.

Remarks.—Without claiming for this case the distinction of unique, it may be safely asserted that it contains many features of much interest to the pathologist. The prominent inquiry is immediately directed to the cause; and here, as in too many instances, all is chaos.

The mare was purchased at a public auction about ten days before, having at the time an enlargement in the off hind leg, then inconsiderable, up to the Saturday night: prior to her admission into my infirmary she had worked regularly and lightly. The manger on Sunday morning was empty, shewing she had fed well till past nine o'clock at night. These scanty remarks comprise the whole history of the case, as obtained from the attendant. I myself examined the stable: the straw shewed no evidence of struggling, as would naturally be the case if the animal had been cast; there was no post which she could have got against so as to injure herself; in fact, there is not a thread which might help to unravel the mystery. That some violence was sustained seems incontrovertible; but how, when, or where, are problems of which surmise alone can offer a solution. On the nature of the injury it seems superfluous to comment. We could not trace the exact vessels ruptured; but as a matter of necessity, they must be included in the epigastric artery, the circumflex artery of the ilium, and probably some of the adjacent veins. The increasing size of the tumour, and the disintegration of the muscular fibres, are simple illustrations of an hydrostatic law. The final consideration is embodied in the question of treatment. Had it been possible to have discovered the exact nature of the enlargement, styptic and tonic agents would, of course, have comprised the systemic, and cold applications the local treatment; but in the absence of a precedent, any diagnosis could, of course, be only conjectural.

Case of Ventral Hernia, and Rupture of the Rectum caused by Intestinal Calculi.

By Mr. B. Cartledge, *M.R.C.V.S.*

My dear Sir, *Sheffield, 7th July,* 1849.

Knowing with what interest the subject of "calculous concretions" has been investigated by you, I have forwarded for your inspection some specimens taken from a patient unsuccessfully treated by me yesterday morning.

I regret the history of the case is so meagre, it being briefly as follows:—A very handsome cart horse, seven years old, belonging to one of our large steel melting companies, was perceived, on the carter's first entering the stable in the morning, to be unwell, in consequence of which I was sent for. I found the most prevailing symptoms present to be those indicative of "spasms of the bowels," although the pain was not urgent. He had eaten all his night feed, and, as far as external appearances would lead them to suppose, was perfectly well when they left him. The usual quantity of fæces were found behind him in the morning, and these presented no unusual character. The pulse was irregular, the respiration laboured, and a cold clammy perspiration bedewed the surface of the body; the visible mucous tissues were of their ordinary colour, and up to the time of death they remained unchanged. The animal urinated in my presence, passing about four ounces of rather highly coloured fluid, and he strained several times afterwards. I prognosticated an unfavourable issue.

An antispasmodic combined with a diffusible stimulant was administered, and this repeated in about half an hour. Shortly after this, as the symptoms remained unabated, and the accession of inflammation was to be apprehended, I gave

Sol. aloes Barb.	℥vij
Tinct. croton	3vj
Opium in sol.	3iij

in the form of draught, and opened the left jugular vein. On the withdrawal of my lancet a thick dark-coloured fluid presented itself, but only in a very small stream: the process of collecting this being very tedious, I opened the other vein, abstracting from both jugulars in all about ten pounds of blood. After this I gave

in ball, ammon. sesquicarb. ʒiv. The rectum contained no fæces. An hour subsequently I again visited my patient, and found him standing tranquil, and was told he had been so the greater part of that time. The breathing and pulse were but little altered; nevertheless, I felt convinced that he was fast sinking, and he died in two hours afterwards; this being four and a half hours from the time I was summoned to attend him. A post-mortem examination disclosed a laceration of the abdominal muscles on the left side of the penis, and a protrusion through the wound of one of the small intestines; the skin, however, was normal; thus we had a recent case of "ventral hernia."

On opening the stomach it was at once apparent that a rupture, and that of one of the intestines, had occurred. A closer search shewed this to be the rectum, near its junction with the single colon, and its cause, the larger calculus I have forwarded to you. Scattered about in the other intestines were found the others, numbering thirty-one, and weighing thirty ounces. The coats of the bladder were inflamed, and at its fundus it was rapidly going on to sphacelus.

I do not remember seeing a calculus whose shape is so peculiar as the heaviest of the specimens sent; it resembles a large mass of excrementitious matter. I have likewise sent you a portion of the stomachical calculus, referred to by you in your work on this subject, which was taken from a horse the property of my late preceptor's father, Mr. Taylor.

Believe me,

Ever faithfully your's.

To Professor Morton.

[We are obliged to Mr. Cartledge for the portion of stomachical calculus he has forwarded. The others sent are also of the ammonio-magnesian phosphate kind, very dense in structure, and perfect in constitution, each being made up of alternate layers enclosing a common nucleus: in form they are mostly angular, and vary in size from a split-pea to that of a large egg. The largest one, which appears to have been the cause of the rupture of the intestine, is of the shape of a small loaf of bread, and weighs seventeen and a half ounces avoirdupois].

On the Use of Collodion and Creasote in a Case of Lacerated Wound followed by Open Parotid Duct of a Horse.

By the same.

My dear Sir, *Sheffield, August* 30, 1849.

Seeing by the last number of The Veterinary Record with what success Mr. Gowing had treated a case of open parotid duct with collodion, and from the encomiums I have repeatedly read and heard passed upon it as an adhesive agent, I have thought it worth while sending you an account of a case illustrative of its value.

A month ago I was called up in the night to attend a horse which, having got loose from his standing and in search after food, had, by putting his head into a corn-bin where projected the points of a large staple, torn the underneath part of his jaw in a most frightful manner. At the time I saw him there hung from beneath the base of the tongue about eight inches of integument, as one division, and various other wounds existed of smaller dimensions and a variety of shapes. The submaxillary artery was separated from its attachments, and clearly to be seen. I immediately closed the wound by sutures; but from its size and pendulous character there was a sac formed in its centre, and I anticipated there would be some difficulty in bringing about the healing process. A hood was put on, and padded by means of tow, so as to bring the whole of the detached skin in contact with the opposite parts, and the patient left for the night. The next morning, however, presented to my view fresh obstacles to contend against; and I removed all the sutures, determining to start anew. A large amount of serum had become effused into the sac; this was allowed to escape, and the inner surface thoroughly dried by means of lint. When this was completed, I painted over the entire inner surface of the wound a tolerably thick coating of collodion; then brought the parts again into contact, and re-applied the padding. Food requiring but slight mastication, and that only in small quantities, was ordered to be given, and the animal directed to be kept perfectly quiet. Twenty-four hours after this I found, greatly to my satisfaction, that, with the exception of one little angle, all the hitherto detached integument was firmly adherent, and almost immoveable. I again resorted to the collodion,

to close up, if possible, this only gaping portion, and by that means render my case complete; but this I could never accomplish, as the sequel will shew.

Ten days elapsed, and the granulatory process was rapidly filling up this only "flaw," and no discharge save that of healthy pus existed. Apparently,

"All went merry as a marriage bell.

The wound was now about to be numbered amongst "the past," when issuing from out of its centre a pale viscid fluid attracted my attention; and although the quantity was very small, I had misgivings as to its being a secretion from the wound, and at the same time I was struggling to persuade myself that had the parotid duct been wounded I should surely have seen symptoms indicative of such having occurred before now. With whatever hopes, however, my mind was then filled, the following day served to convince me that as to the discharge being *saliva,* there was not a

"Hinge or loop
To hang a doubt upon;"

as on every motion of the jaw it passed out in a continuous stream, nor was the quantity much lessened when the parts were in a passive condition.

I again resorted to the use of collodion; but could not keep the agent in contact with the wound by any means I could devise. I then applied the "budding iron," and repeated this once or twice, but the escape of saliva still continued unabated. The application of sol. zinci chlorid. followed this, but still without any good effect whatever: nothing tended to close this unnatural opening, till, remembering to have heard you speak of the value of *creasote* as a topical agent, I employed it in this case, *once* only, and never had occasion to repeat it, the orifice closing in a manner truly astonishing. I may almost say with the groom who attended him, that it is "grand stuff;" and I think as a coagulant and excitant to wounds it is not duly valued by us. An ordinary stimulant was applied to the surface of the wound for a short time, and to-day I have pronounced the horse to be convalescent, although he is much debilitated. This is ten days after the appliance of the creasote.

Believe me,

Ever faithfully your's.

To Professor Morton.

Case of Amputation of the Off Fore Leg of a Heifer.

By Mr. G. Lewis.

Dear Sir, *Monmouth, July* 29, 1849.

I was called to attend a remarkably well bred heifer, two years old, the property of a farmer near this town. Upon my arrival I found she had fractured the off fore leg below the carpus, and into that joint. The owner desiring that I should "do something for her," I at once assured him that union would not take place. However, that evening he sent her to my infirmary upon a dray, with a message that he wished me to do what I could for her. I at once resolved upon amputating the limb, which I did the next morning, removing it by the circular flap operation, midway between the radius and ulna.

I have not had her in slings nor under restraint since the operation. The ligatures came away in due course, and the wound is now nearly healed. She rises with the utmost caution and ease to feed; lies down with the same caution to rest and ruminate, and she is rapidly improving in condition. I intend sending her home this week.

I am aware that, taking a surgical view of the case, it does not possess more than ordinary interest; but the objects I had in view were to relieve the animal by making it a simple wound, and to save the pocket of her owner.

I am, dear Sir,

Your's truly.

To Professor Spooner.

Dear Sir, *Monmouth, Sept.* 3, 1849

In accordance with your wish, I write to inform you how the heifer is going on, and to thank you for your last kind letter.

The stump is perfectly healed, the animal is turned out, she feeds well, and is rapidly improving in condition; and it is remarkable with what facillty she escapes from being caught: lies down, rises up, and places herself in every posture and position required. I assure you that the case has proved perfectly satisfactory to me and to the owner in every respect. I have been asked by several persons as to the possibility of affixing an artificial leg; but as I have not sufficiently considered the matter, I

have not attempted it, although I see no reason why an artificial stump of a certain length may not be applied, upon which the animal might rest while feeding, thereby rendering her considerable support, and that without inconveniencing her in lying down, rising up, &c.

I remain, dear Sir,

Your's truly.

To Professor Spooner.

VETERINARY JURISPRUDENCE.

We are obliged to Mr. Small, V. S. for a copy of the "Ulster Gazette," containing the report of a trial, *Burges* v. *Small.*

There are but few among us, we think, who would have ventured to act so decidedly as Mr. Small did in this matter. He, doubtless, felt that

"He is doubly armed whose cause is just,"

and admirably he took his stand; and this not only on his own account, but likewise that of the profession. Nobly he maintained his cause, and gloriously has he triumphed.

The crowded state of our pages precludes our giving more than a few extracts from the trial.

"The plaintiff in this action, Titus Burges, was an innkeeper in Banbridge, and had sent a colt for castration to defendant, who is a veterinary surgeon, practising in Newry; the colt subsequently died, and plaintiff sought damages from defendant on the plea of neglect, alleging the colt's death to have been caused by the veterinary surgeon sending him home before he was in a fit state to travel, and whilst labouring under strangury."

The plaintiff's witnesses having been examined, they were cross-examined by Mr. Small; when the barrister before whom the case was tried was inclined to dismiss without hearing the defence; but plaintiff's attorney demurring, Mr. Small proceeded to address the Court as follows:—

Defence.

"In the absence of my solicitor, who has not arrived from Newry, it is my misfortune to be obliged to conduct my own defence in this most iniquitous action; and, although it is a saying amongst lawyers, that 'a man who pleads his own cause has a fool for a client,' I think that I may safely risk the imputation in such a

case as this. It is an extraordinary action, and so novel in its nature, that in the records of veterinary jurisprudence in this country, in England, or in Scotland, there is not a single instance of such a cause of action as that which is now before the Court.

"It is a case that does not merely affect me individually, it deeply affects the interests of every member of the profession to which I have the honour to belong. It, likewise, interests the medical profession; for a surgeon after performing amputation may have the misfortune to lose his patient—many a man has died from the amputation of a limb—when a jealous rival, or a vindictive relative of the deceased man, may trump up a plea of neglect against the unfortunate surgeon, and cast him into gaol, on the charge of manslaughter, or it may be murder. Similar is this case before the Court. It is not an action for debt, for I owe no man any thing; nor is it an action even to recover damages, for that is impossible; but it is a vindictive action, brought against me, not only to rob my purse, by bringing me here to Hillsborough, thirty miles from my residence, but with a diabolical intention to ruin my professional character and reputation—to rob me of the means whereby I live. The facts of this case, which I will prove in evidence, are the following:—

"In October last, plaintiff wrote to me at Armagh, where I reside, to say, that he had a colt to castrate, and requesting to know when I would be in Banbridge, and what would be my charge for the operation: my answer was, that I had no immediate business there, that my charge was a guinea for the operation, and that if I went express, the charge would be £1 additional for the visit; but, if he sent the colt to Newry, on a Monday or Thursday, which are my days of attendance there, I would be happy to operate on him, and give him the use of a stable free, where he might supply his own feeding and attendance: this was intended to save him the expense of livery, and also that of my visit to Banbridge: for this act of kindness on my part, witness the ingratitude of the man! On October 16th, the colt was brought to Newry, in charge of plaintiff's servant. I there performed the operation in the same way as I have done it for the last twenty-five years, and with the same care and attention as if he were my own property: he remained in my stable until the 21st, in charge of plaintiff's man; not in charge of any of my men, as he would have been if at livery and under my care. On my return to Newry, on the 19th,

I saw the colt, and found the wounds suppurating, which is the indication that danger is over from the effects of the operation. The colt was doing so well, that I ordered him to get exercise if the weather permitted; and that if he continued to go on well, he might be taken home on Saturday. Although it is never necessary for me to see a horse a second time after castration, yet Mr. Kennet, my pupil, who happened to be in Newry at the time, saw the horse every day that he remained there, and allowed the man in charge of the colt to want for nothing. The colt went home on the sixth day after the operation, as is usual in my practice, without any unfavourable symptom whatever; he was lively, and looking well at the time he left my establishment: if he had been insured by me for £100, my liability was then at an end. The Court, perhaps, is not aware of the fact, that castration is considered so dangerous, that it is common to insure horses under the operation, on payment of five per cent. on the value of the animal, to the operator (here is the form of docket); this insurance lasts only one week, when the underwriter's liability is at an end.—On October 23d, the Monday after the operation, I received in Dundalk the first intimation that the colt was ill. I instantly sent an order to Newry for my assistant to proceed to Banbridge, without a moment's delay, and do what he could for the colt; he did so, but the colt died that night: if he had not gone on receiving my order, there would be some semblance of neglect, and a faint excuse for this action. I heard nothing more of this matter till after my account was furnished; and in the January fair of Banbridge, when I called for payment, plaintiff refused, stating that *I had murdered his colt*. I paid little heed to this vile aspersion, and considered it only as used *in terrorem* to induce me to forego my claim—a stratagem to shirk payment of a just debt. Now, had Mr. Burges thought at that time that he had any case against me for the recovery of the price of his colt, why did he not proceed for it at the January sessions, or at the March sessions: no, but he waits till now, nine months after the transaction, and brings me here to Hillsborough, when he might have tried it at Newry, where my witnesses live, and with equal convenience to himself. [Plaintiff's attorney here stated that he was the cause of its being brought to Hillsborough, as he could not attend Newry sessions, and exonerated the plaintiff from any vin-

dictive motive in doing so.] At next quarter sessions in Newry I brought a civil bill action for the amount of my bill: it was tried before your worship, and dismissed, on the assumption of neglect. This was most unaccountable to me; but, trusting to the known impartiality of your worship, which is almost proverbial in the county, I felt satisfied that the judgment was according to evidence; that evidence I will now prove to be false, and shew how unjustly I have been deprived of as honest a debt as was ever due. This is not all. After that trial, a report was in circulation that the Court had intimated to plaintiff, that, *instead of my sueing him for my account*, he should make me pay the price of the colt. This was tantamount to saying, *bring Small before me if you can, and I will give you a decree.* Sir, I did not believe this report; nor do I think that any representative of her Majesty, on that seat of justice, would be guilty of so gross an impropriety."

Defendant having called his witnesses, and clearly shewn that not only was there not the slightest neglect attachable to him, but that even more than ordinary solicitude and care had been evinced both by himself and his assistants,

"The Court, after complimenting Mr. Small, said, It is quite unnecessary to proceed further with the case; the horse was sent to Newry merely for the operation, which seems, by the plaintiff's own witnesses, to have been properly performed; the action absolutely charges Mr. Small with neglect for *not doing that which appears to be impossible*—I DISMISS ON THE MERITS."

DIPLOMAS.

THE FOLLOWING HAVE OBTAINED THEIR DIPLOMAS FROM THE ROYAL COLLEGE OF VETERINARY SURGEONS, SINCE THE LAST REPORT, LATE STUDENTS OF THE ROYAL VETERINARY COLLEGE.

Certificates of Membership of the VETERINARY MEDICAL ASSOCIATION have been awarded to those before whose names an asterisk appears.

Mr. W. Cooper, Berkhampstead
Mr. T. Turner, jun., Croydon
Mr. T. S. Griffiths, London
Mr. H. W. Cannell, Liverpool
Mr. W. Wallace, jun., Wolverhampton
Mr. T. D. Wiltshire, Merthyr Tydvil
*Mr. J. S. Woods, London
*Mr. Jos. Reeve, Outwell.

EXTRACTS FROM JOURNALS.

On Varicose Veins.

The veins are liable to become permanently dilated, either in limited portions of their length, or throughout the principal part of their course,—a condition which is generally attended by an accumulation of grumous blood, and sometimes by a degree of interruption to the circulation. This state of a vein is termed varix. Varicose veins not only become increased in their caliber, but they are also considerably elongated, and very tortuous in their course; often, indeed, being so coiled and irregular as to constitute distinct tumours.

This varicose condition of a vein is sometimes called hypertrophy; but a distinction ought to be made between mere hypertrophy and varix. Hypertrophy of a vein occurs where an excess of nutrition, either normal or morbid, is carried on in the part, the vein becoming thickened in its coats, enlarged in its caliber, and much elongated; but the integrity of the coat is preserved; the dilatation is uniform, and the circulation consequently unimpeded. If, on the other hand, a change occurs in the state of the venous coats at any point, a kind of pouch may be formed; the blood will have a tendency to coagulate at that spot; there will be a deposit of fibrin, and a species of tumour very analogous to aneurism in an artery is produced. Varices are most frequently found in the veins of the lower extremities, sometimes extending to the veins of the abdomen, and they have been known to occur in the upper extremities. The vena cava, vena azygos, and, indeed, all the great veins, have been met with in a varicose state; but the vessels ordinarily subject to the disease are the venæ saphenæ and hæmorrhoidal veins.

The varicose condition usually advances very slowly, causing at first no inconvenience to the patient: after a time, however, the veins become gradually more and more distended, particularly if the limb be much exercised; they also become more tortuous and knotted, and a dull heavy pain and numbness is complained of throughout the whole of the diseased part. As the disorder progresses, the limb begins to swell and become œdematous,—a condition almost invariably concomitant with long-existing varix.

Varices sometimes undergo a spontaneous cure, owing to coagulation of the blood taking place to a sufficient extent to plug up the canal of the vessel, and cause its complete obliteration. The vessel then becomes hard and incompressible, and is reduced to the condition of a mere cord, the circulation being carried on by collateral venous branches. The clot may sometimes act on an already inflamed vein as an extraneous body, producing ulceration, which not only destroys the coats of the vessel, but may extend to the surface. Hæmorrhage seldom, however, occurs as the result of this action, for the vein is generally previously obliterated. This ulcer is, however, very difficult to heal, owing to the œdematous state of the limb. The cause of the varicose state is but little understood, but is generally supposed to proceed from some obstruction interfering with the reflux of the blood. The elongation and tortuosity acquired by the dilated vein appear to be a provision of nature to compensate for the want of the natural action of the valves; for it is evident that, when portions of the vein are brought into the horizontal position, the column of blood is broken, and the pressure rendered considerably less than if the whole were retained in a vertical direction. The rupture of the valves may, no doubt, in some cases prove the cause of varix, from the presence of the entire column of blood being left dependent wholly on the coats of the vessel.

We are not acquainted with any certain mode of curing this disease. Gentle and graduated compression seems to be the most effective means of checking the progress of the disease, and relieving the œdematous swelling attendant on it; but frequently, as soon as the compression is removed, the varices again make their appearance, and the pain and œdema return to as great an extent as before the bandages were applied. If nature has obliterated the diseased vein by the coagulation of its blood, and by the subsequent adhesion of its coats, there is nothing left for the surgeon to do but to support by gentle bandaging the collateral veins, to keep the bowels open, to recommend the patient to abstain from any violent degree of exertion of the limb, and to maintain the recumbent posture as much as his ordinary avocation will admit.

From Mr. Bransby B. Cooper's Lectures, in the Medical Gazette.

TO CORRESPONDENTS,

AND SHORT NOTICES OF COMMUNICATIONS, &c., RECEIVED.

An Engraving by W. H. Lizars, from a drawing by J. Stewart, of an "Apparatus for administering Chloroform to Horses, invented by Mr. Ramsay, of Barnton," with its explanation, has been sent to us. It appears that Mr. Ramsay first gave publicity to his invention in the *Scottish Agricultural Journal* for 17th July 1849. He says it has been well tested, having been used to upwards of thirty horses while under various surgical operations. Further, that "the recovery of animals operated on while under chloroform has been rapid and most satisfactory; so that there is no doubt this apparatus, which may be considered quite perfect, will soon come into very general use." A conclusion we do not so hastily arrive at; not from any objection we have to the apparatus invented by Mr. Ramsay, which differs not in any essential particular from that which has been employed by us, but from other and weightier reasons which militate against the use of chloroform and all anasthetic agents for the horse.

In a communication received from Mr. S. W. Jeffery, V.S., 9th Light Cavalry, Hon. E. I. C. Service, he says, "I find horses in this country (India) are attacked with diseases, some of which are altogether unknown to the members of the profession in England; and the symptoms of which are also very urgent, so that great numbers are often quickly swept off. The natives appear to be fond of the use of different herbs, leaves, and roots of trees. I was told the other day of a 'specific' for bony enlargements. It is as follows:—take a slice of the fruit of the lime *(citrus limetta)*, and place it over the tumour, keeping it there by means of a bandage, and renew the slice every day for ten or twenty days, when a reduction of the ossification will be found to have taken place, or even its entire removal; this, of course, depending on the size of the exostosis. As the acid of the fruit is conjectured to act chemically on the earthy matter of the bone, probably strong vinegar would do as well. The disease designated '*Bursatte*,' considered here incurable, is, in my opinion, of a scrofulous nature: for it I intend trying iodine combined with tonics; but I am told that plenty of work and dry food are the best curative measures. The constitution of the horse in this country seems different to that of the English horse, and the medicines often to have a different effect. Any peculiarities that I become acquainted with you shall be informed of."

In a note transmitted by Mr. Wright, jun., V.S., Burnham, he says, "I was cutting a colt about a fortnight since, in which considerable adhesion of the testicle to the scrotum existed. This I was dividing, when two or three

parasites made their escape. Having never met with such a circumstance before, I have ventured to communicate the fact to you, and to ask the name of the worms. Each was about two or three inches in length, and of a white colour."

*** They probably were strongyles, which are often met with under the peritoneal tunic.

The history of a case of fits, occurring in a dog, and terminating fatally, has been communicated to us by Mr. J. LAWRENCE, V.S. The post-mortem examination is given by him as follows:—"On laying open the thorax, I found the lungs, pleural covering, heart, and pericardium, perfectly healthy; but I thought the heart rather large for so small a dog.—Abdominal cavity: The stomach was empty and free from inflammation; the liver likewise was healthy, and the gall-bladder nearly full; the fæces were pultaceous, and no trace of disease existed in either the large or small intestines: in short, the whole of the thoracic and abdominal viscera presented a perfectly normal appearance.

"I next examined the brain, the bloodvessels of which were slightly congested; but this was so very trifling, that I became quite at a loss to conjecture the cause of the disease.

"Proceeding with my examination, I now removed the trachea; and making an incision along its superior surface, and cutting into the tube so as to lay it open, I discovered a *mass of hair* impacted in it about an inch and a half below the larynx, the lining membrane of which was highly inflamed for three or four inches in extent."

Mr. BLAKEWAY has forwarded to us specimens of the *rough cocks-foot grass* extensively affected with a variety of the SMUT. We are pleased to hear of the success attendant on his use of the diniodide of copper in a case of chronic enlargement of the leg, with ulcers simulating farcy. It was given in half-drachm doses daily, and to the ulcers was applied the solution that remains after the precipitated diniodide of copper has been removed by the filter. The result exceeded his most sanguine expectations.

We thank Mr. J. R. Cox for his promised communication.

Mr. LEWIS' case of diseased liver in a heifer was received too late for insertion in the present Number.

We hail the proposal of an exchange of Journals, and shall be glad to accede to it.

We regret that we have been unable to fulfil all the promises made in our last Number, but hope to do so in our next.

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